March 30, 2017

FACT SHEET[*]

Business Data Services in an Internet Protocol Environment et al.

Report and Order – WC Docket No. 16-143 et al.

Background: Business data service (also known as special access) refers to the dedicated point-to-point transmission of data at certain guaranteed speeds and service levels using high-capacity connections. Businesses, non-profits, and government institutions use business data services to enable secure and reliable transfer of data, as a means of connecting to the Internet or the cloud, and to create private or virtual private networks. The FCC has historically subjected the provision of business data services by incumbent local exchange carriers (LECs) to price regulations.

The Chairman of the FCC has circulated a draft Report and Order (Order) that, based on an extensive record, recognizes the presence of strong competition in the business data services market, and therefore eases the regulatory burdens on providers of these services. By modernizing our rules, the draft Order will allow market forces to continue working to spur entry, innovation and competition in the vibrant business data services market.

What the Report and Order Would Do:

- Find that competition is robust and vigorous in the markets for packet-based business data services, certain other high-capacity business data services, and transport services so that continued legacy regulation is more likely to impede the introduction of new services and raise prices than to benefit consumers.
- Confirm that certain competitive offerings constitute private carriage.
- Find that competition for lower-speed services (DS1s and DS3s) is robust in some, but not all, counties, and apply a competitive market test to determine where actual and potential competition is likely to constrain prices and lead additional investment.
- In areas with sufficient competition, modernize rules to facilitate additional infrastructure investment and next-generation services by ending tariffing and other legacy pricing regulations.
- In areas without sufficient competition, maintain price caps with a prospective productivity-based X factor of 2% to ensure small businesses and other customers are not subject to price increases and share in productivity gains.
    - Grant carriers additional flexibility to offer discounts in such areas to schools, libraries, rural healthcare clinics, and other special access customers.
    - Ensure continued Commission oversight by prohibiting the use of agreements that would bar disclosure of contract terms to the FCC going forward.

[*] This document is being released as part of a "permit-but-disclose" proceeding. Any presentations or views on the subject expressed to the Commission or its staff, including by email, must be filed in WC Docket No. 16-143, which may be accessed via the Electronic Comment Filing System (https://www.fcc.gov/ecfs/).

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

In the Matter of	)	
	)	
Business Data Services in an Internet Protocol Environment	)	WC Docket No. 16-143
	)	
	)	
Technology Transitions	)	GN Docket No. 13-5
	)	
Special Access for Price Cap Local Exchange Carriers	)	WC Docket No. 05-25
	)	
	)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	)	RM-10593

REPORT AND ORDER*

Adopted: [] **Released: []**

By the Commission:

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*This document has been circulated for tentative consideration by the Commission at its April open meeting. The issues referenced in this document and the Commission's ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairman has determined that, in the interest of promoting the public's ability to understand the nature and scope of issues under consideration by the Commission, the public interest would be served by making a redacted version of this document available to the public and by making an unredacted Highly Confidential version of this document available to authorized parties consistent with the protective orders in this proceeding. The FCC's *ex parte* rules apply and presentations are subject to "permit-but-disclose" *ex parte* rules. *See, e.g.*, 47 C.F.R. §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

APPENDIX B – Productivity-Based X-factor and Catch-up Adjustments for Price Cap Business Data Services
APPENDIX C – Final Regulatory Flexibility Analysis

I. INTRODUCTION

1. After more than ten years of studying the business data services (also referred to as BDS) market, numerous requests for comment, and a massive data collection, we at long last recognize the intense competition present in this market and adjust our regulatory structure accordingly. The record in this proceeding demonstrates substantial and growing competition in the provision of business data services in areas served by incumbent local exchange carriers (LECs) subject to price cap regulation. By adopting a framework which accounts for these dynamic competitive realities, we will create a regulatory environment that promotes long-term innovation and investment by incumbent and competitive providers alike which well-serves business data services customers.

2. The record indicates the market for business data services is dynamic with a large number of firms building fiber and competing for this business. The *2015 Collection*[1] identified 491 facilities-based companies providing business data services in the enterprise market.[2] Competitive LECs such as Zayo, U.S. Telepacific and Birch continue to invest and expand their competitive fiber networks with very successful results.[3] Competitive LECs, not including cable providers, earned $23 billion of the $45 billion in business data services revenue in 2013.[4] Cable providers have also emerged as formidable competitors in this market. Cable business data services are reported to have grown at approximately 20 percent annually for the past several years and, increasingly, they have emphasized Internet access and managed services, which directly compete with the products being offered by the incumbent and other competitive LECs.[5]

3. Although incumbent LECs once dominated the business data services market selling circuit-based DS1s and DS3s, such technology is becoming obsolete. Significant increases in bandwidth demand are being driven by bandwidth-hungry applications, mainly video services (teleconferencing, training, etc.) as well as by web and cloud-based services. These rapidly increasing bandwidth demands will place an ever increasing demand for services such as Ethernet, especially over fiber, which can scale bandwidth to meet these requirements more effectively than can the old legacy services.[6] Packet-based

[1] The *2015 Collection* refers to the data collected from business data services providers and purchasers in the Commission's *Business Data Services/Special Access* rulemaking. *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*, WC Docket No. 05-25, RM-10593, Order, 29 FCC Rcd 14346 (WCB 2014).

[2] Dr. Marc Rysman, Empirics of Business Data Services at tbl. 5 (Apr. 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A1.pdf (Rysman Paper). The Rysman Paper is Appendix B of *Business Data Services in an Internet Protocol Environment; Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans; 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*, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593, Tariff Investigation Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 4723 (2016) (*Further Notice*).

[3] *Further Notice*, 31 FCC Rcd at 4748, para. 58.

[4] AT&T Comments at 13.

[5] *See* Craig Moffett, *Business Services Critical to Cable Growth*, LightReading (Dec. 3, 2015), http://www.lightreading.com/cable/cable-business-services/moffett-business-services-critical-to-cable-growth/d/d-id/719612.

[6] *Further Notice*, 31 FCC Rcd at 4756-59, paras 77-80.

services, which include Ethernet, already make up a large part of the business data services marketplace. In 2013, more than 40 percent of the approximately $45 billion in dedicated service revenues were for packet-based services.[7] Based on provider and analyst forecasts, we expect this shift from circuit-based to packet-based services to continue at a rapid pace.[8]

4. Against this competitive backdrop, we now move away from the traditional model of intrusive pricing regulation for incumbent LECs, recognizing that ex ante pricing regulation is of limited use—and often harmful—in a dynamic and increasingly competitive marketplace. Indeed, there is a significant likelihood ex ante pricing regulation will inhibit growth and investment in many cases.[9] In such circumstances, we should not continue unnecessary regulations, much less extend them to new services or providers. Instead, we adopt a framework based on our market analysis and a careful balancing of the costs and benefits of ex ante pricing regulation that deregulates counties where the provision of price cap incumbent LECs' business data services is deemed sufficiently competitive.

5. This Report and Order (Order), therefore, provides a new framework for business data services that minimizes unnecessary government intervention and allows market forces to continue working to spur entry, innovation, and competition.[10] Our decisions stem from careful consideration of the data submitted in the proceeding and the thoughtful comments and ex parte communications submitted into the record. Our thinking on how to evaluate competition and design pricing regulation evolved as we engaged with economists, advocates, and others to develop an administrable approach to de-regulate in areas where competitive forces are able to ensure just and reasonable rates. To a large extent in the business data services market, the competition envisioned in the Telecommunications Act of 1996 (1996 Act)[11] has been realized, and this order is an important step in updating our rules to adequately reflect such market developments.

II. BACKGROUND

6. Business data services refers to the dedicated point-to-point transmission of data at certain guaranteed speeds and service levels using high-capacity connections. Henceforth, we refer to special access services as a subset of business data services that we continue in some circumstances to subject to ex ante pricing regulation. Specifically, special access services include DS1 and DS3 interoffice facilities and channel terminations between an incumbent LEC's serving wire center and an interexchange carrier (IXC), and end user channel terminations, although ex ante pricing regulation would only apply to certain end user channel terminations.[12] Businesses, non-profits, and government institutions use business data services to enable secure and reliable transfer of data, for example, as a means of connecting to the Internet or the cloud, and to create private or virtual private networks. Business data services support applications that require symmetrical bandwidth, substantial reliability, security, and connected service to more than one location. Business data services are significant to our

[7] *Id.* at 4759-60, para. 81.

[8] *Id.*

[9] For discussion of this point see Mark Jamison, *The cost of regulating special access: A 55 percent investment decrease*, TechPolicyDaily.com (Apr. 12, 2016), http://www.techpolicydaily.com/internet/the-cost-of-regulating-special-access-a-55-percent-investment-decrease/; Tech Knowledge Reply Comments at 5; Hal Singer, *Assessing the Consequences of Additional FCC Regulation of Business Broadband: An Empirical Analysis*, Economists Incorporated (Apr. 7, 2016).

[10] *See Further Notice*.

[11] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996). The 1996 Act amended the Communications Act of 1934, 47 U.S.C. § 151 et seq.

[12] DS1s and DS3s have symmetrical bandwidths of about 1.5 Mbps and 45 Mbps, respectively.

nation's economy—revenues reported by providers in response to the *2015 Collection* total almost $45 billion for 2013,[13] and revenues for the broader market for enterprise services, which include voice, Internet, private network, web-security, cloud connection, and other digital services, could exceed $75 billion annually.[14] Moreover, these numbers do not capture the indirect contribution of business data services to the nation's economy as business customers rely on these services for their commercial operations.

7. The Commission has historically subjected the provision of business data services by incumbent LECs to dominant carrier safeguards.[15] The focus of this proceeding is on areas where incumbent LECs are subject to price cap regulation in setting their business data services rates. Beginning in 1999, through a series of Commission actions, the Commission: (1) began granting price cap incumbent LECs pricing flexibility by establishing both Phase I relief (which permitted the provision of volume and term agreements and contract tariffs) and Phase II relief (which relieved the carrier of price cap regulation) through "triggers" using collocation as a proxy for competition; [16] (2) adopted the "CALLS plan, which separated business data services into its own basket and applied separate "X-factors;" [17] (3) initiated a rulemaking to examine a number of aspects of the business data services market, including whether to apply and how to calculate a productivity-based X-factor and whether to maintain or modify the pricing flexibility rules; [18] and (4) granted a number of price cap incumbent LECs forbearance

[13] Based on aggregate revenue totals reported in responses to questions II.A.15-16 and II.B.8-9 in the *2015 Collection*.

[14] *See* Rysman Paper at Tbl. 3 (Apr. 2016); s*ee also* Dr. Marc Rysman, Empirics of Business Data Services, White Paper, at 9, tbl. 3 (Apr. 2016, rev. June 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A6.pdf (Revised Rysman Paper).

[15] *See Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*; *Petition of BellSouth Corp. for Forbearance Under Section 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*, WC Docket No. 06-215, Memorandum Opinion and Order, 22 FCC Rcd 18705, 18707, para. 3 (2007) (*AT&T Forbearance Order*), *aff'd sub nom. Ad Hoc v. FCC*¸ 572 F.3d 903 (2009).

[16] *See Access Charge Reform*, CC Docket No. 96-262; *Price Cap Performance for Local Exchange Carriers*, CC Docket No. 94-1; *Interexchange Carrier Purchases of Switched Access Services Offered by Competitive Local Exchange Carriers*, CCB/CPD File No. 98-63; *Petition of U.S. West Communications, Inc. for Forbearance from Regulation as a Dominant Carrier in the Phoenix, Arizona MSA*, CC Docket No. 98-157, Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221, 14265-69, paras. 81-86 (1999) (*Pricing Flexibility Order*), *aff'd*, *WorldCom v. FCC*, 238 F.3d 449 (D.C. Cir. 2001).

[17] *See Access Charge Reform*, CC Docket Nos. 96-262, 94-1, 99-249, 96-45, Sixth Report and Order in CC Docket Nos. 96-262 and 94-1, Report and Order in CC Docket No. 99-249, Eleventh Report and Order in CC Docket No. 96-45, 15 FCC Rcd 12962, 12974-75, 13033-34, paras. 30, 172 (2000) (*CALLS Order*), *aff'd in part, rev'd in part, and remanded in part, Texas Office of Public Util. Counsel v. FCC*, 265 F.3d 313 (5th Cir. 2001), *cert. denied, Nat'l Ass'n of State Util. Consumer Advocates v. FCC*, 535 U.S. 986 (2002), *on remand, Access Charge Reform*, CC Docket Nos. 96-262, 94-1, 99-249, 96-45, Order on Remand, 18 FCC Rcd 14976 (2003) (*CALLS Remand Order*). These X-factors, unlike under prior price cap regimes, were "a transitional mechanism . . . to lower rates for a specified time period for [business data services]." *Id.* at 13028, para. 160. Price cap incumbent LECs' business data service rates have remained frozen at 2003 levels (excluding any necessary exogenous cost adjustments). 47 CFR § 61.45(b)(1)(iv) ("The value of X shall be 6.5% for the 2001, 2002 and 2003 annual filings. Starting in the 2004 annual filing, X shall be equal to GDP-PI for the special access basket.").

[18] *See Special Access Rates for Price Cap Local Exchange Carriers and AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25, RM-10593, Order and Further Notice of Proposed Rulemaking, 20 FCC Rcd 1994, para. 1 (2005) (*2005 Special Access NPRM*); *see also Parties Asked to Refresh Record in the* Special Access Notice of Proposed Rulemaking, WC Docket No. 05-25, RM-10593, Public Notice, 22 FCC Rcd 13352 (WCB 2007). In November

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from dominant carrier regulation, including tariffing and price cap regulation for their newer packet-based and higher bandwidth optical transmission broadband services, including a "deemed grant" for Verizon from application of Title II to these services.[19]

8. In August 2012, the Commission suspended its pricing flexibility rules because they were "not working as predicted, and . . . fail[ed] to accurately reflect competition in today's special access markets."[20] In December 2012, the Commission released the *Data Collection Order FNPRM*, to collect data, analyze how competition, "whether actual or potential, affects prices, controlling for all other factors that affect prices," and "determine what barriers inhibit investment and delay competition, including regulatory barriers, . . . and what steps the Commission could take to remove such barriers to promote a robust competitive market and permit the competitive determination of price levels."[21] The Commission

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2009, the Wireline Competition Bureau (Bureau) sought comment on an analytical framework to examine the issues raised in the *2005 Special Access NPRM*. *Parties Asked to Comment on Analytical Framework Necessary to Resolve Issues in the Special Access NPRM*, WC Docket No. 05-25, RM-10593, Public Notice, 24 FCC Rcd 13638 (WCB 2009); *see also Wireline Competition Bureau Announces July 19, 2010 Staff Workshop to Discuss the Analytical Framework for Assessing the Effectiveness of the Existing Special Access Rules*, WC Docket No. 05-25, Public Notice, 25 FCC Rcd 8458 (WCB 2010). Then, in October 2010, the Bureau asked for data on the presence of competitive special access facilities on a voluntary basis. *Data Requested in Special Access NPRM*, WC Docket No. 05-25, RM-10593, Public Notice, 25 FCC Rcd 15146 (WCB 2010); *see also Clarification of Data Requested in* Special Access NPRM, WC Docket No. 05-25, RM-10593, Public Notice, 25 FCC Rcd 17693 (WCB 2010). In September 2011, the Bureau issued a second public notice requesting competition and also pricing data on a voluntary basis. *Competition Data Requested in* Special Access NPRM, WC Docket No. 05-25, RM-10593, Public Notice, 26 FCC Rcd 14000 (WCB 2011).

[19] *See AT&T Forbearance Order*, 22 FCC Rcd at 18705-07, paras. 1-2; *Petition of the Embarq Local Operating Companies for Forbearance Under 47 U.S.C. § 160(c) from Application of Computer Inquiry and Certain Title II Common-Carriage Requirements, Petition of the Frontier and Citizens ILECs for Forbearance under Section 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Their Broadband Services*, WC Docket No. 06-147, Memorandum Opinion and Order, 22 FCC Rcd 19478 (2007) (*Embarq/Frontier Forbearance Order*), *aff'd sub nom. Ad Hoc v. FCC*¸ 572 F.3d 903(2009); *Qwest Petition for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Broadband Services*, *Memorandum Opinion and Order*, WC Docket No. 06-125, Memorandum Opinion and Order, 23 FCC Rcd 12260 (2008) (*Qwest Forbearance Order*); *Petition of ACS of Anchorage, Inc. Pursuant to Section 10 of the Communications Act of 1934, as Amended (47 U.S.C. §160(c)), for Forbearance from Certain Dominant Carrier Regulation of Its Interstate Access Services, and for Forbearance from Title II Regulation of Its Broadband Services, in the Anchorage, Alaska, Incumbent Local Exchange Carrier Study Area*, WC Docket No. 06-109, Memorandum Opinion and Order, 22 FCC Rcd 16304 (2007) (*ACS Forbearance Order*). Press Release, FCC, Verizon Telephone Companies' Petition for Forbearance from Title II and Computer Inquiry Rules with Respect to their Broadband Services Is Granted by Operation of Law, WC Docket No. 04-440, (Mar. 20, 2006), https://apps fcc.gov/edocs_public/attachmatch/DOC-264436A1.pdf (*Verizon News Release*);CenturyLink also received certain enterprise broadband relief when its forbearance petition was deemed granted by operation of law in 2015. *See* Press Release, FCC, CenturyLink's Petition for Forbearance from Dominant Carrier Regulation and the Computer Inquiry Tariffing Requirement with Respect to its Enterprise Broadband Services is Granted by Operation of Law, WC Docket No. 14-9 (Mar. 16, 2015) (*CenturyLink News Release*); CenturyLink's Petition for Forbearance Pursuant to 47 U.S.C. § 160(c) from Dominant Carrier Regulation and Computer Inquiry Tariffing Requirements on Enterprise Broadband Services, WC Docket No. 14-9 (filed Dec. 13, 2013), https://www fcc.gov/ecfs/filing/6017583444/document/7521065850.

[20] *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*, WC Docket No. 05-25, RM-10593, Report and Order, 27 FCC Rcd 10557, 10558, para. 1 (2012) (*Suspension Order*).

[21] *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*, WC Docket No. 05-

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planned to use the results of its analysis to evaluate whether to change its existing pricing flexibility rules "to better target regulatory relief in competitive areas" and evaluate remedies to address potentially unreasonable terms and conditions.[22] The Bureau released the *Data Collection Implementation Order* in September 2013, clarifying the scope of the collection, and by February 27, 2015, the last group of filers were required to respond to the *2015 Collection*.[23]

9. Most recently, the Commission released the *Tariff Investigation Order and Further Notice* on May 2, 2016.[24] The *Order and Further Notice* declared certain terms and conditions in the tariffs of the four largest incumbent LECs unlawful, proposed to replace the existing business data services regulatory structure with a new framework, and sought comprehensive comments on the proposed new framework.[25]

III. COMPETITIVE CONDITIONS FOR BUSINESS DATA SERVICES

10. In this section we consider competition among traditional and non-traditional providers of end-to-end business data services and the circumstances under which market conditions warrant a deregulatory approach for certain business data services consistent with our obligation to ensure that the rates for services offered by common carriers are just and reasonable.[26] In the present rulemaking, the Commission has already determined that significant aspects of the pricing flexibility regulatory regime have failed.[27] Thus, we must now decide whether to allow that failure to continue or to implement changes. As is often the case with complex problems, there is no ideal dataset available or which we could collect in a reasonable timeframe or expense, which would answer all doubts. Instead, we must carefully parse the available evidence and apply reasoned judgment to decide the questions before us.[28]

11. The Commission is charged with ensuring that the rates, terms, and conditions for services offered by common carriers are just and reasonable and that services are not offered on an unreasonably discriminatory basis pursuant to sections 201(b) and 202(a) of the Communications Act.[29] We "may prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this Act."[30] We also have an obligation under section 706(a) of the 1996 Act to:

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25, RM-10593, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 16318, 16346, para. 68 (2012) (*Data Collection Order* or *Data Collection FNPRM*).

[22] *See 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*, WC Docket No. 05-25, RM-10593, Report and Order, 28 FCC Rcd 13189, 13192, para. 5 (WCB 2013) (*Data Collection Implementation Order*).

[23] *See Data Collection Implementation Order*, 28 FCC Rcd at 13192, para. 7. For a more detailed discussion of the Wireline Competition Bureau's implementation of the *2015 Collection* and an overview of the data collected, see the *Further Notice*. *Further Notice*, 31 FCC Rcd at 4737-43, paras. 29-37, 39-43.

[24] *See Further Notice*.

[25] *Id.*

[26] 47 U.S.C. §§ 201(b), 202(a).

[27] *See Suspension Order*, 27 FCC Rcd at 10558, para. 1.

[28] We continued to analyze the *2015 Collection* in response to public input throughout the proceeding. At the same time, stakeholders also have had access to the data in the secure data enclave and have continued to provide updated analysis to us in an effort to inform our judgment.

[29] 47 U.S.C. §§ 201(b), 202(a).

[30] 47 U.S.C. § 201(b); *see, e.g.*, *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations*, CC Docket No. 79-252, First Report and Order, 85 FCC 2d 1, 20, para. 54 (1980) ("Our (continued….)

> encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.[31]

12. Our public interest evaluation "necessarily encompasses . . . among other things, a deeply rooted preference for preserving and enhancing competition in relevant markets [and] accelerat[ing] private sector deployment of advanced services."[32] A competition analysis is critical to our public interest evaluation and is informed by, but not limited to, traditional antitrust principles designed to protect competition.[33] The Commission, in conducting an analysis, may "consider technological and market changes as well as trends within the communications industry, including the nature and rate of change."[34] Analyzing the competitive nature of the market for business data services, will allow us to make a determination about the appropriate way to balance the costs and benefits of applying ongoing regulation to particular business data services.

13. For business data services provided over DS1s and DS3s supplied by the incumbent LEC we find that a nearby potential business data services supplier, in the form of a wired communication network provider, generally tempers prices in the short term and results in reasonably competitive outcomes over three to five years (the medium term). For example, a cable company that has fiber nodes nearby, and hence the ability to provide both Ethernet-over-fiber and, even more readily Ethernet-over-Hybrid Fiber Coax (EoHFC), if a profitable opportunity arises, is particularly relevant to pricing decisions of a business data services provider wishing to retain a customer.

14. Our conclusion is based in part on record evidence indicating a cost structure for business data services that incentivizes suppliers with existing networks to compete vigorously for customers. We also base our conclusion on findings that the impact of the first entrant on price will be substantially higher than the impact of subsequent entrants and business data services pricing is often determined by a

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goal throughout this rulemaking proceeding has been to establish a set of criteria to enable us to determine whether there are certain firms which could not rationally engage in the activities proscribed by the operative provisions of Title II of the Communications Act, *viz.* Sections 201–205 and 214.").

[31] 47 U.S.C. § 1302(a).

[32] *See Applications of Charter Communications, Inc., Time Warner Cable, Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 31 FCC Rcd 6327, 6337, para. 27 (2016) (*Charter/TWC*) (footnotes omitted); *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner, Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee*, Memorandum Opinion and Order, 16 FCC Rcd 6547, 6555-56, para. 22 (2001).

[33] *See SBC Commc'ns Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18290, 18302, para. 18 (2005) (*SBC/AT&T*); *Satellite Business Systems*, Memorandum Opinion and Order, 62 FCC 2d 997, 1068-73, 1088, paras. 200-16, 265-67 (1977), *aff'd sub nom. United States v. FCC*, 652 F.2d 72 (D.C. Cir. 1980) (en banc); *see also Northeast Utils. Serv. Co. v. FERC*, 993 F.2d 937, 947 (1st Cir. 1993) (explaining that the public interest standard does not require agencies "to analyze proposed mergers under the same standards that the Department of Justice . . . must apply"); *Applications of AT&T Inc. and DIRECTV For Consent to Assign or Transfer Control of Licenses and Authorizations*, 29 FCC Rcd 9131, 9140, para. 20 (2015); *Applications of Comcast Corp., General Electric Comp. and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licensees*, Memorandum Opinion and Order, 26 FCC Rcd 4238, 4248, para. 24 (2011) (*Comcast-NBCU Order*).

[34] *See Comcast-NBCU Order*, 26 FCC Rcd at 4248, para. 23.

customer bidding or request for proposal (RFP) process in which even an uncommitted, though usually nearby, entrant can compete for the customer's business, and then build out to the customer.[35] Consequently, the presence of nearby competitive facilities tempers pricing as competitors are generally aware of competitive facilities that can be expanded to reach an additional customer with reasonable costs should the incumbent's pricing exceed competitive levels (supracompetitive prices).[36] Furthermore, where an incumbent sets supracompetitive prices it is vulnerable to competitors vying for customers.

15. Together the evidence demonstrates how even a single competitor exerts competitive pressure which results in just and reasonable rates. This evidence demonstrates that the significant network investment required to provide business data services to end users is increasingly being leveraged in ways that prevent substantial abuses of market power. Given such incentives, the presence of two current competitors or providers with their own fiber nodes within a half mile, hereafter referred to as medium-term entrants, or that will serve over the medium term, are sufficient to provide competitive pressure to adequately discipline prices. Our finding is also based on evidence of competition that is currently in place or likely to arise over the medium term.

16. In addition, we find that business data services with bandwidths in excess of the level of a DS3 generally experience reasonably competitive outcomes, and to the extent they do not today, will do so over the medium term even where a facility-based competitor has no nearby facilities. We come to this conclusion based on a record that shows almost no evidence of competitive problems in the supply of these higher bandwidth services, and which shows higher bandwidth opportunities are particularly attractive to competitive LECs. We make a similar finding for transport services, where the record presents little evidence of competitive problems, and where low bandwidth demand is quickly turning into high bandwidth demand. We make a similar finding for lower bandwidth packet-based services. We reach these conclusions because, compared with time division multiplex (TDM) services, competitive LECs are considerably more active in the supply of packet-based services, are on a considerably more level playing field in supplying these new services against incumbent LECs, and have better incentives to supply such future-proof services where demand is growing rapidly.

A. Introduction

17. We analyze the *2015 Collection*, and look to analyses and other evidence submitted in this proceeding, to reach findings concerning competiveness in the business data services industry. In conducting our analysis, we consider market concentration as highly relevant, but do not find it determinative absent consideration of market dynamics.[37] We also look at specific market-based circumstances when considering actual and potential sources of competition.

18. In this section, we review the competitiveness of business data services, in general, as well as issues raised by commenters. We reach findings as to the degree of competitiveness in the business data services industry and consider industry trends on competitive entry.[38] We look to see if

[35] By uncommitted here we mean an entrant without a connection to a business location but with significant investment in the area.

[36] Supracompetitive prices are those above what a competitive market can sustain. *See* George S. Ford, *How (and How Not) to Measure Market Power over Business Data Services*, Phoenix Center for Advanced Legal & Economic Public Policy Studies (Sept. 2016) (discussion of the "competitive price" in the telecommunications market where fixed costs are substantial).

[37] U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, § 5 (Aug. 19, 2010) (stating "the Agencies evaluate market shares and concentration in conjunction with other reasonably available and reliable evidence") (2010 Horizontal Merger Guidelines).

[38] *See Applications of NYNEX Corp., Transferor, and Bell Atlantic Corp., Transferee*, Memorandum Opinion and Order, 12 FCC Rcd 19985, 20003-04, para. 32 (1997) ("[U]nder the public interest standard, the Commission may (continued….)

services are reasonably substitutable to determine an appropriate product market, and, in the case of geographic markets, we look to areas "in which the seller operates and to which the purchaser can practically turn for supplies."[39] As part of that analysis we observe high barriers to entry, but also observe a significant penetration of competitive business data services facilities being deployed and upgraded with a number of technologies throughout the country, particularly in areas with significant customer demand. Moreover, we observe a strong willingness on the part of providers to extend their networks half a mile to meet demand, especially over the medium term.

19. Consistent with antitrust principles, we distinguish product markets by generally looking at whether various services are reasonably interchangeable, with differences in price, quality, and service capability being relevant.[40] In the case of geographic markets, we look at both supply and demand substitution.[41] For both product and geographic markets, it is conventional to undertake a hypothetical monopolist test to determine market definitions. That approach begins with the smallest plausible market definition and considers likely consumer substitution if a hypothetical monopolist in that market imposed a small but significant and non-transitory increase in price (SSNIP).[42] We do not have data that would enable a more formal application of such a test, but our market analysis considers purchasers' willingness and ability to substitute services, suppliers, and geographies. The extent to which supply is broadly competitive wherever the incumbent LEC also faces a facility-based rival is strengthened by our findings as to specific product markets, and refined by our analysis of geographic markets.

B. Product Market

20. When defining a product market, to ensure our action affects an appropriate group of services, we look to which services are sufficiently similar to reasonably be considered substitutes.[43] We consider a number of factors, including the "practical indicia" identified by the Supreme Court, such as "industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors."[44] Not all of these factors must be present to define the relevant product market.[45] Perfect substitutability is not required as part of our broad review of business data services markets and our narrow consideration of certain special access service inputs that comprise a full business data services customer circuit.[46]

(Continued from previous page)
consider the trends within and needs of the industry, the factors that influenced Congress to enact specific provisions for a particular industry, and the complexity and rapidity of change in the industry.").

[39] *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961) (*Tampa Elec. Co.*).

[40] *See generally Brown Shoe Co. v. United States*, 370 U.S. 294, 336 (1962) ("The outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it.").

[41] *See generally United States v. Phila. Nat'l Bank*, 374 U.S. 321, 359 (1963) (finding the relevant geographic market to be "the 'area of effective competition . . . in which the seller operates, and to which the purchaser can practicably turn for supplies'" (quoting *Tampa Elec. Co.*, 365 U.S. at 327).

[42] *See* 2010 Horizontal Merger Guidelines § 4.1.1.

[43] *Brown Shoe Co.*, 370 U.S. at 325; *R.R. Donnelley & Sons Co.*, 120 F.T.C. 36, 153 (1995) (describing the relevant product market as "the smallest grouping of products whose sellers, if unified by a hypothetical cartel or merger, could profitably increase prices significantly above the competitive level").

[44] *Brown Shoe Co.*, 270 U.S. at 325.

[45] *See, e.g., FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 118-19 (D.D.C. 2016).

[46] *FTC v. Alliant Techsystems Inc.*, 808 F. Supp. 9, 20 (D.D.C. 1992).

21. A product that substitutes for another demonstrates a possibility that consumers will purchase the competing service of a competitor, including a potential entrant. Consequently, we consider providers with facilities used to supply one service that could be used to provide another.[47] For example, we see not only substitution between circuit- and packet-based business data services, but the capacity to supply both services over the same underlying facilities, indicating the two services are likely in the same market, and more importantly, that suppliers of either service are in the same market, as they could readily provide the other service over their facilities.[48] Similarly, while best-efforts services do not generally appear to be a good substitute for business data services (and *vice versa*), legacy hybrid-fiber-coaxial (HFC) and copper (in fact, generally hybrid-fiber-copper) facilities are commercially used to provide low bandwidth business data services (if not always at the highest commercially available quality standards). Unbundled network elements (UNEs), dark fiber, and fixed wireless services and facilities used to provision business data services also play competitive roles in business data services markets.

1. Circuit- and Packet-Based Business Data Services

22. The legacy technology for providing business data services is circuit-based using TDM. Incumbent LECs are the primary facilities-based suppliers of TDM-based services, including DS1s and DS3s with symmetrical capacities of 1.5 Mbps and 45 Mbps, respectively. For decades, these workhorses were the only options available to meet the high-capacity needs of users.[49] TDM circuits provide dedicated, secure, reliable and low-delay transmission service for moving voice, data, and video traffic,[50] but do not effectively scale for data intensive applications.[51] To increase bandwidth for DS1s/DS3s, providers must bond multiple circuits together. For example, providers can bond up to eight DS1s to achieve a maximum bandwidth of 12 Mbps.[52] DS3s are rarely bonded, however, because with the increased cost, the more logical option is to use a newer technology, such as a packet-based service.[53] In

[47] *See* 2010 Horizontal Merger Guidelines § 5.1.

[48] *See* Letter from Matthew A. Brill, Counsel for Comcast Corp., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 2 (filed Mar. 13, 2017) (Comcast Mar. 13, 2017 *Ex Parte*) ("explain[ing] that the existence of HFC facilities can facilitate Comcast's ability to construct new fiber connections to customer locations more rapidly and at lower cost than if Comcast lacked nearby HFC facilities").

[49] USTelecom Comments at 7.

[50] Circuit-based TDM services, typically provided over copper, and sometimes over fiber links, do not suffer from the routing issues that can affect packet-based services, such as packet loss, jitter or latency. *International Comparison Requirements Pursuant to the Broadband Data Improvement Act*, IB Docket No. 10-171 et al., Third Report, 27 FCC Rcd 9884, 10011-14 (IB 2012) (Packet loss is when packets of data travelling across the network fail to reach their destination; "[l]atency refers to several types of delays typically incurred during network data processing, and is typically measured in milliseconds (ms);" and "[j]itter refers to the variance of latency over time, and is measured by the average deviation from the mean latency of the network.").

[51] *See* Lee Copeland, *Packet-Switched vs. Circuit-Switched Networks*, Computerworld (Mar. 20, 2000), http://www.computerworld.com/article/2593382/networking/networking-packet-switched-vs-circuit-switched-networks html; Keyur Parikh and Junius Kim, White Paper, TDM Services Over IP Networks 2 (Dec. 2007), http://media.cygnus.com/files/cygnus/whitepaper/MASS/2011/APR/harris_tdmacrossip_10252515.pdf.

[52] *See* Level 3 et al. Jan. 27, 2016 Comments, Attach., Decl. of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services at 5 (Baker Decl.).

[53] *See Further Notice*, 31 FCC Rcd at 4743-44, paras. 45 n.103 (citing Baker Decl. at 5), 46-48.

contrast, packet-based services have bandwidth options ranging from 2 Mbps up to 100 Gbps, depending on the connection medium, and are easily scaled over fiber to meet increasing data demands.[54]

23. Because packet-based networks move packets over a shared transport channel, they are more efficient than a circuit-based network where transmission capacity is reserved even when not used. The routing and reassembling of data packets, however, can lead to packet loss, jitter, and latency, affecting the quality of service needed to support certain applications desired by users, e.g., real-time and mission critical applications. Providers can mitigate these delays through packet prioritization and setting performance parameters, like assigning different classes of service and quality of service levels (with, for example, Service Level Agreements (SLAs)).[55] In this way, providers can shape and differentiate networks to improve performance to meet the specific needs of users.[56] Backed by performance guarantees, packet-based business data services can provide the same, if not better, level of security, reliability, and symmetrical speeds as a DS1 or DS3 service. Packet-based business data services can also accomplish this with greater efficiency and scalability to satisfy a user's growing bandwidth demands.

24. Functionally, TDM and packet-based services are broadly interchangeable in the business data services realm as both are used to provide connectivity for data network and point-to-point transmissions and both services can be delivered over the same network infrastructure.[57] Incumbent and competitive LEC providers offer both types of services to similar types of customers and their marketing materials juxtapose these two technologies against each other.[58] Customers of TDM-based services are also switching to packet-based services.[59] And commenters representing suppliers agree, with limited exception, the services, whether circuit-based or packet-based, are substitutes and in the same product market.[60]

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[54] *See* Baker Decl. at 5; Ralph Santitoro, Metro Ethernet Services – Technical Overview, Metro Ethernet Forum at 7-11, https://www.mef.net/Assets/White_Papers/Metro-Ethernet-Services.pdf (last visited Mar. 28, 2017) (MEF Overview).

[55] Baker Decl. at 5; MEF Overview at 1; Juniper Networks, *Understanding Class of Service (CoS) Profiles*, https://www.juniper.net/techpubs/en_US/network-director1.5/topics/concept/cos-profile-understanding.html (last updated Sept. 29, 2016).

[56] MEF Overview at 18; Juniper Networks, *Understanding Class of Service (CoS) Profiles*, http://www.juniper.net/documentation/en_US/junos-space-apps/network-director3.0/topics/concept/cos-profile-understanding.html (last updated Sept. 29, 2016).

[57] Ad Hoc Jan. 28, 2016 Comments at 15; Birch et al. Jan. 28, 2016 Comments at 24.

[58] *See* Comcast Comments, Ex. A, Joseph Farrell Decl. at 17 (Comcast Decl. of Joseph Farrell); MegaPath, *Ethernet vs T1 Comparison Table*, https://www.megapath.com/data/ethernet/comparison/ (last visited Mar. 28, 2017) (noting similarities and differences between TDM and Ethernet services); XO, *Wholesale Ethernet Access Benefits*, https://campaigns.xo.com/wholesale/transport/ethernet/ (last visited Mar. 28, 2017) (comparing its Ethernet Access service to DS-1 or DS-3 private lines, Frame Relay, or ATM networking).

[59] *See, e.g.*, Comcast Comments, Ex. C, Decl. of John Guillaume at para. 16 (Comcast Decl. of John Guillaume) ("Comcast is often bidding to replace legacy TDM (often DS-1) lines that provide lower bandwidth at a higher cost than Comcast's Ethernet-based services."); CenturyLink et al. Comments, Ex. B, Decl. of David Williams at para. 7 (CenturyLink et al. Decl. of David Williams) (stating cell site "backhaul links have largely already migrated from copper-based DS1 connections to fiber-based Ethernet services"); Ad Hoc Jan. 28, 2016 Comments at 10-11 (describing "Ethernet as a product [their members] would use as a more cost-effective intermediate capacity compared to DS3s for locations that outgrow DS1 capacity."). There is also survey evidence indicating that small-to-medium sized businesses are switching to best-efforts Internet broadband services. *See* USTelecom Comments at 7-8.

[60] *See* ACA Comments, Appx. A, Decl. of Dr. Marius Schwartz & Dr. Federico Mini at 5; Birch et al. Comments at 27; Sprint Jan. 27, 2016 Comments at 11-12; Verizon Comments at 15.

25. Substitution between these two services, however, is generally one directional. New customers, more likely than not, are choosing to purchase Ethernet services, subject to their availability and pricing,[61] and existing customers of TDM-based service are switching to Ethernet.[62] There is no evidence suggesting Ethernet customers are switching to DS1s and DS3s.[63] Nor as a policy matter would we want that to occur as the technology transition is moving towards the eventual termination of TDM service offerings altogether. The Commission wants to encourage that migration, while mitigating disruptions to existing customers, to help unleash the benefits of network innovation for American businesses and consumers.[64]

26. We find circuit- and packet-switched business data services that offer similar speed, functionality, and quality of service characteristics fall within the same product markets for the purposes of action taken here, even though there is evidence suggesting the two technologies have important distinctions. Indeed, the Commission has long considered TDM and packet-based business data services as functionally interchangeable at comparable capacities and has consistently included both types of business data services in its orders and forbearance decisions.[65] Courts, in turn, have upheld the Commission's view.[66] Although commenters have pointed out some differences between these technologies, there is considerable evidence in the record indicating that the Commission's view on

[61] *See, e.g.*, ACA Comments at 31; XO Jan. 27, 2016 Comments at 24; Sprint Comments, Ex. B, Frentrup Decl. at para. 6 (Sprint Frentrup Decl.).

[62] At the same time, customers may choose to stay with TDM services despite availability of packet-based services due to higher prices or costs associated with replacing equipment that uses legacy TDM services. *See, e.g.*, XO Jan. 27, 2016 Comments at 24-25 ("That said, because existing TDM customers have investment in TDM equipment, they are more reluctant to move to the 'next level' Ethernet service even where Ethernet prices are dropping and bandwidth is increasing.").

[63] *See, e.g.*, XO Jan. 27, 2016 Comments at 25 ("XO does not see customers, even with low speed requirements, moving from Ethernet to TDM services.").

[64] As explained in the *Technology Transitions Order*, "[m]odernizing communications networks can dramatically reduce network costs, allowing providers to serve customers with increased efficiencies that can lead to improved and innovative product offerings and lower prices. It also catalyzes further investments in innovation that both enhance existing products and unleash new services, applications and devices, thus powering economic growth. The lives of millions of Americans could be improved by the direct and spillover effects of the technology transitions, including innovations that cannot even be imagined today." *Technology Transitions, et al.*, GN Docket No. 13-5, et al., 29 FCC Rcd 1433, 1435, para. 2 (2014) (*Technology Transitions Order*). Accordingly, the Commission strives "to position all the players — innovators (including those in existing lines of business), legacy service providers and manufacturers, government regulators and the general public — to prepare for, maintain, and facilitate the momentum of technological advances that are already occurring." *Id.*

[65] *See, e.g., Petition of Qwest Corp. for Forbearance Pursuant to 47 U.S.C. § 160(C) in the Phoenix, Arizona Metropolitan Statistical Area*, Memorandum Opinion and Order, 25 FCC Rcd 8622, 8657, paras. 68-69 (2010) (*Qwest Phoenix Order*); *United States v. SBC Commc'ns, Inc.*, 489 F. Supp. 2d 1, 4 (D.D.C. 2007) ("The government defines a Local Private Line ('LPL') as a dedicated, point-to-point circuit offered over copper and/or fiber-optic transmission facilities . . . ."). In the *Further Notice*, the Commission found that "[p]acket-based BDS, including over HFC, is a good substitute for TDM BDS" and proposed to include it as part of the product market. *Further Notice*, 31 FCC Rcd at 4791, para. 160.

[66] *See, e.g., Qwest Corp. v. FCC*, 689 F.3d 1214, 1232 (10th Cir. 2012) (accepting the Commission' view of a cable provider as a competitor in the provision of special access services); *EarthLink, Inc. v. FCC*, 462 F.3d 1, 11 ("[I]t is reasonable to conclude that the BOCs' secondary market position relative to cable internet providers tends to mitigate the impact of forbearance on the state of competition in the broadband market, especially where cable internet providers themselves are not required to unbundle."); *U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 582 (2004) (*U.S. Telecom v. FCC*) (agreeing with the Commission there is evidence in the record of "robust intermodal competition from the cable providers").

sufficient substitutability of circuit and packet business data services still holds. We believe that legacy TDM business data services suppliers would be constrained by the threat of potential customer loss to packet-based business data services suppliers.

2. Ethernet over Hybrid-Fiber Coax

27. Packet-based business data services over fiber are the gold standard for the industry because they provide the greatest flexibility to efficiently scale bandwidth to the highest speeds at the highest performance levels. There is debate in the record, however, on whether we should include the packet-based Ethernet services provided by cable companies using their HFC networks in the product market for business data services.[67] Our review of the record now confirms that competitive pressure on low bandwidth packet-based services carried on fiber and legacy TDM services is significant.

28. In many ways, EoHFC is much like other modes of business data services. Ethernet-over-HFC technology provides point-to-point wireline connection at symmetrical speeds, albeit limited to 10 Mbps.[68] Although EoHFC is not as reliable as circuit-switched or fiber connections, some cable companies are able to guarantee 99.9 percent availability (as compared to fiber's 99.99 percent).[69] In addition to availability, some cable companies offer further performance guarantees, addressing jitter, latency, packet loss, availability, and mean time to repair their Ethernet over DOCSIS service.[70] Comcast targets its EoHFC service to "[c]ustomers with low to medium bandwidth requirements that need enterprise features."[71] Wholesalers, for instance, are increasingly leaning on the cable industry's vast EoHFC network to address the needs of their multi-regional customers.[72] **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** "has certified both fiber-based and HFC-based Ethernet offering from cable companies for use in [its business data] services, as well as for use in [its] backhaul services."[73] Similarly, Sprint has announced that it now provides business data services over cable company facilities, including EoHFC.[74]

29. Some cable providers contend that their EoHFC business data services are not

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[67] Letter from John T. Nakahata, Counsel to Windstream Services, LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143, et al., at 11 (filed Mar. 27, 2017) (Windstream Mar. 27, 2017 Letter).

[68] *See* Comcast Decl of John Guillaume at para. 6.

[69] *See id*; Letter from Matthew A. Brill, Counsel for Time Warner Cable, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 2-3 (filed on Mar. 3, 2016) (noting TWC offers SLAs for its Ethernet-over-DOCSIS service) (TWC Mar. 3, 2016 *Ex Parte* Letter).

[70] *See* Letter from Matthew A. Brill, Counsel for Comcast, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, et al. at 3 (filed Mar. 25, 2016) (Comcast Mar. 25, 2016 *Ex Parte* Letter).

[71] *Id*. 2.

[72] *See, e.g.*, Letter from Curtis L. Groves, Assistant General Counsel Federal Regulatory and Legal Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, Brendan Gunn and Daniel Higgins at para. 17 (filed Mar. 1, 2016) (Verizon Mar. 1 2016 *Ex Parte* Letter, Gunn Decl.) (explaining Verizon aims to purchase "the most efficient and cost-effective access available" and for that reason has been leasing EoHFC from cable companies in its non-incumbent LEC territories); CenturyLink Jan. 28, 1016 Comments at 18; Sean Buckley, *Sprint Ropes in Ethernet over Copper, Ethernet over DOCSIS into Ethernet Strategy*, FierceTelecom (May 15, 2016), http://www.fiercetelecom.com/story/sprint-ropes-ethernet-over-copper-ethernet-over-docsis-ethernet-strategy/2016-05-15.

[73] Letter from **[BEGIN HIGHLY CONFIDENTIAL]**

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[74] Press Release, Sprint, Sprint Adds Ethernet over Copper and DOCSIS (Jan. 24, 2017), http://newsroom.sprint.com/news-releases/sprint-adds-ethernet-over-copper-and-docsis.htm.

substitutable with fiber business data services because they do not offer SLAs, or where they do so, they are limited, for example, guaranteeing only repair intervals and availability for their Ethernet over DOCSIS service.[75] Some wholesalers echo this view, reporting that they do not consider EoHFC (DOCSIS 3.0) as competitive with their services mainly because of limited availability, performance issues, and inadequate SLA guarantees.[76] However, the record shows that while these performance levels may be undesirable for some customers, many others readily accept lower performance guarantees in exchange for lower prices.[77]

3. "Best-Efforts" Internet Access Services

30. Best-efforts Internet access services describe basic Internet access as generally marketed to residential and small business subscribers. At the most-basic level, best-efforts and dedicated business data services appear to be interchangeable: end users can use both services to access the Internet or create virtual private networks. However, best-efforts Internet access is provided with asymmetrical speeds and without service performance guarantees.[78] Whereas dedicated packet-based business data services allow for packet prioritization and quality of service priority tiers, best-efforts services do not.[79] Also, while dedicated business data services commonly provide at least 99.9 percent network reliability, with higher guarantees being available for fiber services, and guarantees for latency and jitter,[80] best-efforts services generally do not offer any reliability guarantees, although some cable providers offer some non-binding performance "assurances."[81]

31. In the *Further Notice*, the Commission stated that "it is likely that best effort services may not be in the same product market or markets as BDS," and sought comment on its analysis.[82] However, the record includes evidence of incumbent LECs losing small- and medium-sized customers to cable's best-efforts offerings, despite noticeable differences in performance and prices between business

[75] *See* **[BEGIN HIGHLY CONFIDENTIAL**]

[END HIGHLY CONFIDENTIAL]); TWC Mar. 3, 2016 *Ex Parte* Letter at 2 ("TWC's Business Internet Access ('BIA') service, a DOCSIS-based service delivered over TWC's hybrid fiber/coaxial cable ('HFC') network, is not a dedicated Internet access service, but rather a best efforts service that operates over a shared network.").

[76] Birch et al. Jan. 27, 2016 Comments, Black Decl. at para. 19.

[77] *See, e.g.*, Verizon Mar. 1, 2016 *Ex Parte* Letter, Gunn Decl at para. 9; CenturyLink Feb. 19, 2016 Reply, Decl. of Carla Stewart at para. 10.

[78] *Further Notice*, 31 FCC Rcd at 4741, para. 14; TDS Feb. 19, 2016 Reply, Decl. of Kenneth H. Parker at para. 10; Comcast Comments at 10-11.

[79] Windstream Jan. 27, 2016 Comments at 13-18; TDS Jan. 27, 2016 Comments at 17.

[80] Windstream Jan. 27, 2016 Comments at 14.

[81] *See, e.g.*, Comcast Comments, Decl. of David Allen at para. 7 (Comcast Allen Decl.).

[82] *Further Notice*, 31 FCC Rcd at 4806, para. 191, 4809, para. 196; *see also* Letter from Paul Margie, Counsel to Sprint Corp., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 13 (Mar. 22, 2017) (Sprint Mar. 22, 2017 *Ex Parte*) (stating analysis submitted has "established that, 'services provided on a 'best-efforts' basis are not regarded by most purchasers as substitutes for special access dedicated circuits at guaranteed service levels.'") (quoting Declaration of Stanley M. Besen and Bridget M. Mitchell para. 16, appended as Attach. 1 to Sprint Jan. 27, Comments, (revised public version submitted Apr. 11, 2016) (Besen/Mitchell Decl.)).

data and best-efforts services.[83] In many circumstances, customers are willing to trade guaranteed service levels for higher bandwidth and better prices while receiving some symmetricity.[84] Cable providers routinely pitch their best-efforts business broadband services to customers as substitutable for legacy TDM services.[85] Charter, for example, markets its Business Internet Essentials16 services as "more than 13 times faster than T1."[86] And the record shows cable has been largely successful in growing its best-efforts business broadband services: "Comcast reports a [**BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** increase for best efforts business broadband services from 2014-2015" and "TWT reports a [**BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** increase from 2014 to 2015 in its BIA (its best-efforts HFC service)."[87] Incumbent LECs are noticing this competition. For example, AT&T explains that its sales team has discovered that "for the thirteen-month period from November 2014 through November 2015, a very substantial portion of AT&T's competitive losses were to cable companies and a significant portion of those losses were to best efforts cable services."[88] We, therefore, observe substitution and best-efforts networks supporting business data services for certain customers, but we do not observe broad substitution or substantial performance similarities with fiber-based business data services sufficient to determine that best-efforts service and its underlying facilities are in the same product market. In that manner, best-efforts services can be distinguished from other business data services. Despite this, the underlying facilities used to provision best-efforts services, even over legacy media such as HFC, can be and are being repurposed to provide business data services.[89]

4. Unbundled Network Elements

32. We find that the use of UNEs, where available, allow competitive providers to effectively compete in lower bandwidth services, and are particularly close substitutes for DS1s and DS3s. However, use and availability of UNEs is diminishing.[90]

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[83] *See, e.g.*, AT&T Feb. 19, 2016 Reply at 26-27; ACS Comments 10-11; USTelecom Reply, Appx. A (reporting results of a survey showing substantial number of small- and medium-size business customers have switched to cable's best-efforts services).

[84] CenturyLink Feb. 19, 2016 Reply, Decl. of Julie Brown and David Williams at para. 8 ("[W]here a customer wants a 10MB or 20MB service (both directions) . . . a 50/10 or 50/25 cable modem solution will give them the needed speed. It is not really a completely symmetrical solution but they end up with 10/10 or 20/20 at a much lower cost point than Ethernet so they go with that solution." (alterations omitted)).

[85] AT&T Comments at 46 n.133.

[86] Verizon Reply at 11 n.24 (citing Press Release, Charter Communications, Charter Business Customers Stay on the Leading Edge of Internet Speed with third Free Speed Increase for Commercial Customers (Dec. 1, 2011), http://ir.charter.com/phoenix.zhtml?c=112298&p=irol-newsArticle&ID=1635399 ("*Charter Business Internet Essentials16*, with downstream speeds of 16 megabits per second (Mbps) and upstream speeds of 2 Mbps, will increase to up to 20 Mbps downstream and 3 Mbps upstream . . . more than 13 times faster than T1.")).

[87] AT&T Comments at 46 (citing record sources).

[88] AT&T Feb. 19, 2016 Reply at 26-27.

[89] *See* Comcast Mar. 13, 2017 *Ex Parte* at 2 ("explain[ing] that the existence of HFC facilities can facilitate Comcast's ability to construct new fiber connections to customer locations more rapidly and at lower cost than if Comcast lacked nearby HFC facilities").

[90] *See* Reply Comments of the United States Telecom Assoc., WC Docket No. 15-1, at 5, 13-14 (filed Mar. 9, 2015) (discussing a 40 percent decline in competitor use of UNE loops between 2005 and 2013 and a corresponding 30 to 36 percent drop in the number of several incumbent LECs' unbundled DS1s and DS3s available to competitors). *But see Application of XO Holding and Verizon Communications Inc. for Consent to Transfer Control of Licenses and Authorizations*, WC Docket No. 16-70, Memorandum Opinion and Order, WC Docket No. 16-70, 31 FCC Rcd

(continued….)

33. Incumbent LECs are required by section 251(c)(3) of the Act and section 51.319 of the Commission's rules to provide requesting common carriers with DS1s, DS3s, and bare copper loops as UNEs.[91] UNE rates, as determined by the state public utility commissions, are based on forward-looking costs not on the incumbent LECs' historical costs, and are thus typically lower than the incumbent LEC rates for regulated DS1 and DS3 services.[92] UNEs are intended to facilitate competition by lowering barriers to stimulate facilities-based entry into local markets, and the Commission has imposed unbundling obligations "in those situations where [it] finds that carriers genuinely are impaired without access to particular network elements and where unbundling does not frustrate sustainable, facilities-based competition."[93]

34. The availability of UNEs from incumbent LECs is limited based on the "impair" standard.[94] DS1 and DS3 UNE loops are allowed only in those buildings located within the service area of an incumbent LEC wire center that falls below a certain business density line and fiber collocation threshold.[95] As a practical matter, competitive LECs cannot rely on UNEs at a wire center in which the competitive LEC is not collocated.[96] Moreover, with incumbent LECs increasingly retiring their copper-based infrastructure, the question also arises as to the extent to which UNEs remain available in the future.

5. Dark Fiber

35. Dark fiber is a physical connection with no transmission functionality. As the Commission explained in the *Further Notice*, "the supply of BDS over dark fiber takes on significant aspects of facility-based competition" and "is particularly attractive for competitive LECs seeking to expand their network reach and mobile carriers needing cell site backhaul."[97] Also, the record indicates that mobile wireless service providers are purchasing and then self-equipping dark fiber as a substitute for a fiber-based Ethernet service.[98] Accordingly, we find dark fiber is a substitute for special access services

(Continued from previous page)
12501, at 12516-17 para. 30 (*XO Verizon Order*) ("The record confirms that the copper UNEs and other inputs, including collocation and off-the shelf electronics, used by XO to provide EoC service are readily available to other providers today and would continue to be available to other competitors in the future.").

[91] 47 U.S.C. § 251(c)(3); 47 CFR § 51.319.

[92] *See U.S. Telecom v. FCC*, 359 F.3d at 561-62, *cert. denied*, 125 S. Ct. 313 (2004) (explaining that UNE rates are prices based on forward-looking costs, while DS1 and DS3 services are subject to the more flexible "just and reasonable standard"); *Verizon Commc'ns Inc. v. FCC*, 535 U.S. 467, 497 (2002) (upholding the Commission's decision requiring state commissions to set the rates charged by incumbents for leased elements on a forward-looking basis).

[93] *Unbundled Access to Network Elements, Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Order on Remand, 20 FCC Rcd 2533, 2535, para. 2, 2545, paras. 21-22, 2562-63, para. 51 (2005) (*Triennial Remand Order*); *see also Qwest Phoenix Order*, 25 FCC Rcd at 8670, para. 90 (2010) ("Congress enacted and the Commission implemented the UNE framework in an attempt to lower barriers to entry and to create a viable platform for entry into the local market.").

[94] 47 U.S.C. § 251(d)(2); *AT&T Corp. v. Iowa Util. Bd.*, 525 U.S. 366, 386-88 (1999); *U.S. Telecom v. FCC*, 359 F.3d at 561.

[95] 47 CFR § 51.319(a)(4)(i), (a)(4)(ii), (5)(ii).

[96] Birch et al. Jan. 28, 2016 Comments at 25.

[97] *Further Notice*, 31 FCC Rcd at 4791, para. 67.

[98] CenturyLink et al. Decl. of David Williams at para. 6 ("All four of the largest wireless providers have issued requests for proposals (RFPs) or approached CenturyLink seeking to move cell sites from lit BDS—specifically Ethernet services—to dark fiber."); Comcast Allen Decl. at para. 5 ("Wireless providers are increasingly demanding (continued….)

purchased for wireless backhaul. Similarly, dark fiber is a substitute outside of backhaul, e.g., serving the needs of retail business customers.[99] The *2015 Collection* includes all competitive provider locations serviced over dark fiber, and staff and key economists that used that data considered competition over it as essentially equivalent to facility-based competition.[100]

6. Fixed Wireless Services

36. We find fixed wireless services are a substitute for cell site backhaul but are, at most, a gap filler for special access services providing last-mile access to buildings. While mobile wireless carriers have relied substantially on fixed wireless, i.e., often self-provisioning microwave point-to-point links to backhaul traffic from their macro cell sites, the record on providers viably using fixed wireless to provide last-mile access to buildings is not as clear.[101] In the *Further Notice*, the Commission found the record somewhat mixed on the use of fixed wireless technology to provide business data services.[102] But the Commission also noted that the *2015 Collection* included locations served by fixed wireless technology and mobile providers "reported that about 40 percent of their cell site have self-provisioned wireless backhaul facilities."[103] In response, commenters discussed at a high level, whether or not to include fixed wireless in the business data services product market, or for a competitive market test with few additional facts provided on the subject of substitutability.[104] The record also indicated that XO and Windstream use fixed wireless service in their networks.[105]

37. We continue to find fixed microwave is a competitive backhaul alternative for wireless providers. The record, however, on using fixed wireless to provide reliable last-mile access to end users

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long-term leases of dark fiber facilities to meet their backhaul needs" and "demand among wireless providers for its lit fiber service is diminishing."); Cox Comments at 13 (Cox is experiencing "[f]urther pricing pressure" from the "increased use of dark fiber providers, especially by wireless companies").

[99] Zayo Comments at 1 (stating "Zayo's business is network connectivity, 38% is dark fiber solutions and 16% is colocation and cloud infrastructure" and that "Zayo's customers include wireless service providers"); Birch et al. Jan. 27, 2016 Comments, Declaration of Chris McReynolds at para. 16 (stating that "in a relatively small number of locations, competitive LECs provide dedicated services via local fiber transmission facilities that they own or that they have acquired as dark fiber pursuant to long-term lease arrangements").

[100] *See generally*, Baker Decl.; Revised Rysman Paper; FCC Staff, Update on the Use of Cluster-Robust Standard Errors in Business Data Services Regression, at 2 (Aug. 22, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340891A1.pdf; Mark Israel, Daniel Rubinfeld, Glenn Woroch, White Paper, "Competitive Analysis of the FCC's Special Access Data Collection" at 3, 11 (filed on behalf of AT&T and attached to Letter from Glenn Woroch, U.C Berkeley, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 (filed Jan. 28, 2016)) (IRW First White Paper); Sprint Comments, Exh. D, Decl. of William P. Zarakas and Jeremy A. Verlinda at Appx. C.

[101] Verizon Jan. 27, 2016 Comments at 6 (stating "[w]ireless carriers have long used microwave facilities for the backhaul in their networks").

[102] *Further Notice*, 31 FCC Rcd at 4753, para. 68.

[103] *Id.*

[104] *See* AT&T Comments at 16, 42; Cox Reply at 13 n.40; CenturyLink et al. Comments at 48 ("The Commission must also account for fixed wireless and non-traditional providers of BDS."); FTTH Comments at 2, 19; Mark Israel, Daniel Rubinfeld, Glenn Woroch, Second White Paper, Analysis of the Regressions and Other Data Relied Upon in the Business Data Services FNPRM And a Proposed Competitive Market Test at 32 (filed on behalf of AT&T attached to Letter from Glenn Woroch, U.C. Berkeley, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al. (filed June 28, 2016)) (IRW Second White Paper); NCTA Comments at 43 n.135, 44-45, 67; Sprint Comments at 2.

[105] Verizon Comments at 46; XO Jan. 27, 2016 Comments at 25.

is mixed, especially in urban areas where line-of-sight can be more of a concern than in rural areas.[106] We do note the promise of 5G technology to provide quality high-bandwidth fixed wireless services to businesses in urban areas.[107] AT&T and Verizon are currently engaged in 5G trials, but commercial service is not expected to launch until 2020.[108] We will continue to monitor these developments. For now, at a minimum, we consider fixed wireless an option for last-mile building access when wireline facilities are unavailable. Fixed wireless can also serve as a viable backup transmission option for business data services purchasers to increase network diversity. As such, for purposes of the relevant business data services product market we find that fixed wireless services should be included in the product market discussion because they may have a competitive effect on the market.

C. Geographic Market

38. To determine an appropriate geographic market for competitive analysis purposes, we consider the area to which consumers can "practically turn for alternative sources," and within which providers can reasonably compete.[109] The geographic market "must . . . both correspond to the commercial realities of the industry and be economically significant."[110] Yet, as with product market delineation, a geographic market "cannot . . . be defined with scientific precision."[111] In this section we conclude that a half mile is the relevant geographic market for the analysis of competition in the business data services market.

39. In the *Further Notice*, the Commission described the relevant geographic market in the business data services industry as likely being larger than the average census block and sought comment on its analysis.[112] Considering varying buildout distances in the record, the Commission observed in the *Further Notice* that competitors are willing to extend their facilities to reach potential customers "typically rang[ing] from **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** to **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]**[113] Commenters indicate that incumbent LECs and competitive providers have similar buildout criteria.[114] For larger competitive LECs, the majority of buildouts are within **[BEGIN**

[106] GCI highlighted the use of fixed microwave links for middle-mile transport networks in Alaska. *See* GCI Reply at 4 (citing Letter from Chris Nierman, Senior Counsel, GCI, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90, at 2-3 (filed June 3, 2015)).

[107] NCTA Comments at 43 n.135.

[108] CCA Reply, Exh. 1, Raul Katz, *Assessment of the Impact of the Business Data Services Market Dynamics on Innovation and Competition in the U.S. Wireless Market*, at 33; Sean Kinney, Verizon Completes 5G Radio Specification as Trials Continue, RCR Wireless (July 11, 2016), http://www rcrwireless.com/20160711/carriers/verizon-completes-5g-radio-specification-tag17.

[109] *See Morgenstern v. Wilson*, 29 F.3d 1291, 1296 (8th Cir. 1994).

[110] *Brown Shoe Co.*, 370 U.S. at 336-37 (internal quotation marks omitted).

[111] *FTC v. Sysco Corp.*, 113 F. Supp. 3d 1, 48 (2015) (quoting *United States v. Conn. Nat'l Bank*, 418 U.S. 656, 669 (1974) (internal quotation marks omitted)).

[112] *Further Notice*, 31 FCC Rcd at 4812-18, paras. 204-15; T. Randolph Beard, Lawrence J. Spiwak Esq. & George S. Ford PhD, *Market Definition and the Economic Effects of Special Access Price Regulation*, 22 CommLaw Conspectus 237, 265 (2014) ("Indeed, if one assumes that high capacity services are provided by monopoly providers in highly granular, point-to-point markets (as proponents of special access regulation argue), then price regulation reduces welfare and probably reduces investment in communications infrastructure.").

[113] *Further Notice*, 31 FCC Rcd at 4814-15, para. 211.

[114] *See* Letter from Christopher T. Shenk, Counsel for AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 11 (filed Mar. 21, 2016) (stating AT&T's "engineering guidelines demonstrate that AT&T engineers (continued….)

HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] from a splice point and less commonly exceed **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] away from the nearest splice point on their fiber network.[115] Accordingly, the Commission suggested that the "relevant geographic market definition for lower bandwidth BDS lies somewhere above the average area of the Census block with BDS demand and below the Metropolitan Statistical Area (MSA)."[116]

40. While buildouts are common within a half mile from a competitor's facilities,[117] the subsequent record shows buildouts of half mile and farther often occur.[118] However, such buildouts become much less likely as the distance from a cost-effective and viable fiber junction point increases as well as due to variation in entry barriers. Some providers may be more risk tolerant and will build out farther than others, as they weigh location-specific factors, including the identities of the nearby competitors, the specifics of competing local networks, local geographic features (such as traversing rivers or highways), local building codes, the density of local demand, and bandwidth demanded.[119] However, we find risk tolerant businesses and buildouts farther than a half mile to be the exception.[120]

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its network to maintain lateral distances at or below about **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] Baker Decl. at 24-25, para. 40 n.37 (citing Windstream Jan. 27, 2016 Comments, Attach. A, Windstream Decl. of Dan Deem et al. at para. 57; XO Jan. 27, 2016 Comments, Declaration of George Kuzmanovski at para. 24 (Kuzmanovski Decl.)).

[115] *See, e.g.*, Kuzmanovski Decl. at para. 24; Windstream Decl. of Dan Deem et al. at para. 51.

[116] *Further Notice*, 31 FCC Rcd at 4814, para. 209. *Id.* at 4814-15, para. 211 (citing narrative responses to question II.A.8 in the *2015 Collection*).

[117] AT&T Comments at 11 (stating "competitors typically compete for customers in buildings within about a half mile of their network facilities") (citing Baker Decl. at para. 43).

[118] Letter from Eric Branfman and Joshua Bobeck, Counsel for Lightower, Lumos and Unite Private Networks, WC Docket No. 16-143 et al., RM-10593, Biltz Decl. at para. 7 (reporting that their research indicates an addressable market of nearly $100 million within one mile of Lumos' network in a portion of Virginia); Narrative Responses to Data Collection Questions II.A.8 of Marne & Elk Horn Telephone Company (reporting **[BEGIN HIGHLY CONFIDENTIAL]**

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[119] Cox Communications, Inc. (**[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]); Windstream Dan Deem et al. Decl. at para. 51; Kuzmanovski Decl. at paras. 29, 32; Cox Comments, Decl. of Ken Shelton at para. 9 (Shelton Decl.) (indicating that local government regulations may prohibit or at least reduce profitability of a buildout). *See also* Sprint Mar. 22, 2017 *Ex Parte* at 10-11; *see also* Narrative Response to Data Collection Questions II.A.8 of U. S. Link, Inc. (reporting to have **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]); Zito Media, L.P. (reporting **[BEGIN HIGHLY CONFIDENTIAL]**

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[120] *See* Rysman Paper at § IV.B ("Narrative evidence [of the *2015 Collection*] suggests that C[ompetitive] P[roviders] generally build out no more than a quarter to a half-mile. Answers varied, but these sorts of distances appeared consistently in the narrative responses.").

41. The nature of the customer's demand is particularly relevant to competitors' build decisions. As the Commission recognized recently when considering the likelihood of a competitor entering a building to provide business data services, "[t]he lower the demand in the building, the closer another competitive fiber provider must be to that building for entry to be profitable and thus likely."[121] Nevertheless, even when demand is too low to justify the buildout, competitive providers often consider whether there are any potential customers nearby and may even take a more circuitous route in anticipation of additional demand from businesses along the route.[122] The *2015 Collection* indicates that in many areas of the country competitive facilities are sufficiently close to make deployment to buildings with low demand justifiable. In 2013, there was at least one competitive provider in "more than 95 percent of MSA census blocks with BDS demand, and . . . those census blocks represented about 97 percent of the total BDS connections and 99 percent of business establishments."[123] The average distance between buildings with incumbent LEC business data services customers and competitive fiber was just 364 feet.[124] About half of these buildings were within 88 feet of competitive fiber facilities and 75 percent were within 456 feet.[125]

42. We tested the sensitivity of our finding that a location currently faces or likely will face competitive choices over the medium term if it is within a half mile of a location served over the facilities of at least one competitive provider. For example, based on the *2015 Collection*, 64.1 percent of all locations with business data services demand in price cap areas were within a quarter mile of at least one competitive provider, as compared to 79.5 percent that were within a half mile, and 89.4 percent that were within a mile.[126] Thus, our approach lies somewhat above the middle of these two extremes, each of which had limited record support. We also found 45.8 percent of locations with business data services demand to be within a half mile of at least two competitive providers, and 64.6 percent of all locations with business data services demand to be within a mile of at least two competitive providers. In addition, as discussed, cable competition is considerably more developed than it was in 2013. Given the nature of cable networks, we expect the percent of locations within range of a quarter mile of at least one facilities-based competitor, to be more similar to the percent of locations within a half mile of one such competitor today.

43. As we detail more fully below, there is strong evidence of rapid growth in competitive investment. Because of this ongoing investment, the average building with business data services demand over time will find itself closer and closer to a competing facilities-based competitor's network. The declining distances between buildings with business data services demand and the fiber networks of competitive providers in general, and those of cable providers with near ubiquitous fiber in particular, create a cycle of investment and benefits within an area outside of any particular building. Because even small businesses' bandwidth needs are constantly growing, the effect of this virtuous cycle of investment

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[121] *XO Verizon Order*, 31 FCC Rcd at 12512, para. 22.

[122] Kuzmanovski Decl. at paras. 20, 26; Narrative Responses to Data Collection Questions II.A.8 of Bay Springs Communications Inc. (**[BEGIN HIGHLY CONFIDENTIAL]**

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[123] IRW Second Supp. Decl. paras. 5-6.

[124] Letter from Caroline Van Wie, AVP, AT&T Services Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143, et al., Attach. at 4 (filed Oct. 14, 2016).

[125] *Id.*

[126] Price cap areas throughout refer to the study areas of price cap carriers.

is likely to be amplified.[127] Greater fiber investment leads to lower costs of deploying facilities to neighboring buildings, which in turn leads to greater investment. As costs continue to drop through further fiber deployments, and potential revenues for each building served increase with growing demand for high bandwidth services, these competitive providers with significant legacy (in the case of cable) and newer networks have powerful economic incentives to enter and price their services aggressively. This effect will provide a strong disciplining force to the incumbent service providers of surrounding locations, and will grow over time. Importantly, all else equal, we expect competitors will be particularly likely to build out to locations where incumbents have priced supracompetitively, to the extent these are the most profitable locations. In this manner, over time, abuses of market power can be addressed through localized competitive pressures.

44. The record demonstrates that most business data services providers are willing and able to profitably invest and deploy facilities within a half mile of existing competitive facilities, and often have the ability to build out after winning a customer's bid for business, depending upon the scale of investment required to reach the customer.[128] Accordingly, we conclude that the relevant geographic market for purposes of this market analysis is the region within a half mile of a location with business data services demand. We make this determination by focusing on the factors that influence suppliers of business data services, as opposed to customers, because in most instances a customer is unlikely to impact service pricing by moving its physical location in response to a material increase in price.[129] This point is true for both single- and multi-location customers that seek dedicated connections to each location.

45. We also find that business data services providers commonly sell their service in bidding markets, and this is especially so for multi-site contracts. Winning bidders then build out to the customer within an agreed-upon provisioning timeframe.[130] Consequently, competitors outside of the customer's location can affect pricing because the winning bid represents the competitive offer that others must beat, even if that competitor does not already have facilities in the customer's building. That competitor is increasingly relevant the closer the competitor's network facilities, actual or potential fiber splice points, are to the customer (because its costs likely fall with proximity, making its bid more likely to constrain the winning bid).[131] Thus, the geographic range of the competition posed by a business data services provider is not limited to the specific locations of active circuits sold at a particular point in time.

D. Competitive Entry in Business Data Services Markets

46. As part of our analysis, we consider how varying market characteristics impact entry by competing providers in business data services markets, along with evidence of entry barriers being

[127] *See, e.g.,* TDS Jan. 28, 2016 Comments, Decl. of Matthew J. Loch at para. 4; FTTH Comments at 11.

[128] IRW First White Paper at 9-10; Windstream Jan. 27, 2016 Comments at 37 (**[BEGIN HIGHLY CONFIDENTIAL]**

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[129] *See SBC/AT&T*, 20 FCC Rcd at 18307, para. 28.

[130] *See generally* Narrative Responses to Data Collection Questions II.A.8 and II.A.8.a of Crown Castle Solutions Corp., Detel Wireless, Emery Telecommunications & Video, Inc., Fiberutilities Group, LLC, F J Communications, Inc., Frontier Communications Corp., HunTel CableVision (d/b/a HunTel Communications), MBO Video, Midcontinent Communications, Nashville Electric Service, Wabash Mutual Telephone Comp. (discussing response parameters to requests for solicitations for bids and requests for proposals (RFPs)).

[131] IRW First White Paper at 8-9; Verizon Comments at 4-5; Kuzmanovski Decl at para. 25 (noting the cost per linear foot varies city by city).

overcome by traditional and non-traditional competing providers. We then conclude that, while there can be high barriers to business data services entry, evidence shows that firms frequently choose to enter this market with significant investments, particularly in areas of significant demand, indicating sufficient competitive conditions that do not warrant direct regulatory intervention.

47. *Current Prices at Cap*. In the *Further Notice*, the Commission suggested that "the fact that the price capped incumbent LECs have kept their prices at the top of the cap is additional evidence of market power."[132] Commenters were at odds over whether the lack of or minimal headroom between prices and the caps indicated the possession of market power.[133] However, we disagree that prices at the cap demonstrate that incumbent LECs generally would have set materially higher prices wherever their prices were capped. Given our finding of competition in the business data services DS1, DS3, and transport markets we also find these concerns unwarranted. We expect these competitive markets to function so as to continue to keep prices in check.

1. Barriers to Entry

48. Market analysis is incomplete without an evaluation of entry barriers. As antitrust principles explain, "[t]he prospect of entry into the relevant market will alleviate concerns about adverse competitive effects only if such entry will deter or counteract any competitive effects of concern."[134] In evaluating the prospect of entry, agencies "examine the timeliness, likelihood, and sufficiency of the entry efforts an entrant might practically employ."[135]

49. *Timeliness.* Entry must be rapid enough to make an attempt by an incumbent to set a price above competitive levels unprofitable.[136] Depending on the distance, buildout does not appear to take very long, about three to four months,[137] relative to the typical multi-year contracts used in selling these services. Thus, in cases where demand is prospective and not urgent, and where a competitive LEC has existing facilities nearby, for example, within a half mile, buildout or even its threat would be timely enough to restrain a dominant provider in the relevant market. Instances in which business data services are sold as part of a bidding or similar process also allow for timely entry, as providers are typically afforded an opportunity to provision a customer after a bid is accepted and before service must begin. Moreover, even if a competitor with a nearby wireline network (for example, perhaps a cable company) is not presently capable of entry over the short term, we expect it will become so over the medium term.

50. *Likelihood.* "Entry is likely if it would be profitable,"[138] and profitability is precisely what competitive LECs consider when deciding whether to deploy fiber to a customer's location.[139]

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[132] *Further Notice*, 31 FCC Rcd at 4830-31, para. 239.

[133] *See* Level 3 Reply at 25 ("Incumbent LECs' lack of headroom under the Commission's price caps provides further evidence of market power because it demonstrates that incumbent LECs charge prices at the highest level permitted by regulation."); Sprint Reply at 42-43; Windstream Comments at 61. *But see* AT&T Comments at 24 ("The mere fact that rates are near the price cap ceilings set by the Commission would be indicative of market power only if those ceilings were above the price that would exist in a competitive market."); IRW Second White Paper at 21-22.

[134] 2010 Horizontal Merger Guidelines § 9.

[135] *Id.*

[136] *See id.* at § 9.1.

[137] *See, e.g.*, XO Jan. 28, 2016 Comments, Decl. of Michael Chambless at para. 22.

[138] 2010 Horizontal Merger Guidelines § 9.2.

Profitability depends on projected expenditures required for construction and anticipated revenues from the customer and potential customers.[140] Indeed nearby wireline network providers are actively meeting nearby demand, a process that can be expected to accelerate over the next few years.

51. Competitive LECs rarely build on speculation and instead prefer to have a customer in place before undertaking the costs associated with buildouts.[141] However, providers are also willing to consider potential customers nearby or along the route (and may even build a more circuitous route to pass by more potential customers).[142] Providers generally look to recover construction costs within a certain period of time, **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** while taking into account potential customers.[143] When the cost of construction is high, providers may lengthen the recoupment period.[144]

52. *Sufficiency*. We found earlier that the presence of a second competitor in this industry is sufficient to place an effective competitive constraint on business data services supply. Given the likelihood of entry wherever a competitive wireline network is nearby, this will also ensure a similar effect over the medium term.

53. This evidence demonstrates that providers find ways to enter nearby geographic markets and win customers. They consider nearby demand and build circuitous routes, they lengthen the terms of their contracts to recover the cost of buildout, and they place spare splice points along their network routes to accommodate future demand. These facts show that once providers have sunk substantial costs into a network, it is in their interest to build laterals to as many customers as possible because the relative cost of a lateral is much lower than the cost of other network facilities. And this conclusion is corroborated by evidence of extensive competitive entry into the business data services marketplace.

2. Entry and Investment in Business Data Services Markets

54. *Evidence of Competitive Entry by Cable*. The entry of cable into business data services provisioning has been the most dramatic change in the market over the past decade. Cable companies began serving business customers using their "best-efforts" broadband networks with asymmetric speeds

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[139] *See, e.g.*, Comcast Comments, Decl. of Robert Victor at para. 3; EarthLink Response to Data Collection Question II.A.11; Blackfoot Communications, Inc. Response to Data Collection Question II.A.11; Comcast Response to Data Collection Question II.A.11.

[140] *See, e.g.*, Shelton Decl. at para. 3.

[141] XO Kuzmanovski Decl. at para. 14 ("XO does not engage in speculative builds"). *But see* Letter from Eric. J. Branfman, Counsel for Lumos Networks Corp., to Marlene H. Dortch, Secretary, FCC, at 2 (Aug. 29, 2016) (Lumos "may invest some at-risk capital to build out specific routes where Lumos sees potential even though it does not have orders that in themselves justify the investment"); Comcast Comments at 9 (reporting "Comcast now has begun to undertake proactive fiber buildouts in select downtown markets" that **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**, representing a substantial capital risk").

[142] ACA Comment at 29.

[143] *See, e.g.*, Kuzmanovski Decl. at para. 20.

[144] Comcast reports a payback period of **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**. Letter from Kathryn A. Zachem, Counsel to Comcast Corp., to Marlene H. Dortch, Secretary, FCC, WC Docket 05-25 et al., at 4 (filed Oct. 3, 2016). Lightower aims to recover construction costs through monthly recurring charges over the life of the contract. Letter from Eric J. Branfman and Joshua M. Bobeck, Counsel to Ligthpath et al., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., Decl. of Eric Sandman at para. 18 (filed Oct. 5, 2016).

in the mid-2000s, but these services were not generally competitive with incumbent LECs' business data services. Cable companies now offer over fiber carrier-grade reliability, scalability, and quality of service functionality to compete for the largest enterprise customers across the country and also offer Carrier Ethernet services with symmetrical speeds up to 10 Mbps over their within-footprint near ubiquitous DOCSIS 3.0 EoHFC networks. As a result, incumbent LECs increasingly find themselves competing with cable for business data services customers. CenturyLink, for example, "views cable providers to be its primary special access competitors, given their expansive networks and rapid growth in business markets."[145]

55. The growth in consumer broadband demand has also lowered the costs to cable companies of deploying fiber to business locations. As consumer bandwidth demand grew exponentially over the past decade, cable providers were required to invest billions of dollars pushing fiber deeper into their networks as they needed to continually split nodes to keep pace with the demand.[146] Compared to just ten years ago, fiber within the franchise areas of cable providers that offer high-speed DOCSIS services has dramatically lowered the cost of building out fiber to the surrounding business locations due to the shorter distances required to reach any location.[147] For example, as a result of network expansion, in March of 2015, "approximately **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent of business locations [were] within 500 feet of Comcast's EoHFC facilities, an increase from **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent in 2013.[148]

56. Like other competing providers, cable companies have focused investment on building fiber networks for higher-bandwidth Ethernet services, which is enabling them to overcome limitations of traditional coaxial-based cable systems that cannot meet higher bandwidth demands.[149] For example, after first entering the marketplace in 2009, Comcast "rolled out Metro Ethernet services to 20 of the top 25 metropolitan areas entirely over fiber, with plans ranging from 1 Mbps to 10 Gbps in 2011."[150] Comcast has invested "more than $5 billion since 2010" on network infrastructure to provide business data services.[151] Comcast had connections, largely using fiber, to approximately **[BEGIN HIGHLY**

[145] CenturyLink Brown/Williams Declaration at para. 7.

[146] *See* Comcast Mar. 13, 2017 *Ex Parte* Letter (describing how fiber nodes installed to supply best-efforts broadband can be used to supply business data services); K. Bode, *Cox Exec Thinks More Fiber, Less Coax, Is the Future, DSL Reports* (Mar. 24, 2017), http://www.dslreports.com/shownews/Cox-Exec-Thinks-More-Fiber-Less-Coax-Is-the-Future-139210 (describing Altice and Cox plans); C. Wilson, *Charter Planning Enterprise Push, Rebranding*, LightReading (Dec. 1, 2016), http://www.lightreading.com/cable/cable-business-services/charter-planning-enterprise-push-rebranding/d/d-id/728699 (Charter and Cox "aggressively pushing fiber closer to the customer"); M. Silbey, *Why Cable Is Upgrading Networks Now*, LightReading (Oct. 7, 2016), http://www.lightreading.com/cable/ccap-next-gen-nets/why-cable-is-upgrading-networks-now/d/d-id/726836.

[147] Comcast Mar. 13, 2017 *Ex Parte*, at 2-3 ("The existence of fiber connectivity serving each node may reduce the total length of fiber required to reach a customer, thus requiring less total investment and construction time than would be required in the absence of Comcast's existing fiber-fed nodes. . . . [T]he fiber component of Comcast's existing HFC plant can position the company to provide dedicated, fiber-based BDS in many markets, even if Comcast is not currently providing fiber-based BDS to particular locations in those markets.)

[148] Comcast Mar. 25, 2016 *Ex Parte*, at 2.

[149] *See* Letter from Kathleen Grillo, Senior Vice President, Public Policy and Government Affairs, Verizon and Chip Pickering, Chief Executive Officer, INCOMPAS to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 at 2 (filed Aug. 9, 2016) (INCOMPAS/Verizon Aug. 9, 2016 Letter) ("recognizing the greater economic incentives to build out very high capacity circuits"); Cox Reply at 7 (citing Cox Comments at i, 10-11, 16-17).

[150] *See* Comcast Comments at 8; *Further Notice*, 31 FCC Rcd at 4750-51, para. 62.

[151] Comcast Comments at Exh. F, Decl. of Devesh Raj, para. 10.

CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] business locations in 2016, an increase of **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** since 2013.[152] Comcast has also "added **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** over the 2012-2015 period."[153]

57. Charter, the second largest cable company and the **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** largest provider of fiber connections to buildings, has invested more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** annually, starting in 2013, towards the provision of business data services.[154] In 2016, Charter acquired fellow cable companies, Legacy Time Warner Cable (TWC) and Bright House Networks, LLC, for $90 billion.[155] A stated benefit of the merger was the increased ability of the combined entities to compete for "large enterprise and other multi-location customers."[156] Post-merger Charter plans to invest $2.5 billion into serving commercial areas within its footprint.[157] Charter has "expanded its provision of BDS to approximately **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** new locations" since the beginning of 2013.[158] As of the second quarter of 2016, Charter's commercial revenues driven by enterprise, small and medium business growth rose to over $2 billion, an increase of 12.6 percent over the prior-year period.[159]

58. Cox, the third largest cable company, was one of the first cable companies entering the business data services market and by June 2016 served "more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** locations with dedicated point-to-point services," primarily over its fiber facilities.[160] Cox has invested more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** in fiber and equipment over the past 10 years, with **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** invested since 2013.[161] In 2015, "Cox earned approximately **[BEGIN HIGHLY**

[152] *See* Comcast Mar. 25, 2016 *Ex Parte* at 2.

[153] NCTA Reply at 3-4. Additionally, Comcast has experienced substantial "revenue growth from 2014 to 2015 of approximately **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent for Business Internet and **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent for Ethernet (fiber and HFC) services" with an overall increase in business data service revenues from **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** in 2013 to **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** in 2015. Comcast Comments at 9.

[154] *See* Charter Comments at 5.

[155] *Commission Accepts for Filing Applications of Charter Communications, Inc., Time Warner Cable, Inc., and Advance/Newhouse Partnership for Consent to Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, Public Notice, 30 FCC Rcd 8107, 8110 (MB 2015). Legacy TWC was one of the earliest cable companies to enter the business data services segment.

[156] *See id*. at 8112.

[157] *Charter/TWC*, 31 FCC Rcd at 6501-02, para. 375.

[158] Charter Comments at 5. Charter Reply at 6 ("Charter, in particular, is investing to expand its network to reach new customers, while at the same time BDS prices are falling sharply across the full range of bandwidths.").

[159] *See* News Releases, Charter Announces Fourth Quarter and Full Year 2016 Results, Time Warner Cable and Bright House Transactions Closed; Well-Positioned for Growth, at 6 (Feb. 16, 2017), http://ir.charter.com/phoenix.zhtml?c=112298&p=irol-earnings.

[160] Cox Comments at 5-6. This represents a growth rate of **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** connections reported in 2013.

[161] Cox Comments at 7.

CONFIDENTIAL] **[END HIGHLY CONFIDENTIAL]** in annual revenue from its [business data services] . . . and projects earnings of **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** for 2016, up from **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** in 2013."[162]

59. In 2016, Altice, a European company, completed its roughly $10 billion acquisition of Cablevision Systems Corp. (Cablevision), which includes Cablevision's business service unit, Cablevision Lightpath Inc., making Altice the fourth largest cable provider.[163] As of the end of 2015, Cablevision's Lightpath unit had 7,700 buildings connected to its fiber network, compared to the 4,400 buildings serviced in 2010.[164] Mediacom, the fifth largest cable operator serving "rural and exurban areas of the Midwest and Southeast . . . began deploying BDS on a significant scale throughout its service territories in 2011."[165] The company has invested more than $4 billion on its "high capacity [fiber] network that serves thousands of small rural communities."[166] This network supports over 1,000 macro cell sites, and Mediacom is planning to expand its network coverage in downtown areas and commercial districts to connect tens of thousands of new business customer locations.[167]

60. Even smaller cable operators are entering the business data services marketplace. ACA, representing a substantial number of small cable operators, estimates its members are "making at least tens of millions and upwards of $300 million of investments annually to deploy facilities to support the provision of BDS."[168] ACA's members primarily offer Ethernet business data services over fiber.[169]

61. Cable business services are reported to have grown at approximately 20 percent annually for the past several years, and increasingly, they have emphasized Internet access and managed services (i.e., security and routing, controlled and secured access to the cloud) showing a shift in demand to higher (and more competitive) bandwidths.[170] Business services will reportedly generate more than $12 billion

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[162] *Id.* at 7-8. This corresponds to approximately **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** percent growth from 2013 to 2015.

[163] *See Applications Filed by Altice N.V. and Cablevision Systems Corp. to Transfer Control of Authorizations from Cablevision Systems Corp. to Altice N.V.*, Memorandum Opinion and Order, 31 FCC Rcd 4365 (WCB/IB/MB/WTB 2016).

[164] *Compare* Cablevision, Annual Report (10-K), 7 (filed Feb. 25, 2016), http://phx.corporate-ir.net/phoenix.zhtml?c=102703&p=irol-sec, *with* Cablevision, Annual Report (10-K), 3 (filed Feb. 16, 2011), http://phx.corporate-ir.net/phoenix.zhtml? c=102703&p=irol-sec. In 2013, Lightpath reported **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** connections, and was ranked **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** of all cable companies, on a count of facility-based connections, when Charter, TWC, and Brighthouse are treated as a single provider, but **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** of all competitive LECs (counting Level 3 and tw telecom as a single firm). The ordering of the top cable companies in 2013, but accounting for mergers since then, was and likely still is **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**.

[165] Mediacom Comments at 1-2.

[166] *Id.* at 2, 10.

[167] *See* Joan Engebretson, *Ambitious Mediacom Gigabit Plans Are Mostly DOCSIS 3.1-Based*, Telecompetitor (Mar. 15, 2016), http://www.telecompetitor.com/ambitious-mediacom-gigabit-plans-are-mostly-docsis-3-1-based/.

[168] ACA Comments at 8.

[169] *Id.* at 27.

[170] *See* Craig Moffett, *Business Services Critical to Cable Growth*, LightReading (Dec. 1, 2015), http://www.lightreading.com/cable/cable-business-services/moffett-business-services-critical-to-cable-growth/d/d-id/719612.

for U.S. cable providers in 2015, up 20 percent or so from their milestone total of $10 billion in 2014.[171] According to one analyst, business revenues for cable companies will almost double their 2014 total by 2019.[172]

62. *Expansion by Other Competitive Providers*. Non-cable competitive LECs and other non-traditional providers also continue to invest and expand their network reach.[173] For example, Zayo, founded in 2007, now has more than 25,000 buildings connected to its metro fiber network.[174] Network connectivity makes up 45 percent of Zayo's business with 38 percent from dark fiber solutions.[175] Zayo committed to investing an estimated $740 million in major network expansion projects from March 2014 to December 2015.[176] For the fourth quarter ending on June 30, 2016, Zayo reported $506.7 million of consolidated revenue, which includes $108 million from its Canadian operations.[177] Zayo recently closed its purchase of Electric Lightwave adding an estimated 12,100 route miles to its network as well as connectivity to 3,100 enterprise buildings.[178]

63. Lightower has an all-fiber network with service to over 22,000 locations and more than 7,000 wireless towers and small cells in 17 states in the Northeast, Mid-Atlantic, and Midwest, serving "enterprise, carrier and data center customers."[179] Lightower acquired regional fiber provider, Fibertech Networks, in 2015 for $1.9 billion, doubling its network reach, and acquired Sidera Networks in 2013 for $2 billion.[180] The company spends about **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent of its revenues on capital investment.[181] Lightower recently added over 350 route miles of fiber in North Carolina.[182]

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[171] *See* Alan Breznick, *Cable Gives Thanks for Business Services*, LightReading (Nov. 27, 2015), http://www.lightreading.com/cable/cable-business-services/cable-gives-thanks-for-business-services/a/d-id/719564.

[172] Anna-Maria Kovacs, Ph.D., CFA, Regulation in Financial Translation Business Broadband: Assessing the Case for Reregulation at 6 (Mar. 2016) (citing Craig Moffett, Cathy Yao, Jessica Moffett, U.S. Cable and Telecommunications: It's Time to Take a Fresh Look at Broadband Market Share, MoffettNathanson Research (Dec. 9, 2015)).

[173] *Further Notice*, 31 FCC Rcd at 4821, 4829-30, paras. 221, 236.

[174] Earnings Call Presentation, Zayo Group Holdings, Inc., Fiscal Year 2017 Q2, 5 (Feb. 9, 2017), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2017/zgh-dec-2016-earnings-call.pdf.

[175] Zayo Comments at 1.

[176] *Id.* at 2.

[177] Earnings Call Presentation, Zayo Group Holdings, Inc., Fiscal Year 2017 Q2, 5 (Feb. 9, 2017), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2017/zgh-dec-2016-earnings-call.pdf.

[178] *Id*. *See also* Press Release, Zayo, Zayo to Aquire Electric Lightwave (Nov. 30, 2016), http://www.zayo.com/news/zayo-acquire-electric-lightwave/.

[179] Lightower Comments at 1; Lightower, http://www.lightower.com (last visited Mar. 28, 2017).

[180] Sean Buckley, *Lightower Snaps up Fibertech in $1.9 Billion All Cash Deal*, FierceTelecom (Apr. 27, 2015), http://www.fiercetelecom.com/telecom/lightower-snaps-up-fibertech-1-9b-all-cash-deal; Press Release, Lightower Closes Merger with Fibertech Networks to Double its Network Reach and Strengthen its Position in U.S. Networking Market (Aug. 13, 2015), http://www.lightower.com/company/news/press-releases/lightower-closes-merger-with-fibertech-networks-to-double-its-network-reach-and-strengthen-its-position-in-u-s-networking-market.

[181] Lightower Comments, Sandman Decl. at para. 12.

[182] *See* Press Release, Lightower Expands All-Fiber Network 350 Miles in North Carolina (Oct. 12, 2016), http://www.lightower.com/company/news/press-releases/lightower-expands-all-fiber-network-350-miles-in-north-carolina/#.WMMD1PJ0rew.

64. *Industry Concentration*. In the *Further Notice*, the Commission considered several measures of concentration in varying geographies, indicating "uniformly high levels of concentration."[183] On a national level, concentration among incumbent LECs was observed, based on 2013 reported business data services revenues.[184] Degrees of incumbent LEC concentration also were observed at geographies of unique building locations, census blocks, and zip codes.[185] The measures were difficult to determine precisely by geography due to certain biases.[186] Putting the concentration measures in context, the Commission explained that it "d[id] not yet know how much competitive pressure different forms of supply place on other suppliers, or how many suppliers, accounting for their differences, are sufficient to make prices effectively competitive (matters we have sought comment on above)."[187] We find the concentration measures alone are largely poor indicators of whether market conditions exist that will constrain business data services prices, and overstate the competitive effects of concentration.[188]

65. Traditional and non-traditional providers of business data services constrain an incumbent's pricing outside of immediate geographies used to describe market concentration in the *Further Notice* in three ways. First, with nearby facilities, a business data services provider is able to expand its presence to timely reach a customer.[189] Second, a business data services competitor does not need to be already offering service in a given building to constrain a supplier at that location. A nearby business data services competitor constrains pricing by responding to RFPs and participating in similar customer service bidding requests, which creates a pricing floor without any physical presence of the potential competitor in the nearby geography.[190] Third, concentration is greater for the declining legacy DS1 and DS3 channel termination services, in which incumbent LECs have a historical advantage, compared to newer, and in-demand, Ethernet business data services, which are largely competitive.[191] We

[183] *Further Notice*, 31 FCC Rcd at 4816, para. 216.

[184] *Id.* at 4818-19, paras. 216-17; *see* Sprint Comments at 42 (explaining National Regulatory Research Institute "examined both market share and market concentration and concluded that 'ILECs maintain strongly dominant market shares for DS-1 channel terminations'"); Zarakas and Gately at 9-17 ("Market Share and Market Concentration Analysis and Results").

[185] *Further Notice*, 31 FCC Rcd at 4820-22, paras. 219-23. At the census block level, for example, the Commission reported that "more than half of" census blocks "have a choice of two suppliers." *Id.* at 4822, para. 223; Sprint Mar. 22, 2017 *Ex Parte* Letter at 20 ("For BDS circuits greater than 50 Mbps, including Ethernet services, the FCC's own data demonstrates that roughly 83% of census blocks, and 94% of BDS customer locations have at most one ILEC and one competitive provider—and nearly half are served by the ILEC alone.").

[186] *Further Notice*, 31 FCC Rcd at 4819, para. 217.

[187] *Id.* at 4820, para. 219.

[188] *See* 2010 Horizontal Merger Guidelines §§ 2, 5; *United States v. Oracle*, 331 F. Supp. 2d 1098, 1123 (N.D. Cal. 2004) (discussing evidence of competitive effects, in addition to evidence of market concentration). *See also United States v. Aetna Inc*., No. 16–1494, 2017 WL 325189, at *9-10 (D.D.C. Jan. 23, 2017) (describing how defendants may rebut how market-share statistics "give an inaccurate account" of probable competitive effects in the relevant market); *FTC v. Sysco Corp*., 113 F. Supp. 3d 1, 23 (D.D.C. 2015) (discussing how high market shares creates a rebuttable presumption that can be overcome by a showing of competitive effects in the market).

[189] *See* IRW First White Paper at 6.

[190] *See* Besen/Mitchell Decl. at 26-27 (discussing how the number of bidders impacts pricing); Comments of Verizon at 22 (discussing competitive circumstances when "a potential customer for high-capacity services solicits bids or otherwise requests service").

[191] Letter from Christopher T. Shenk, Counsel to AT&T Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 7 (filed Mar. 13, 2017) ("ILEC Ethernet market shares have consistently fallen since 2010, while those of the CLECs and cable MSOs have consistently increased") (citing Vertical Systems Group, 2016 U.S. Carrier

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therefore conclude that concentrated supplies of DS1s and DS3s in a particular building or cell tower or similar are not reliable indicators of whether business data services pricing decisions are made competitively.

E. Other Examples of Competitive Effects in the Business Data Services Market

66. *Increasing Ethernet Revenue*. Comments show that, as a result of more substitutes in the market, incumbent LECs face declining sales in TDM services, notably DS1s and DS3s, including customer loss to cable operators and other providers. A recent report by Frost and Sullivan found that the migration from TDM to Ethernet business data services is fueling double-digit revenue growth for Ethernet business data services, and that this growth rate is expected to increase as Ethernet networks expand.[192] In particular, Ethernet-based services accounted for more than 40 percent of total dedicated service revenues in 2013, and Ethernet business data services revenues have been growing by over 20 percent a year since then.[193] The Ethernet bandwidth of ILECs grew by only 5.3 percent in 2013, while the bandwidth of competitive providers grew by 31.6 percent.[194] Incumbent LEC business data services revenues also declined from 2013 to 2015, while competitive LEC and cable competitor revenue grew rapidly.[195] Level 3 revenues increased 66 percent, Comcast revenues grew by 46 percent, and Time Warner cable revenues increased by 73 percent over the same time period.[196] For cable overall, business revenues have grown at a 20 percent compound annual growth rate.[197] Notably, this revenue growth came in spite of falling prices, which likely indicates expansion of market output and/or demand shifts to higher bandwidth and thus more competitive services. Vertical Systems Group found that Carrier Ethernet pricing fell by double-digit rates for all services and speed segments from 2010 to 2015.[198]

67. Some of the growth in cable's competitive position has come at the expense of incumbent and competitive LECs. AT&T, for example, calculates "losing more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** of its DS1 business from non-affiliates just between January 2013 and October 2015, and the rate of loss is accelerating."[199] In addition, "the number of new DS1 purchases from AT&T (*i.e.*, gross, not net, additions) declined by nearly **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** since the end

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Ethernet Leaderboard (Feb. 23, 2017), https://www.verticalsystems.com/vsglb/2016-u-s-carrier-ethernet-leaderboard/).

[192] Mayo Decl. at para. 34 (citing Frost & Sullivan, Business Carrier Ethernet Services Market Update 2015, at 7 (Sept. 2015)).

[193] Mari Silbey, Moffett: Business Services Critical to Cable Growth, LightReading (Dec. 1, 2015), http://lightreading.com/cable/cable-business-services/moffett-business-services-critical-to-cable-growth/d/d-id/719612 (reporting 20 percent compound annual growth in cable business data services revenues).

[194] IRW First White Paper at 23.

[195] AT&T Comments at 16; Anna-Maria Kovacs, Regulation in Financial Translation, Business Broadband: Assessing the Case for Reregulation at 10 (Mar. 2016), http://cbpp.georgetown.edu/publications/regulation-financial-translation-business-broadband-assessing-case-reregulation.

[196] Comcast Comments, Exh. B, Decl. of John W. Mayo at para. 37 (Mayo Decl.).

[197] *See* USTelecom Jan. 27, 2016 Comments at 19 (noting cable operator growth); CenturyLink Jan. 27, 2016 Comments at 20 (stating "business services has been one of the fastest growing areas within Charter, with year-over-year revenue growth averaging just under 20 percent") (internal quotation marks omitted).

[198] Mayo Decl. at para. 104 (citing Ethernet U.S. Data Pricing Overview, Vertical Systems Group 2016).

[199] Brief of AT&T Inc. in Support of its Direct Case, WC Docket No. 15-247 at 3 (filed Jan. 8, 2016).

of 2013."[200] A degree of those losses were to Ethernet, as AT&T reports "the number of new Ethernet purchases (*i.e.*, gross additions) during this period has more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]**[201] Verizon reports that it sees similar competitive effects because of cable's increased entry into the business data services market. For example, comparing the same three-month period year-over-year Verizon saw a **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent decrease in Ethernet orders with its customers "telling Verizon the trend will continue and worsen as they send more business to cable."[202]

68. *Decreasing Ethernet Prices.* There is persuasive evidence of recent decreases in the prices for packet-based services across all bandwidths. According to Cox, Ethernet prices have declined **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** or more between 2012 and 2016."[203] ACA reports smaller cable operators have over the past five years "decreased prices for their Ethernet services by approximately 50 percent on average across all geographic areas and for all customer segments – with some members reporting that prices have decreased even more, by 70 percent."[204] Comcast observes "steady year-over-year decline in [retail] pricing for dedicated Internet access and Ethernet transport services," e.g., prices for its Ethernet Dedicated Internet service declined by **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent over the past 12 months.[205] CenturyLink's Ethernet prices have on average, declined by **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent over the past five years.[206]

69. Charter's monthly price for a 1 Gbps service as of the first quarter of 2016 **[BEGIN HIGHLY CONFIDENTIAL] END HIGHLY CONFIDENTIAL]**.[207] Zayo reports price per unit decreases for GigE full rate (>1000 Mbps) from $3,300 to $2,800 from December 2013 to December 2015, about a 15 percent change.[208] Per unit prices for fractional GigE (101-1000 Mbps) services decreased from $2,300 to $1,700 over the same period, a 26 percent drop.[209]

70. Comcast once expected a price of between **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** per month in 2013 for its wholesale 100 Mbps fiber service but now charges less than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** a month for the same service.[210] Charter reports its "average regional price of a 100

[200] *Id.*, Attach. 1, Decl. of Paul Reid at para. 37.

[201] *Id.*

[202] Verizon Mar. 1, 2016 *Ex Parte* at 4-5 (also discussing the company's new service offerings in response to increased cable competition).

[203] Cox Comments at 24.

[204] ACA Comments at 8.

[205] Comcast Comments at 19.

[206] CenturyLink et al. Comments at 24.

[207] Charter Comments at 6-7.

[208] *See* Zayo Group Holdings, Inc. Fiscal Year 2015 Q4, Pricing Trends (June 2015), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2015/zgh-fy2015q4-pricing-trends.pdf; Zayo Group Holdings, Inc. Fiscal Year 2016 Q2, Pricing Trends (Dec. 2015), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2016/zgh-fy2016q2-pricingtrends.pdf.

[209] *Id*.

[210] Comcast Comments at 18-19.

Mbps dedicated service" was **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** per month in 2013 but by the first quarter of 2016, that per month price dropped to **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]**.[211] ACS has similarly experienced per month price declines for its **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]**[212] Zayo's pricing trends show the monthly price per unit for Fast E Ethernet (10-100 Mbps) service decreasing from $1,300 to $1,200 (7.6 percent) from December 2013 to December 2015.[213] CenturyLink reports prices for a 100 Mbps Ethernet backhaul circuit to a wireless tower have fallen **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent on average over the past five years.[214]

71. There is also evidence that lower bandwidth packet-based services are experiencing price declines. For example, Legacy TWC's 10 Mbps service fell from **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** per month on average in 2013 to **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** per month by the first quarter of 2016, a 23 percent decrease.[215] The company's 5 Mbps service decreased from a **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** monthly average to a **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** monthly average over the same period, a 28 percent change.[216]

F. Incumbent LEC Pricing Regulation

72. We consider a large quantity of evidence in the record. A body of evidence particularly relevant to these foregoing discussion considered the benefits of current incumbent LEC price regulations. The evidence is mixed and we find does not in most locations support continued, much less additional, price regulation. Econometric studies performed by Dr. Marc Rysman,[217] Commission staff, and commenters examined the relationship between incumbent LEC prices and the number of business data services competitors they face near a customer location.[218] Based on the Commission's *2015 Collection*,

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[211] Charter Comments at 6.

[212] Letter from Karen Brinkmann, Counsel to Alaska Communications, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143, Bishop Decl. at para. 6 (filed Sept. 2, 2016).

[213] *See* Zayo Group Holdings, Inc. Fiscal Year 2015 Q4, Pricing Trends (June 2015), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2015/zgh-fy2015q4-pricing-trends.pdf; Zayo Group Holdings, Inc. Fiscal Year 2016 Q2, Pricing Trends (Dec. 2015), http://investors.zayo.com/~/media/Files/Z/Zayo-IR-V2/earnings-releases/2016/zgh-fy2016q2-pricingtrends.pdf.

[214] CenturyLink et al. Comments, Decl. of Craig Davis at para. 15.

[215] Charter Comments at 7.

[216] *Id.*

[217] *See Further Notice*, 31 FCC Rcd at 4919-65, Appx. B, Dr. Marc Rysman, Empirics of Business Data Services, White Paper (Apr. 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A1.pdf (Rysman Paper). The Rysman Paper was revised in response to feedback received through the peer review process. The Commission would like to thank Dr. Rysman for his thoughtful and careful independent empirical analysis of the business data services market.

[218] *See generally* Dr. Marc Rysman, Empirics of Business Data Services, White Paper § I (Apr. 2016, rev. June 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A6.pdf (Revised Rysman Paper); Andrew Sweeting, Review of Dr. Rysman's "*Empirics of Business Data Services*" White Paper at 1, para. 2 (filed Apr. 26, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A4.pdf (Sweeting Report); Letter from Tommaso Valletti, Professor of Economics, Imperial College London, to Deena M. Shetler, Associate Bureau Chief, Wireline Competition Bureau, FCC, at 2 (filed July 21, 2016), https://apps fcc.gov/edocs_public/attachmatch/DOC-

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the Revised Rysman Paper showed that incumbent LEC DS1 and DS3 prices were a statistically significant three percent and ten percent lower, respectively, in census blocks with one or more facilities-based competitors.[219] However, these price changes often became statistically insignificant after implementing changes to the analysis in response to peer reviewers, suggesting that the data was too noisy to draw any firm conclusions.[220]

73. Furthermore, as recognized by Dr. Rysman, and noted by peer reviewers and other commenters in the record, data and modeling limitations did not allow for a definitive conclusion that incumbent LECs were not pricing competitively.[221] Despite Dr. Rysman's detailed analysis, a causal relationship could not be ascribed to his estimates due to the possibility that some factor not observed in the data (e.g., lower costs of serving a given customer) could be simultaneously producing both a greater number of facilities-based competitors and lower prices.[222] Further, while some (disputed) evidence was presented of incumbent LEC prices being lower where there was competition, other evidence was presented of dramatic increases in competitive entry, rapid price declines, and service growth.[223] Moreover, analysts and forecasters expect strong competitive growth over the next decade in business data services, and we find that, all else equal, competitive growth will occur exactly where supracompetitive pricing is most prevalent.[224]

74. *Current Prices at Cap*. In the *Further Notice*, the Commission suggested that "the fact that the price capped incumbent LECs have kept their prices at the top of the cap is additional evidence of

(Continued from previous page)
340457A5.pdf (Valletti Report); *Wireline Competition Bureau Releases Peer Review Materials in Business Data Services (Special Access) Rulemaking Proceeding*, WC Docket Nos. 16-143 et al., Public Notice, 31 FCC Rcd 7123 (WCB June 28, 2016); FCC Wireline Competition Bureau Memorandum, *Peer Review of Empirics of Business Data Services White Paper by Dr. Marc Rysman* (April 2016) (June 28, 2016, rev. Jul. 8, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A8.pdf; FCC Staff, Update on the Use of Cluster-Robust Standard Errors in Business Data Services Regression, at 2; IRW First White Paper at 3, 11; IRW Second White Paper at 27; Baker Decl at 20, 35; Sprint Comments, Exh. D, Decl. of William P. Zarakas and Jeremy A. Verlinda at Appx. C.

[219] *See* Revised Rysman Paper at Tbl. 14.

[220] FCC Staff, Update on the Use of Cluster-Robust Standard Errors in Business Data Services Regression, at 2 (Aug. 22, 2016), https://apps fcc.gov/edocs_public/attachmatch/DOC-340891A1.pdf.

[221] *See* Rysman Paper at 20-21; Sweeting Report at para. 7; Valletti Report at 6; IRW Second White Paper at 18; Mark Israel, Daniel Rubinfeld, Glenn Woroch, Fourth White Paper, Analysis of the Revised Regressions Disclosed By FCC Staff on August 22, 2016, Fourth White Paper (filed on behalf of AT&T and CenturyLink attached to Letter from Christopher T. Shenk, Counsel to AT&T, and Russell P. Hanser, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al.) at 1 (filed Sept. 8, 2016)) (IRW Fourth White Paper); NCTA Reply, Attach. Reply Declaration of Michael L. Katz and Bryan G. M. Keating at paras. 21, 27-30.

[222] Dr. Rysman attempted to account for this by including Census tract fixed effects in order to compare prices between two customer locations within the same tract. However, given that costs can vary by customer location it is still possible that locations with more competitors within the same Census tract still had lower costs of service. *See* Revised Rysman Paper at 20.

[223] Sprint Comments, Attach. Decl. of Ed Carey at 2-4, tbl. 1 (**[BEGIN HIGHLY CONFIDENTIAL]**

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[224] *See, e.g.*, Letter from Glenn T. Reynolds, USTelecom, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 4 (filed Apr. 26, 2012) ("Industry analyst Heavy Reading nearly a year ago explained, '[t]he collective MSO share of the Ethernet market will continue growing at the expense of incumbents and other competitors.'") (quoting Heavy Reading Insider, Cable Operators & Ethernet: Serious Business, Vol. 11, No. 5, at 24 (July 2011)).

market power."[225] Commenters were at odds over whether the lack of or minimal headroom between prices and the caps indicated the possession of market power.[226] However, we disagree that prices at the cap demonstrate that incumbent LECs generally would have set materially higher prices wherever their prices were capped. Given our finding of competition in the business data services DS1, DS3, and transport markets we also find these concerns unwarranted. We expect these competitive markets to function so as to continue to keep prices in check.

G. Competition in the Transport Market

75. Transport services are typically higher volume services between points of traffic aggregation which can more easily justify competitive investment and deployment. The Commission has traditionally regulated TDM-based special access services in two distinct segments: end user channel terminations and dedicated transport; and other special access services.[227] The provision and sale of TDM-based special access services has reflected, and continues to reflect, the different competitive dynamics that characterize the two sets of services. When the Commission adopted the *Pricing Flexibility Order*, it distinguished between these two sets of TDM special access services and required price cap LECs to make different levels of competitive showings to obtain pricing flexibility for each.[228] The Commission's pricing flexibility rules also reflect this distinction. Section 69.709 of the Commission's rules governs the grant of pricing flexibility for special access services other than the channel termination between the LEC end offices and customer premises, which includes interoffice facilities and channel terminations between an incumbent LEC's serving wire center and an IXC.[229] Section 69.711 of the Commission's rules govern the grant of pricing flexibility for channel terminations between LEC end offices and customer premises.[230] All of these elements comprise the service provided to the end user. The *Further Notice* followed the Commission's precedent by defining dedicated service as a service that "transports data between two or more designated points"[231] and aspired to create a "framework [that] reflect[s] how the market operates today."[232]

76. Commenters, including competitive providers, support maintaining this distinction.[233] Dr. Rysman also acknowledged the relevance of this distinction in his paper.[234] This distinction is rooted

[225] *Further Notice*, 31 FCC Rcd at 4830-31, para. 239.

[226] *See* Level 3 Reply at 25 ("Incumbent LECs' lack of headroom under the Commission's price caps provides further evidence of market power because it demonstrates that incumbent LECs charge prices at the highest level permitted by regulation."); Sprint Reply at 42-43; Windstream Comments at 61. *But see* AT&T Comments at 24 ("The mere fact that rates are near the price cap ceilings set by the Commission would be indicative of market power only if those ceilings were above the price that would exist in a competitive market."); IRW Second White Paper at 21-22.

[227] *Further Notice*, 31 FCC Rcd at 4843, para. 281; *compare* 47 CFR § 69.409, *with* 47 CFR § 69.411.

[228] *See generally Pricing Flexibility Order*, 14 FCC Rcd 14221.

[229] *See* 47 CFR § 69.709.

[230] 47 CFR § 69.711.

[231] *Further Notice*, 31 FCC Rcd at 4741, para. 39.

[232] *Id.* at 4843, para. 282.

[233] XO Jan. 27, 2016 Comments at 22 (stating that the "Commission has recognized this product distinction in numerous decisions and placed Dedicated Service channel terminations and transport in different product markets"); Letter from Mike Saperstein, Vice President, Federal Regulatory Affairs, Frontier Communications, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., (filed Nov. 9, 2016) at 1 (Frontier Nov. 9, 2016 Letter); Letter from Diane Griffin Holland, Vice President, Law & Policy, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al. (filed Nov. 9, 2016) at 1-2.

both in the different functionalities these sets of services deliver and in the different rate elements price cap carriers use to price these services.[235] We find that this distinction remains valid in the current special access marketplace and employ it in our approach to reforming our regulation of TDM transport services.

77. In analyzing the competitiveness of TDM transport services,[236] based upon the *2015 Collection* and the record, we find strong evidence of substantial competition, as well as market conditions that suggest regulation of TDM transport and other non-end user channel termination services is not justified.[237] Indeed competition for such services has been robust since a large proportion of TDM transport services were deregulated. As Frontier explains, a "substantial majority of transport revenue has been covered by Phase II pricing flexibility since the early 2000s."[238] AT&T further states that "the data collection strongly supports nationwide *Phase II* relief for transport."[239] It cites data showing the widespread deployment of competitive transport networks, including the fact that "as of 2013, competitive providers have deployed competing transport networks in more than 95% of census blocks with special access demand (and about 99% of business establishments are in these MSAs)."[240] Although INCOMPAS asserts that Commission rules requiring certain incumbent LECs to provide unbundled transport services is evidence of underlying market power, the record overall reflects a competitive landscape where customers often combine competitive transport with channel terminations supplied by incumbents.[241] According to CenturyLink, it uses non-incumbent LEC transport facilities for "less than half" of the end user channel terminations it purchases as a competitive provider outside of its incumbent footprint.[242] Moreover, data from the *2015 Collection* show that "the vast majority of locations with special access demand have competitive fiber" within close proximity.[243] AT&T identified a number of

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[234] Rysman Paper at 204 ("Physically, a service is made up of several elements, such as the connection to the edge of the provider's network (sometimes referred to as the 'last mile') and the transport from this edge to the Internet backbone or to another location owned by the customer."); *id.* at 233 ("[T]he cost structure behind providing transport is likely to be substantially different from providing service to end-user premises. . . .").

[235] *Pricing Flexibility Order*, 14 FCC Rcd at 14227, para. 10.

[236] The term "transport" or "other transport services" as used hereinafter collectively refers to interoffice facilities and channel terminations between an ILEC's serving wire center and an IXC, services covered by section 69.709(a)(4) of the Commission's rules. It excludes the elements of that rule that cover switched access services, such as entrance facilities, dedicated transport facilities between the serving wire center and the tandem switching office, and direct-trunked transport. 47 CFR § 69.709(a)(4). We use terms "transport" and "mileage" interchangeably, as do commenters. *See, e.g.*, Birch et al. Jan. 27, 2016 Comments, Decl. of Jonathan B. Baker at para. 14 ("Local transport facilities [are] . . . also termed dedicated transport, inter-office transport, or channel mileage . . . .").

[237] The TDM business data services we deregulate are those identified in section 69.709(a) of our rules. 47 CFR § 69.709(a).

[238] Frontier Nov. 9, 2016 Letter at 1.

[239] Letter from James P. Young, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 5 (filed Oct. 25, 2016) (AT&T Oct. 25, 2016 Letter); *see also* Letter from Russell P. Hanser, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 1-3 (filed Nov. 4, 2016) (CenturyLink Nov. 4, 2016 Letter).

[240] AT&T Oct. 25, 2016 Letter at 4.

[241] Letter from Karen Reidy, Vice President, INCOMPAS, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 1 (filed Nov. 10, 2016).

[242] CenturyLink Nov. 4, 2016 Letter at 2.

major urban areas that had as many as 28 competitive transport providers[244] and cited a number of second tier MSAs which commonly have "over a dozen separate competitive transport providers."[245]

78. Competitive providers are split on the question of whether the transport market is competitive. XO, before becoming part of Verizon, found "considerable competition for transport" and that "numerous CLECs frequently are collocated in the offices where XO is located."[246] Other competitive providers dispute the competitive nature of transport services and assert that incumbent LECs are able to charge supracompetitive rates for TDM transport services and should therefore be price regulated.[247] For example, Sprint alleges that "along many routes, competitive providers are simply unavailable" and asserts that competition for transport service is the exception rather than the rule.[248] However, Sprint provides no data or anecdotal evidence to support its assertion and to rebut the evidence from the *2015 Collection* and from incumbent LEC commenters that show that competitive transport is available in the vast majority of census blocks in MSAs. As AT&T states, "[n]o party to this proceeding has attempted specifically to make a case that there is a lack of competition for transport, and certainly not on a national basis."[249]

79. Evidence of competitive providers investing in transport services, rather than purchasing from incumbent carriers, reinforces our observations.[250] While business data services providers may choose to purchase transport – either as a long-term solution to reach a customer or a temporary cost while implementing self-provisioning plans – many have deployed transport instead of buying the service.

80. More broadly, we understand that transport service represents the "low-hanging fruit" of the business data services circuit, which makes it particularly attractive to new entrants.[251] In the *Pricing Flexibility Order*, the Commission noted that competitors often enter the transport market before the channel termination market,[252] and we continue to adhere to that view. The net present value of the cash

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[243] Letter from Christopher T. Shenk, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, RM-10593, at 3 (filed Apr. 20, 2016) ("[B]uildings that have only an ILEC connection are, on average, only 364 feet from the closest CLEC fiber network.") (citing *id*., Attach., Second Supplemental Declaration of Mark Israel, Daniel Rubinfeld and Glenn Woroch at para. 5).

[244] AT&T Oct. 25, 2016 Letter at 5.

[245] Letter from Keith M. Krom, Executive Director – Senior Legal Counsel, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 3 (filed Nov. 10, 2016) ("Birmingham, Alabama has 14 competitive fiber-based transport providers within its MSA; Augusta, Georgia has 17; Little Rock, Arkansas boasts 12, as does Waco, Texas; San Diego, California has 13; and South Bend, Indiana has 14.").

[246] XO Jan. 27, 2016 Comments, Decl. of Michael Chambless at para. 10.

[247] *See, e.g.*, Letter from Paul Margie, Counsel to Sprint Corporation, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 2-5 (filed Nov. 9, 2016); Windstream Mar. 27, 2017 Letter at 25.

[248] Sprint Nov. 9, 2016 Letter at 4 ("[C]ompetitive transport for DS1 and DS3 channel terminations is not a practical possibility for customers except in certain special situations.").

[249] AT&T Oct. 25, 2016 Letter at 5-6.

[250] TDS Metrocom Jan. 27, 2016 Comments at 8 (discussing estimates of private transport growth).

[251] *See Pricing Flexibility Order*, 14 FCC Rcd at 14279, para. 102; XO Jan. 27, 2016 Comments, Decl. of Michael Chambless at para. 10; Michael Kennedy, *Kennedy: Demand drivers for metro transport networks*, FierceTelecom (Feb. 17, 2010), http://www.fiercetelecom.com/telecom/kennedy-demand-drivers-for-metro-transport-networks.

[252] *Pricing Flexibility Order*, 14 FCC Rcd at 14279, para. 102 ("[C]ompetitors are likely to enter the market for entrance facilities, direct-trunked transport, channel mileage, and the flat-rated portion of tandem-switched transport before they enter the market for channel terminations between a LEC end office and a customer premises.").

flows associated with the relatively high expected per-unit cost of deploying a new, relatively low-capacity channel termination and the expected revenue derived from the sale of that channel termination, especially for DS1 and DS3 channel terminations, would be expected to be significantly less than the relatively low expected per-unit cost of deploying a new, relatively high-capacity inter-office transport facility, and the expected revenue derived from the sale of that facility.[253] Thus, in the face of increased demand for transport services, we observe responsive market conditions that support the deployment of competitive facilities, through either new entry or conversion.

H. Conclusions

81. *Packet-based Services*. Packet-based services represent the future of business data services. We believe the higher bandwidth capabilities of these services will lead to greater returns on investment and in turn, greater incentives for facilities-based entry into the business data services market. In contrast, DS1s and DS3s are legacy services that now compete against packet-based broadband services such as EoHFC services in the same geographic market. We find this competition, or potential competition between legacy and packet-based services, sufficient enough to discipline pricing. In many instances, incumbent LECs are now on similar footing to entrants (even if they may still on average be advantaged), as they often also deploy new facilities to meet customer demand (because even a relatively low demand customer today may not be a low demand customer tomorrow, and copper loop generally is incapable of meeting higher demands). As a result, we find the marketplace for packet-based business data services is competitive.

82. *TDM-based DS1s and DS3s*. Within the broader record, we acknowledge that, by the nature of legacy services, incumbent LECs have a degree of concentration in certain geographies for DS1 and DS3 services. We also recognize a changing industry with increasingly competitive options, particularly at higher bandwidths, and a decreasing demand for these legacy services. Our analysis suggests that any prior advantage an incumbent might have enjoyed at lower bandwidths is now less competitively relevant in light of customer demand that attracts a number of traditional and non-traditional competitors that are improving legacy cable networks and expanding with new facilities to meet demand.[254] This is further supported by the degree of sunk investment made by traditional and non-traditional providers of business data services to compete.[255] We conclude that incumbent LEC market power has been in many cases largely eliminated, and elsewhere is declining thanks to increased competition in business data services markets.[256]

83. *Transport*. Based on the *2015 Collection*, the record, and our market observations, we find substantial evidence of competition in TDM-based transport markets, which, accordingly, suggests

[253] ACA Comments at 22.

[254] A recent report by Frost and Sullivan found that the migration from TDM to Ethernet business data services is fueling double-digit revenue growth for Ethernet business data services and this growth rate is expected to increase as Ethernet networks expand. *See* Mayo Decl. at para. 34 (citing *Business Carrier Ethernet Services Market Update 2015*, Frost & Sullivan (Sept. 2015)).

[255] *WorldCom, Inc. v. FCC*, 238 F.3d 449, 458-59 (D.C. Cir. 2001) (finding sufficient the Commission's determination that "'the presence of facilities-based competition with significant sunk investment makes exclusionary pricing behavior costly and highly unlikely to succeed'") (quoting *Pricing Flexibility Order*, 14 FCC Rcd at 14264, para. 80)).

[256] *See Further Notice*, 31 FCC Rcd at 4830-36, paras. 237-55 (discussing market power findings); Cisco, *VNI Forecast Highlights Tool*, http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index html (last visited Mar. 28, 2017); Ian Olgeirson, *Cable Commercial Services Produce Mid-Market Gains, Forecast Points to Slowing on Low End*, SNL Kagan Multichannel Market Trends, at 1-2 (Mar. 19, 2015); IRW First White Paper at 23-25.

that price regulation is not required. For these reasons, we conclude that TDM-based transport is competitive.

IV. AN ADMINISTRABLE FRAMEWORK FOR BUSINESS DATA SERVICES GROUNDED IN OUR MARKET ANALYSIS AND THE RECORD

84. We intend to apply ex ante rate regulation only where competition is expected to materially fail to ensure just and reasonable rates. As a matter of policy we prefer reliance on competition rather than regulation, wherever purchasers can realistically turn to a supplier beyond the incumbent LEC. Based on these principles and our market analysis, we find regulation is unnecessary for packet-based services. TDM transport services, and higher bandwidth (i.e., above DS3) TDM end user channel terminations. We also conclude that we should refrain from ex ante pricing regulation for TDM end-user channel terminations in areas deemed competitive. We then outline a bright-line competitive market test for initially determining whether a given price cap area will be treated as competitive in the provision of DS1 and DS3 end user channel terminations by the incumbent LEC. This test will treat as competitive a particular county if 50 percent of the locations with BDS demand in that county are within a half mile of a location served by a competitive provider based on the *2015 Collection* or 75 percent of the census blocks in that county have a cable provider present based on the Commission's Form 477 data. Any price cap incumbent LEC serving special access customers within that county will be relieved of ex ante pricing regulation. Furthermore, we adopt a process for regularly updating the list of competitive counties in a way that accounts for changing competitive conditions but also avoids the need to undergo burdensome data collections.

A. Regulatory Framework Applicable to Packet-Based Business Data Services and to TDM-Based Services Providing Bandwidths in Excess of a DS3

85. After reviewing the record and considering the Commission's goals to ensure that rates for business data services are just and reasonable, while also encouraging facilities-based competition and facilitating technology transitions, we decline to re-impose any form of price cap or benchmark regulation on packet-based business data services or on TDM-based services providing bandwidths in excess of the level of a DS3, and we eliminate that regulation to the extent it exists today.[257] Our market analysis does not show compelling evidence of market power in incumbent LEC provision of these services, particularly for higher bandwidth services. Moreover, even if the record demonstrated insufficiently robust competition, proposals to apply price cap regulation to packet-based services were complex and not easily administrable[258] and did not reflect the fact that costs to serve individual customers vary.[259] Likewise, we decline to impose benchmark pricing regulation on incumbent LEC packet-based business data services or on TDM-based services of bandwidths in excess of the level of a DS3. Because our market analysis shows that such services are subject to competition, anchor or benchmark pricing is unnecessary and could in fact inhibit investment in this dynamic market by preventing providers from being able to obtain adequate returns on capital. Additionally, the benchmark pricing proposals in the record were administratively complex and unlikely to reliably result in just and reasonable rates.

86. We further find that packet-based services are best not subjected to tariffing and price cap regulation, even in the absence of a nearby competitor. Packet-based services represent the future of business data services and are readily scalable, so competitive LECs are generally very willing to deploy

[257] We note that these include optical capacity services.

[258] *See, e.g.*, Letter from Thomas Jones, Counsel for Level 3 Communications, LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., at 8 (Jul. 25, 2016) (Level 3 July 25, 2016 *Ex Parte*).

[259] Letter from Steven F. Morris, Vice President and Associate General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., at 7 (filed Sept. 27, 2016) (NCTA Sept. 27, 2016 *Ex Parte*).

such services beyond their footprints because they can expect to earn increasing revenues from their initial investment with few additional costs. In contrast, the record shows that competitive LECs are generally unwilling to extend their legacy TDM networks, especially beyond a half mile to provide DSn services.[260] Consequently, entrants are better placed to win customers in packet-based markets than in those for TDM services. Packet-based services are new services, experiencing both rapid growth, and rapid change in standards, throughput and usage, and so regulation is more likely to impose long-term costs by dissuading providers of packet-based services from entering.

87. We do, however, remind stakeholders that packet-based telecommunications services remain subject to the Commission's regulatory authority under sections 201, 202, and 208 of the Act.[261] These statutory provisions allow the Commission to determine whether rates, terms, and conditions are just, reasonable, and not unreasonably discriminatory in the context of a section 208 complaint proceeding.[262]

B. Regulatory Framework Applicable to TDM Transport Services

88. We eliminate all ex ante pricing regulation of price cap incumbent LEC provision of TDM transport and other transport (i.e., non-end user channel termination) special access services.[263] The *2015 Collection* and the record demonstrate widespread competition in the market for these services and generally support using a deregulatory approach for TDM transport and other non-end user channel termination services.

89. We conclude that competition for TDM transport services is sufficiently pervasive at the local level to justify relief from pricing regulation nationwide. Commission staff analysis of competitive provider responses to question II.A.5. of the *2015 Collection* shows that in all price cap territories, 92.1 percent of buildings served were within a half mile of competitive fiber transport facilities. Additionally, for all census blocks with business data services demand, 89.6 percent have at least one served building within a half mile of competitive LEC fiber. As we concluded in the foregoing market analysis, the presence or reasonable proximity of a single competitor's facilities represents competition given the high sunk cost nature of the business data services market. Our data are conservative given the fact that the *2015 Collection* includes only a subset of all hybrid fiber coax facilities deployed by cable providers (i.e., only Metro-Ethernet headend-connected fiber feeder plant) and given that the *2015 Collection* data are from 2013 and therefore necessarily understate the level of actual competition for transport services by not including competitive facilities that have since been deployed.[264] We find that the high percentage of locations within a half mile of competitive fiber and the high percentage of census blocks with at least one building within a half mile of competitive fiber justify our refraining from applying pricing regulation

[260] *See* Birch et al. Comments at 21-25 (explaining that Level 3 "cannot economically deploy new connections at capacities of 100 Mbps or less to most locations"); TDS Comments at 11; Windstream Comments at 18-19.

[261] *See* 47 U.S.C. §§ 201, 202, 208.

[262] *See* 47 U.S.C. § 208.

[263] The term "transport" or "other transport services" as used hereinafter collectively refers to interoffice facilities and channel terminations between an incumbent LEC's serving wire center and an IXC, services covered by section 69.709(a)(4) of the Commission's rules. It excludes the elements of that rule that cover switched access services, such as entrance facilities, dedicated transport facilities between the serving wire center and the tandem switching office, and direct-trunked transport. 47 CFR § 69.709(a)(4). We use terms "transport" and "mileage" interchangeably, as do commenters. *See, e.g.*, Birch et al. Jan. 27, 2016 Comments, Decl. of Jonathan B. Baker at para. 14 ("Local transport facilities [are] . . . also termed dedicated transport, inter-office transport, or channel mileage . . . .").

[264] *See, e.g.*, ACA Comments at 7-8; FTTH Comments at 12-17; NCTA Comments at 6-8; Zayo Comments at 2; Charter Reply at 2-3.

across all price cap areas to TDM transport services.

90. We recognize that our decision in all likelihood will leave a relatively small percentage of census blocks (with an even smaller percentage of overall demand) price deregulated and without the immediate prospect of competitive transport options. However, greater harm—primarily manifested in the discouragement of competitive entry over time—would result if we were to attempt to regulate these cases than is expected under our deregulatory approach. In contrast, lower entry barriers for deploying transport services than for end user channel termination services and increasing demand for transport means that regulatory relief will provide incentives for competitive providers to deploy additional transport facilities to compete for this demand. While competition may not be universal, it is sufficiently widespread for us to have confidence that a combination of these factors will broadly protect against the risk of supracompetitive rates being charged by price cap LECs over the short- to medium-term. To the extent there are points of aggregation that are not served by competitors, the relatively high demand at these points makes it likely that a competitor could justify investing in competitive transport facilities to serve that demand.

91. Moreover, our goal is not absolute mathematical precision but an administratively feasible approach that avoids imposing undue regulatory burdens on this highly competitive segment of the market. Refraining from pricing regulation for transport services nationally achieves the proper balance between precision and administrability. It also avoids unnecessary disruption of existing special access transport sales arrangements. The alternative would be to impose significant regulatory burdens on all participants in the market with an additional layer of regulatory complexity that would undermine predictability and ultimately hinder investment, including in entry, and growth. Instead, we believe that providing regulatory relief in this market segment will foster conditions that will continue to encourage competitive entry and provide incentive for further investment in fiber transport facilities. Finally, our section 208 complaint process represents a continuing safeguard against unjust and unreasonable rates.

C. Competitive Market Test Criteria for DS1 and DS3 End User Channel Terminations

92. The competitive market test we adopt today assesses the availability of actual and likely competitive options in the provision of last mile services and subjects to ex ante pricing regulation only circuit-based DS1 and DS3 end user channel terminations provided by price cap incumbent LECs in areas the test finds lack a competitive presence. We base the competitive market test on the geographic unit of a county or county-equivalent[265] (hereinafter, county) which significantly reduces the over- and under-inclusivity issue posed by MSAs which the Commission highlighted in the *Suspension Order* and avoids the administrability issues posed by smaller geographic units of measure.[266] The test uses data demonstrating the presence of competitive facilities from the *2015 Collection* in combination with the most recent data on cable deployment from the Form 477 data collection to determine which counties to regulate.

93. While there is no clear consensus in the record on the right approach to the competitive market test, we do see a few points of general agreement. The various proposals use bandwidth

[265] County-equivalents include parishes, boroughs, independent cities, census areas and the District of Columbia. U.S. Census Bureau, *About Metropolitan and Micropolitan Statistical Areas*, https://www.census.gov/population/metro/about/.

[266] There are 3,233 counties in the United States as opposed to 389 MSAs. *See* https://www.census.gov/geo/reference/county-changes html (list of counties for 2010, which includes the United States Minor Outlying Islands, and they are not included in our analysis; since 2010, the total number of counties has been reduced by one, https://www.census.gov/geo/reference/county-changes html); *see also* U.S. Census Bureau, *Geographic Terms and Concepts - County or Statistically Equivalent Entity*, https://www.census.gov/geo/reference/gtc/gtc_cou.html.

demarcation points and competition test criteria based on counting providers in or near a geographic area using the *2015 Collection* data. Beyond those few high-level points of agreement, there are vast differences of opinion among commenters on the current state of competition in the marketplace, on the need for a competitive market test, and on what a competitive market test should entail. Generally, competitive LECs needing to purchase business data services as inputs at wholesale, mobile wireless providers not affiliated with an incumbent LEC, Windstream and Verizon (both net buyers), and end-user representatives, such as the Ad Hoc, interpret the *2015 Collection* as largely showing a non-competitive market, requiring regulatory intervention at all but the highest service bandwidth levels, i.e., in excess of 1 Gbps.[267] On the other side, cable companies and competitive fiber providers that do not typically purchase business data services at wholesale, AT&T, and other incumbent LECs (net sellers) see a highly competitive marketplace with no need of regulatory intervention.[268]

94. The test we adopt utilizes certain core attributes of a test on which there was consensus in the record, including establishing a threshold number of providers to find competition, employing a defined geographic area of measurement, and basing the test on data from the *2015 Collection* and updating the results of the test to ensure they continue to reflect the extent of competition in the market. That said, it also represents a departure from some of the proposals in the *Further Notice* in that rather than focus on burdensome pricing regulation, it takes a dynamic and forward-looking approach to evaluating the benefits and costs of regulation.[269] The test will be updated periodically by relying on data the Commission routinely collects, so it does not require additional and potentially burdensome data collections. We find this approach strikes a reasonable balance between precision and administrability, will encourage continued investment in and deployment of business data services, and will foster a market-driven transition from legacy circuit-based services to newer packet-based services and other technologies.

95. We take a pragmatic approach to formulating a competitive market test by considering what data are available to us to evaluate competitive conditions both at present and in the future. We then determine what geographic unit is sufficiently granular and at the same time administrable for the Commission as well as the industry. Finally, we consider which criteria best reflect competitive conditions in the market while still furthering the Commission's policy objectives. The ultimate goal of the test, however, is not to definitively determine competitive market conditions but rather to determine on balance which areas are best positioned to benefit from price deregulation and which areas will benefit more from continued price cap regulation.

96. In determining where we can appropriately avoid applying ex ante price regulations for certain special access services, we balance the benefits and costs of such regulation. We recognize that in counties where there currently appears to be few competitive alternatives for consumers of DS1 and DS3 end user channel terminations that the benefits of ex ante price regulation likely outweigh the costs since this likely indicates broad entry in such regions may not occur. However, in counties where the competitive pressures are able to discipline prices for a large fraction of customers, as discussed in our market analysis, we see the opposite to likely be the case. Ex ante pricing regulation can have negative

[267] Other comment groups generally aligned with this position are public interest groups, mobile wireless providers that are not affiliated with an incumbent LEC, and one commenter, Ad Hoc, representing the interests of business purchasers.

[268] *See* AT&T Oct. 25, 2016 Letter at 1-2; Letter from Russell P. Hanser & Brian W. Murray, Counsel to CenturyLink, to Marelene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 4-8 (filed Oct. 28, 2016) (CenturyLink Oct. 28, 2016 Letter).

[269] In particular, the competitive market test does not focus on some proposed criteria, namely, customer classes, business density and bandwidth capacity because they are largely unnecessary to achieve our policy goals and, importantly, because including them in a competitive market test would make it administratively unwieldy.

features. For example, in a county where entry is relatively widespread, the absence of entry in specific areas may be due to regulated prices inadvertently being set below competitive levels. Such prices make entry unprofitable, are harmful to long run incentives to invest, can lead to inefficient short run levels of production and consumption, and can prevent entry indefinitely. This counsels toward being especially wary of imposing price caps except where competitive service seems most unlikely to be available within a reasonable time horizon. This perspective of balancing the benefits and costs of regulating prices, as well as the importance of having an administrable system, leads us to adopt the framework discussed below.[270] In our judgment, we expect this framework to appropriately balance our desire for fostering a dynamic and competitive marketplace with the need to ensure rates that are just and reasonable.

1. Availability of Data to Measure Competition

97. *2015 Collection*. The most intuitively relevant dataset in our toolbox is the one collected in response to the *Data Collection Order*.[271] That data collection covered circuit- and packet-based business data services and required responses from providers of both dedicated and best-efforts last-mile access services (albeit exempting small providers of best-efforts services), as well as purchasers of business data services.[272] In short, the data collection came as close as practicable at the time to providing a "clear picture of all competition in the marketplace."[273] Despite this, some commenters question the continued relevance of the data, citing cable providers' aggressive expansion into business data services since the data collection.[274] These criticisms overstate the limitations of the *2015 Collection*. It is unprecedented in scope and remains a useful and appropriate basis for our new regulatory framework. That said, we acknowledge that while the *2015 Collection* is well suited for the initial evaluation of competition, it is unsuitable for measuring competition going forward. We also acknowledge that the *2015 Collection* does not fully capture the extent of cable deployment to date.

98. Although some commenters propose refreshing the data with periodic data collections, most commenters strongly oppose the idea as being too burdensome and even "an obstacle to competition."[275] To comply with the *2015 Collection*, for example, some carriers were "forced to pull data manually from numerous billing and data systems, diverting limited time and resources from other critical projects."[276] For an uncertain number of years, providers would be required "to continuously track and maintain . . . all company documents that may be responsive . . . requiring business employees and counsel to devote significant resources to conduct broad searches for such documents and evaluate their responsiveness."[277] We believe the costs of further data collections would not justify the benefits obtained from having updated data. Below we find that an alternative dataset can be used to update our

[270] For a discussion of the need to balance the costs and benefits while also accounting for administrative burdens, *see* T. Randolph Beard et al., *Market Definition and the Economic Effects of Special Access Price Regulation*, 22 CommLaw Conspectus 237, 245, (2014).

[271] *Data Collection Order*, 27 FCC Rcd at 16360, App. A., as modified by *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*, WC Docket No. 05-25, RM-10593, Order on Reconsideration, 29 FCC Rcd 10899 (2014) (*Data Collection Reconsideration Order*).

[272] *Data Collection Order*, 27 FCC Rcd at 16326-28, paras. 16-22.

[273] *Id*. at 16327, para. 19.

[274] *See, e.g.*, Charter Comments at 15; Comcast Comments at 15-16; AT&T Reply at 49-50.

[275] Lightower et al. Comments at 22; *see also* Cox Comments, Exh. 1, Decl. of Jeremy Bye and Larry Steelman at para. 31. (Cox Bye and Steelman Decl.)

[276] GCI Reply at 12.

[277] CenturyLink et al. Reply at 65.

competitive market test with no additional compliance burdens while still effectively capturing market competition as compared with a new more comprehensive data collection. We therefore decline extend the *2015 Collection*.[278]

99. *Form 477 Data*. In 2013, as the National Broadband Map data collection[279] was nearing its completion, the Commission issued the *Modernizing Form 477 Order*,[280] which redesigned and updated the requirements first spelled out in the *2000 Data Gathering Order*.[281] To comply with the Form 477 data collection requirements, all facilities-based fixed broadband providers, including cable operators, are required to report data on all census blocks where they make fixed broadband services available to residential and business customers at bandwidth speeds exceeding 200 kbps in at least one direction.[282] Among other things, providers also report "the maximum advertised speed for each technology used to offer service in each census block."[283] The Commission collects these data semi-annually and makes the data available to the public.[284]

100. We find the Form 477 data well suited for supplementing the *2015 Collection* in the initial analysis of market conditions and a conservative proxy for competitive deployment going forward. Form 477 broadband service availability data necessarily imply the presence of broadband-capable cable network facilities, which makes it an ideal dataset to ensure the competitive market test accounts for competition from cable operators. We recognize, however, that the Form 477 data do not measure the presence of other competitive providers. That being said, given the long-term sunk cost nature of competitive provision, it is unlikely that locations that were previously competitive (as evidenced in the *2015 Collection*) would become noncompetitive. The key question thus becomes whether the Form 477 data can be used as an updating mechanism, not merely for the extension of cable supply, but as a proxy for the extension of competitive end user channel terminations more generally. While the measure is unlikely to be perfect, we conclude the Form 477 portion of the competitive market test is a good match for the *2015 Collection* as a means of capturing future changes. Moreover, given cable operators' ongoing aggressive deployment of end user channel terminations, which dwarfs that of non-cable

[278] As determined in prior orders, the Commission does not consider third-party data a reliable alternative to the data collected by the Commission. Third-party data is not as comprehensive (providers participate on a voluntary basis and use different standards in reporting their data), consistent, and may be subject to potential bias or manipulation. Furthermore, private parties often impose restrictions on reuse and publication of their data, which would impede the Commission's and third parties' ability to use the data. *See, e.g.*, *Modernizing the FCC Form 477 Data Program*, Report and Order, 28 FCC Rcd 9887, 9900, para. 27 (2013) (*Modernizing Form 477 Order*).

[279] The National Broadband Map data was developed in cooperation with the National Telecommunications & Information Administration (NTIA). *See* FCC, The National Broadband Map, https://www fcc.gov/news-events/blog/2011/02/17/national-broadband-map (Feb. 17, 2011).

[280] *See generally Modernizing Form 477 Order*.

[281] *See generally Local Competition and Broadband Reporting*, CC Docket No. 99-301, Report and Order, 15 FCC Rcd 7717 (2000) (*2000 Data Gathering Order*).

[282] *Modernizing Form 477 Order*, 28 FCC Rcd at 9902-03, paras. 32-35; *see also* FCC, *Fixed Broadband Deployment Data from FCC Form 477*, https://www fcc.gov/general/broadband-deployment-data-fcc-form-477. The relevant question in the form reads as follows: "For purposes of this form, fixed *broadband connections* are *available* in a census block if the provider does, or could, within a service interval that is typical for that type of connection—that is, without an extraordinary commitment of resources—provision two-way data transmission to and from the Internet with *advertised speeds* exceeding 200 kbps in at least one direction to *end-user premises* in the census block." FCC, *FCC Form 477 Local Telephone Competition and Broadband Reporting Instructions* at 17 sec. 5.3 (Dec. 5, 2016), https//transition.fcc.gov/form477/477inst.pdf.

[283] *Modernizing Form 477 Order*, 28 FCC Rcd at 9905, para. 36.

[284] 47 CFR § 1.7002; *Modernizing Form 477 Order*, 28 FCC Rcd at 9920, para. 78.

suppliers, it is highly likely the cable-only measure found in the Form 477 data will capture the vast bulk of additional deployments because it is likely that most non-cable competitive extension of business data services networks will occur where cable is also deploying or has already deployed. Importantly, these data are updated on a semiannual basis and, therefore, any periodic re-evaluation of competition in specific markets will always be relatively current. Moreover, because these data are collected by the Commission, we are confident in their integrity.

101. In fact, some commenters used Form 477 data to supplement the data from the *2015 Collection* in their analyses and proposed that we use it going forward.[285] Other commenters, while advocating using Form 477 data, also suggested modifying Form 477 to replicate the *2015 Collection* going forward.[286] We are reluctant, however, to impose additional reporting burdens on providers for the same reasons we rejected proposals to refresh the *2015 Collection*, and therefore decline to amend Form 477 to mirror the data gathered by the *2015 Collection*. We believe the data currently collected by the Form 477 is already well suited to the needs of the competitive market test. Further, we will implement sufficient safeguards to allow us to use Form 477 in its present state.

2. Appropriate Geographic Measure

102. In terms of granularity, our goal through the years of regulating the business data services market has been "to define . . . geographic areas narrowly enough so that the competitive conditions within each area are reasonably similar, yet broadly enough to be administratively workable."[287] After considering various possible geographic areas to use for the competitive market test, we conclude that basing the competitive market test at the county level strikes the best balance between being sufficiently granular and administratively feasible. We reject other proposals raised in the record, including use of MSAs, census blocks, census tracts, and ZIP codes.

103. *Counties*. As suggested by various commenters in the record, we agree that the geographic area we use for the competitive market test should be larger than census blocks or census tracks, but smaller than MSAs.[288] We find that counties are granular enough to capture reasonably similar competitive conditions yet large enough to be administratively feasible and are supported in the record. Counties are significantly more granular geographic units than MSAs and thus reduce the risk of misidentifying competitive or noncompetitive geographic areas. Counties are subdivided into census blocks.[289] Presently, there are 3,233 counties in the U.S.,[290] as compared to 389 MSAs, of which 204 had been granted pricing flexibility relief.[291] Counties have another advantage over MSAs, in that MSAs do

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[285] *See, e.g.*, US Telecom Jan. 28, 2016 Comments, Appx. at 1.

[286] *See, e.g.*, Birch et al. Comments at 9, 55; TDS Metrocom Comments at 18; CenturyLink et al. Comments at 82-83.

[287] *Pricing Flexibility Order*, 14 FCC Rcd at 14259, para. 71.

[288] *See* Cox Reply at 12; Hawaiian Telcom Comments at 6-7; Letter from Michael H. Pryor, Counsel for Cox, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 1 (filed Aug. 17, 2016) (Cox Aug. 17, 2016 *Ex Parte*).

[289] *See* U.S. Census Bureau, *What are census blocks?*, http://blogs.census.gov/2011/07/20/what-are-census-blocks/ (last visited Mar. 6, 2017); U.S. Census Bureau, *Geographic Terms and Concepts - Census Tract, U.S. Census Bureau*, https://www.census.gov/geo/reference/gtc/gtc_ct html (last visited Mar. 6, 2017).

[290] For county names and counts, see https://www.census.gov/geo/maps-data/data/cbf/cbf_counties html, and for changes since 2010, see https://www.census.gov/geo/reference/county-changes html.

[291] The Commission froze the list of price cap MSAs based on the 1980 census for administrative reasons whereas the U.S. Census Bureau updates its list of MSAs periodically. *See* U.S. Census Bureau, Delineation Files, Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) (July 2015),

(continued….)

not cover all of the price cap incumbent LEC study areas, while counties do.[292] Moreover, counties are a more stable unit of regulation than MSAs. While county boundaries occasionally change, and sometimes counties are split, or merged or new ones are created, such changes are relatively infrequent. For example, in the decade ending 2010, there were only two substantial county boundary changes, both in rural Alaska, and a merger of a county and a city.[293] In contrast, MSA boundary changes are more frequent and far reaching. For example, in 2003, 41 counties were moved from an MSA to a micropolitan statistical area, and changes were made to statistical area boundaries in every state.[294]

104. The Commission's *2015 Collection* shows an average of 376 buildings with last-mile access demand in a county, whereas the average number of buildings with last-mile access demand in an MSA is 2,713. This statistic shows that counties are much more granular geographic units for administering the competitive market test. Furthermore, using census data we can compare the number of firms and establishments and the employment levels in counties and MSAs. Those data also demonstrate that counties allow for a more granular analysis of competitive conditions than MSAs:

Table 1. MSA-County Size Comparisons[295]

Business Statistic	County Averages	MSA Averages	MSA-to-County Ratio
Number of firms	2,047.10	14,558.80	7.11
Number of establishments	2,369.40	17,021.60	7.18
Employment	37,867.80	273,718.60	7.23
Annual payroll ($1,000)	1,858,320.70	13,841,373.40	7.45

105. Counties are also significantly less granular than smaller geographic units such as buildings, census blocks, census tracks, and ZIP codes, and, thus, significantly more feasible for the Commission and industry to administer. Use of counties has another advantage as well: counties do not cross MSAs. Consequently, there is a ready translation of the FCC's pricing flexibility regime to counties, which will minimize disruption where a county's regulatory status is not changed by this order.

106. Counties provide a convenient, natural administrative unit for capturing competitive effects, and competitive effects from cable operators in particular. The competitive presence of cable operators will generally conform to county boundaries since cable franchises have historically been

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https://www.census.gov/population/metro/data/def.html; but see AT&T Comments at 39 ("There are about 381 MSAs in the U.S."); *Suspension Order*, 27 FCC Rcd at 10580, 10624-33, para. 44 n.123 & Appx. D.

[292] There are 1,984 counties that lie within price cap incumbent LEC study areas and have some census blocks under the price cap regulation, but which are not in an MSA.

[293] U.S. Census Bureau, Geography, *Substantial Changes to Counties and County Equivalent Entities: 1970-Present*, https://www.census.gov/geo/reference/county-changes.html.

[294] U.S. Government Accountability Office, *Metropolitan Statistical Areas: New Standards and Their Impact on Selected Federal Programs*, at 13 (June 14, 2004), http://www.gao.gov/assets/250/242983.pdf.

[295] *See* U.S. Census Bureau, Statistics of U.S. Businesses (SUSB), 2014 SUSB Annual Data Tables by Establishment Industry, State by County, Totals, https://www.census.gov/data/tables/2014/econ/susb/2014-susb-annual.html (last visited Mar. 6, 2017); U.S. Census Bureau, Delineation Files, Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs), https://www.census.gov/population/metro/data/def.html (last visited Mar. 6, 2017).

awarded, with some exceptions, on a county-by-county basis.[296] Cable operators may not provide cable service without a franchise from a franchising authority.[297] A franchise authorizes the construction of a cable system over public rights-of-way, and through easements, within the area to be served by the cable system.[298] Thus, a franchise license allows a cable operator to overcome many entry barriers associated with buildouts and creates more certainty in anticipated buildout revenues. With those hurdles out of the way, it is in the cable operator's interest to build out an extensive network in the jurisdiction. Indeed, a cable operator's franchised cable system is often near ubiquitous throughout the franchised county.

107. *Metropolitan Statistical Areas (MSAs)*. We conclude that MSAs are not well suited to be used as the geographic area for determining competitive effects. The Office of Management and Budget (OMB) developed MSAs for purposes of compiling statistics for a set of certain geographic areas, defining MSAs as "geographic entities that contain a core urban area of 50,000 or more population, and often includes adjacent counties that have a high degree of social and economic integration with the urban core, as measured by commuting to work."[299] Furthermore, "OMB may add counties or principal cities to an MSA, remove them, or even create new MSAs."[300] Although OMB periodically updates its list of MSAs to reflect changes in social and economic integration between urban centers and outlying areas,[301] the Commission "adopted a list of 306 MSAs based largely on data compiled from the 1980 census, and froze that list for use in all pricing flexibility petitions."[302] Thus, even if MSAs were an appropriate geographic area for competitive analysis and regulation, the Commission's list of MSAs does not reflect the current state of population and business conditions. This circumstance has caused confusion among providers that have submitted petitions to the Commission containing data calculated using different MSA definitions.[303]

108. In addition, MSAs are too large to reflect the scope of competition. Competitive LECs have consistently argued throughout this proceeding that the Commission's previous MSA analysis "ignored the wide variability of competitive conditions across a large geographic area."[304] The Commission agreed in the *Suspension Order*, analyzing business density in six MSAs and finding

[296] The process to franchise cable operators differs significantly from locality to locality. In most states, franchising is conducted at the local level, affording counties and municipalities broad discretion in deciding whether and under what circumstances to grant a franchise. *See Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as amended by the Cable Television Consumer Protection and Competition Act of 1992*, MB Docket No. 05-311, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 5101, 5108, para. 14 (2007), *pet. for review denied, Alliance for Community Media v. FCC*, 529 F.3d 763 (6th Cir. 2008) (*Alliance for Community Media*); Second Report and Order, 22 FCC Rcd 19633 (2007); Order on Reconsideration, 30 FCC Rcd 810 (2015). States may also award franchises on a state-wide basis. *See Alliance for Community Media*, 529 F.3d at 772 (the Commission "declined to preempt state law, state-level franchising decisions, or local franchising decisions 'specifically authorized by state law . . . because it lacked 'a sufficient record to evaluate whether and how such state laws may lead to unreasonable refusals to award additional competitive franchises'").

[297] 47 U.S.C. § 541(b)(1).

[298] 47 U.S.C. § 541(a)(2); *see generally ACLU v. FCC*, 823 F.2d at 1558.

[299] *Data Collection Order*, 27 FCC Rcd at 10569, para. 26.

[300] *Id.*

[301] U.S. Census Bureau, Metropolitan and Micropolitan, Current Lists of Metropolitan and Micropolitan Statistical Areas and Delineations, https://www.census.gov/population/metro/data/metrodef.html (last visited Mar. 28, 2017) (noting "[t]he standards for delineating the areas are reviewed and revised once every ten years").

[302] *Data Collection Order*, 27 FCC Rcd at 10569-70, paras. 26-27.

[303] *Id*. at 10592, para. 63.

[304] *See, e.g.*, Sprint Jan. 28, 2016 Comments at 17.

significant "variance of competitive conditions within an MSA" because "[t]he resulting statistical entity can be large, including the entirety of distant counties if those counties contain exurban areas linked to the core by commuting behavior."[305] Even some incumbent LECs that initially had argued for the continued use of MSAs[306] eventually accepted the use of more granular areas.[307]

109. *Buildings and Census Blocks*. Some commenters express a strong preference for regulation focused on individual buildings with special access demand and, as a compromise, propose to regulate on a census block level.[308] While this level of granularity might be more precise, it creates a range of other problems. For one, buildings with demand is a constantly changing statistic as businesses expand or downsize. Census blocks are also subject to change as the Census Bureau revises its measurements. Another issue is the administrative burden metrics like these are likely to impose on providers and the Commission: there were 658,485 census blocks[309] and 1,216,977 buildings with last-mile access demand reported in our data collection.[310] Regulation at such a granular level "would inevitably lead to a patchwork of differing regulations from census block to census block (or from building-to-building)" making it exceptionally difficult for regulated carriers to set prices subject to regulation in some areas and not in others.[311] We therefore conclude that the geographic scope of the competitive market test must be larger than buildings and census blocks.

110. *Census Tracts and ZIP Codes*. Others suggest the Commission use census tracts or, alternatively, ZIP codes to analyze markets in the competitive market test.[312] Census tracts are statistical subdivisions of a county updated each decennial census.[313] Based on the *2015 Collection* data, the median census tract had a land area of 1.71 square miles.[314] U.S. Postal Service ZIP codes identify the individual post office or metropolitan area delivery station associated with mailing addresses.[315] ZIP codes are also subject to periodic updates, and zip code boundaries can be difficult to obtain.[316] Census tracts are less

[305] *Suspension Order*, 27 FCC Rcd at 10578, para. 40.

[306] *See* AT&T Jan. 27, 2016 Comments at 4-5.

[307] Second IRW White Paper at 31 (proposing a competitive market test based on census tracts). AT&T recently reverted to its original stance on MSAs, arguing it would be too burdensome for it to change its billing systems to any other regulatory areas. *See* Letter from James P. Young et al., Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., at 17-18 (Mar. 13, 2017). However, we take into account not only individual commenters' burdens but also other factors, such as whether the regulatory geographic units adequately reflect competitive entry.

[308] *See, e.g.*, Birch et al. Comments at 6-8; NASUCA et al. Comments at 5.

[309] The total number of census blocks in the country is 11,078,297 as of the 2010 census.

[310] *See* U.S. Census Bureau, *2010 Census Tallies of Census Tracts, Block Groups & Blocks*, https://www.census.gov/geo/maps-data/data/tallies/tractblock.html (last visited Mar. 6, 2017).

[311] AT&T Comments at 40; Comcast Comments at 55.

[312] IRW White Paper at 3-4; AT&T Comments at 39-41; CenturyLink Comments at 50-51; Second IRW White Paper at 31; Cox Reply at 12; AT&T Reply at 67-70.

[313] U.S. Census Bureau, *Geography – Geographic Terms and Concepts – Census Tract*, https://www.census.gov/geo/reference/gtc/gtc_ct.html (last visited Mar. 6, 2017).

[314] Revised Rysman Paper at 11.

[315] U.S. Census Bureau, *Geography - ZIP Code™ Tabulation Areas (ZCTAs™)*, https://www.census.gov/geo/reference/zctas html (last visited Mar. 6, 2017),

[316] USPS, *What is the policy for submitting a ZIP Code Boundary change?*, http://faq.usps.com/?articleId=221757 (last visited Mar. 6, 2017).

granular than census blocks but more granular than ZIP codes and MSAs; census tracts and ZIP codes are considerably more granular than MSAs. As of the 2010 census, there were 73,057 census tracts in the U.S. compared to 11,078,297 census blocks and 389 MSAs.[317] In 2016 there were 33,120 five digit ZIP Code™ Tabulation Areas (ZCTA™) in the U.S.[318] As with buildings and census blocks, the sheer number of census tracts and ZIP codes, along with their variability over time, significantly undermine the administrability of using them for the competitive market test.

3. Appropriate Level of Competition

111. Upon examining the structure of the business data services industry and the record before us, we find that a combination of either one competitive provider with a network within a half mile from a location served by an incumbent LEC or a cable operator's facilities in the same census block as a location with demand will provide competitive restraint on the incumbent LEC that will be more effective than our legacy regulatory regime in ensuring rates, terms, and conditions are just and reasonable.[319] Our conclusion that a "nearby BDS competitor" provides sufficient competition to forgo regulation of an incumbent LEC's provision of BDS is based on three findings: (1) a determination of the geographic scope within which a likely BDS provider can realistically compete with an incumbent LEC; (2) a finding that one such competitor in addition to the incumbent LEC provides a reasonable degree of competition in BDS supply; and (3) a finding that the benefits of such competition outweigh the potential unintended costs of regulation.

a. Effect of a Nearby BDS Competitor

112. The record in this proceeding indicates that providers actively compete for customers located within about a half mile from their networks by bidding on requests for proposals and sending their sales personnel to offer their services.[320] When bidding on a contract, providers often "have no way of knowing with any reasonable degree of certainty which other providers are capable of serving that customer over their own facilities" and, therefore, when bidding on an RFP they "make much rougher assessments of the possibility of facing competitive bids"—a dynamic that "ensure[s] that the benefits of competition redound to all customers in an area where competitive facilities have been deployed, not just

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[317] *See* U.S. Census Bureau, *Geography, 2010 Census Tallies of Census Tracts, Block Groups & Blocks*,https://www.census.gov/geo/maps-data/data/tallies/tractblock.html (last visited Mar. 3, 2017); *see also* U.S. Census Bureau, *Metropolitan and Micropolitan Delineation Files, Core based statistical areas (CBSAs), metropolitan divisions, and combined statistical areas (CSAs)* (July 2015), https://www.census.gov/population/metro/data/def html; *but see* AT&T Comments at 39 ("there are about 74,000 census tracts in the U.S.").

[318] U.S. Census Bureau, *Geography – 2016 U.S. Gazetteer Files, Zip Code Tabulation Areas*, https://www.census. gov/geo/maps-data/data/gazetteer2016.html (last visited Mar. 6, 2017).

[319] *See* 47 U.S.C. §§ 201(b), 202(a); *Access Change Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, End User Common Line Charges*, CC Docket Nos. 96-262, 94-1, 91-213, 95-72, First Report and Order, 12 FCC Rcd 15982, 16095, para. 264 (1997); *Regulatory Treatment of LEC Provision of Interexchange Services Originating in the LEC's Local Exchange Area, Policy and Rules Concerning the Interstate, Interexchange Marketplace*, CC Docket Nos. 96-149, 96-61, Second and Third Report and Order, 12 FCC Rcd 15756, 15758-62, paras. 1-5 (1997) (adopting a framework for market power analysis, finding it "necessary to achieve the pro-competitive, deregulatory goals of the 1996 Act").

[320] *See, e.g.*, Comcast Comments at 9-10, 17 ("Having a proactive sales force is critical for a new entrant such as Comcast to overcome business customers' predisposition to use incumbent providers' BDS services."); Cox Bye and Steelman Decl. at para. 26. Wholesalers typically obtain not only "on-net" lists of buildings from providers but also "near-net" lists and seek bids from nearby providers. *See, e.g.*, XO Jan. 28, 2016 Comments, Decl. of Michael Chambless at paras. 24, 27.

those who are located within a certain distance of a network, or that offer a certain level of revenues."[321] Accordingly, we determine nearby competitive network facilities exert competitive pressure on incumbent LECs whether or not their network is within a half mile of a customer's location.

113. We further find that wireline providers of BDS are commonly willing to extend their existing network out approximately a half mile, and in some instances further, to meet demand.[322] That is, the cost of meeting demand within one-half mile, including the costs of network extension and customer connection, is usually less than the present value of expected net revenues that buildout to that location will entail. This is true for cable companies who today are major and aggressive business data services suppliers.[323] For example, in 2013 cable already supplied BDS, largely over fiber facilities, to more than one in ten locations with BDS demand, and may well reach 23.5 percent of locations today.[324] We additionally assume as a reasonable approximation that a cable company competes for any BDS demand, or will do so within a few years, wherever it is supplying mass market broadband services over its own network, or will do so sometime over the next few years.[325] We find this is so even for locations with BDS demand that are not currently connected to the cable company's network, and which may be more than a half mile from a fiber-node (because cable companies are actively driving fiber closer to all end users, and so extending fiber to a new location beyond that distance may be economic given broader network objectives).[326] In sum, we find a wireline supplier is an effective competitor in meeting BDS demand at a location if it either delivers BDS to a location or has a network within one half mile of the location with BDS demand, and/or is a cable company with a near ubiquitous HFC network that surrounds the location with BDS demand. We hereafter refer to such competitors as nearby competitors, and to their networks as nearby networks.

b. Effect of a Single BDS Competitor

114. We find that, in the market for business data services, there is a substantial competitive effect when a wireline competitor is present to discipline rates, terms, and conditions to just and reasonable levels.[327] We arrive at this conclusion because there is a general expectation that the largest

[321] Verizon Jan. 28, 2016 Comments at 22-23. The fact that providers do not know the precise location of competitors' facilities is one of the reasons the network data requested in the *2015 Collection* was classified as highly confidential.

[322] *See supra* Part III.C.

[323] *See supra* Part III.D.2.

[324] In 2013, cable operators served 13.6 percent of all unique locations with BDS demand. If this share grew for three years at the previously noted rate of 20 percent, then cable would serve 23.5 percent of locations today.

[325] *See, e.g.*, Letter from Matthew A. Brill, Counsel to Comcast, to Marlene H. Dortch, Secretary, FCC, WC docket No. 05-25 et al, at 2-3 (filed March 13, 2017) (explaining "the fiber component of Comcast's existing HFC plant can position the company to provide dedicated, fiber-based BDS in many markets, even if Comcast is not currently providing fiber-based BDS to particular locations in those markets"). This presumption is consistent with the Commission precedent where, in the context of cable franchising rules, the Commission found the "ubiquitous" presence of direct broadcasting satellite providers "presumptively satisfies the requirement that the franchise area be served by two unaffiliated PVPDs each of which offers comparable programming to at least 50 percent of the households in the franchise area." *Amendment to the Commission's Rules Concerning Effective Competition; Implementation of Section 111 of STELA Reauthorization Act*, Report and Order, 30 FCC Rcd 6574, 6580 at para. 8 (2015); *see also* 47 U.S.C. § 543(l)(1) (definition of "effective competition").

[326] *See supra*, Part III.D.2.

[327] We do not claim that a second wireline provider within a half mile is a rapid entrant as described in the 2010 Horizontal Merger Guidelines. *See* 2010 Horizontal Merger Guidelines § 5.1. We only assert that over a period of several years, such a provider will in most cases place reasonably effective competitive pressure on the incumbent.

benefits from competition come from the presence of a second provider, with added benefits of additional providers falling thereafter,[328] in part because, consistent with other industries with large sunk costs, the impact of a second provider is likely to be particularly profound in the case of wireline network providers.[329] A wireline provider is willing to cut prices to as low as the incremental cost of supplying a new customer, requiring minimal contribution to its sunk costs.[330] In addition, we find that the presence of a nearby competitor is likely to prevent substantial abuse of market power, whether through high prices, or lack of innovation, and equally that a lack of actual supply by a nearby competitor likely arises when existing suppliers' offerings are reasonable in both price service characteristics. That is, active supply occurs most rapidly in locations where the most profits are likely to be obtained, including where, for example, the transition to packet-based services is most valued, or put another way, active supply is most likely to occur where the costs of missing competition are greatest. Equally, active supply is most likely to be postponed where the benefits of additional competition are small, because the potential profit gained from extending supply is small.

115. We reject some commenters' characterization of the *Qwest Phoenix Order* as a blanket finding by the Commission that two competitors are insufficient to constrain incumbent LEC pricing.[331] Although the Commission raised concerns about the competitive nature of a duopoly in that order, it did

[328] On the impact of one or two firms in telecommunications, *see* Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 Yale J. on Reg. 24 (2007) (hereinafter Shelanski); Second IRW White Paper at 39-40. Empirical evidence also suggests once a market reaches three firms, an additional entrant has little effect on per customer profits. *See* Timothy F. Bresnahan & Peter C. Reiss, *Entry and Competition in Concentrated Markets*, 99 J. of Pol. Reporter 977 (1991). Additionally, a recent study of the U.S. residential broadband market finds that entry of a fourth competitor in a zip code has almost no effect on price. *See* Mo Xiao & Peter F. Orazem, *Does the Fourth Entrant Make Any Difference? Entry and Competition in the Early U.S. Broadband Market*, 29 Int'l J. of Indus. Org. 547-561 (2011). The disproportionate effect of the entry of a first competitor and the declining impact of subsequent entrants is also evident in the record. For example, Sprint's Network Vision Program solicited bids for all of Sprint's 38,000 cell towers showed **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] Sprint Frentrup Decl. at paras. 4, 10.

[329] On sunk costs being important in (especially wireline) telecommunications, such as business data services, *see* Jonathan E. Nuechterlein and Philip J. Weiser, Digital Crossroads: Telecommunications Law and Policy in the Internet Age, at 8-10 (2nd ed. 2013) (Nuechterlein and Weiser); Jerry Hausman and J. Gregory Sidak, *Telecommunications Regulation: Current Approaches with the End in Sight*, *in* Economic Regulation and Its Reform: What Have We Learned? 349, 353-354 (Nancy L. Rose, ed., 2005); Organisation for Economic Co-operation and Development, *The Development of Fixed Broadband Networks*, at 11, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2013)8/FINAL&docLanguage=En (OECD Fixed Broadband Networks) (noting the listed fixed costs are all sunk). Similarly, other industries with large sunk costs have shown that "price declines with the addition of the first competitor, but drops by very little thereafter." Allan Collard-Wexler, *Demand Fluctuations in the Ready-Mix Concrete Industry*, 81 Econometrica 1003, 1008 at Figure 2 (2013).

[330] As the Commission previously stated, "the presence of facilities-based competition with significant sunk investment makes exclusionary pricing behavior costly and highly unlikely to succeed." *Pricing Flexibility Order*, 14 FCC Rcd at 14235, para. 26. This view is shared by the Department of Justice. *AT&T Inc. and BellSouth Corp., Application for Transfer of Control*, Memorandum Opinion and Order, 22 FCC Rcd. 5662, 5682-83, paras. 41-42 (2007) (emphasis added) (*AT&T/BellSouth Order*) (discussing the Department of Justice consent decrees and noting "the DOJ found potential competitive harm and ordered divestitures only in buildings where 'AT&T and SBC or MCI and Verizon, respectively, were capable of supplying local private lines before the merger and no other competitive LEC was likely to connect the building to its network'").

[331] *See, e.g.*, INCOMPAS Reply at 14; NASUCA Reply at 6.

not categorically reject the possibility that a market with two competitors could represent sufficient competition to restrain supracompetitive pricing by providers. To the contrary, it specifically recognized that "under certain conditions duopoly will yield a competitive outcome."[332] We find that the high sunk cost nature of the BDS market gives providers the incentive to extend their network facilities to new locations with demand even when those locations contribute revenue only marginally above the incremental cost of the network extension. In their comments, incumbent LECs substantiate this conclusion by citing substantial losses they have recently incurred, primarily to new entrant cable operators.[333] They also provide examples of their responses to cable competition involving both price reductions and new service offerings.[334] Reports by cable providers of significant year-over-year growth in their BDS revenues corroborate this story, and show a shift in demand to higher (and more competitive) bandwidths.[335]

116. We also distinguish our analysis here from that which the Commission employed in the *Qwest Phoenix Order*. Although our competitive market test takes into account competition only from providers of copper, fiber, and coax last-mile facilities, in many locations there are likely more competitors present than the two captured by the test, such as providers of fixed wireless last-mile services, including providers of emerging 5G last-mile transmission technology, which promises to be near-ubiquitous.[336] Thus, technological changes that have occurred or are likely to occur in the near future make the Commission's reasoning in the *Qwest Phoenix* decision inapposite.

117. Some competitive LECs urge us to deregulate only locations with four providers (one incumbent LEC and three competitors) with last-mile connections in the building or in the census block.[337] We find that such an approach would result in substantial overregulation of the business data services market and therefore we decline to adopt it. The primary driver of the number of connections at any location is the nature of demand in the location.[338] We fully expect locations with a single customer to typically have only one provider.[339] Even those locations with multiple customers may only have a single provider—the provider that won the bidding process to supply the location. However, as we explain above, the high sunk network cost nature of this industry indicates even as few as two nearby

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[332] *Qwest Phoenix Order*, 25 FCC Rcd at 8637, para. 30, *aff'd*, *Qwest Corp. v. FCC*, 689 F.3d 1214 (10th Cir. 2012).

[333] *See, e.g.*, Brief of AT&T Inc. in Support of its Direct Case, WC Docket No. 15-247 at 3 (Jan. 8, 2016) ("AT&T lost *more than* **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** percent of its DS1 business from non-affiliates just between January 2013 and October 2014, and the rate of loss is accelerating.").

[334] *See, e.g.*, Letter from Maggie McCready, Vice President, Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al. at 5-6 (filed Mar. 1, 2016) (Verizon Mar. 1, 2016 Letter).

[335] *See, e.g.*, Comcast Comments at 9 (reporting **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** revenue growth for Business Internet and **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** revenue growth for Ethernet (fiber and HFC) services from 2014 to 2015); Alan Breznick, *Cable Gives Thanks for Business Services*, LightReading (Nov. 27, 2015), http://www.lightreading.com/cable/cable-business-services/cable-gives-thanks-for-business-services/a/d-id/719564 (business services will reportedly generate more than $12 billion for U.S. cable providers in 2015, up 20 percent or so from their milestone total of $10 billion last year).

[336] *See supra* Part III.B.6; Letter from Russell P. Hanser and Brian W. Murray, Counsel to CenturyLink and Frontier, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al. at 2 (filed Mar. 20, 2017).

[337] *See, e.g.*, Sprint Comments at 29; Windstream Comments at 33; Verizon Comments at 12-13; Birch et al. Comments at 7-8.

[338] *See, e.g.*, CenturyLink et al. Comments at 60-61.

[339] *See* GCI Reply at 12 (noting that under a competitive market test based on three or four facility-based providers, "large areas of Alaska might be perpetually subject to non-competitive status").

providers have the incentive to undercut each other's price to win customers so long as they at least recover the incremental cost of extending supply to any customer. Accordingly, requiring even two, let alone three or four providers to be already supplying a given location as the rule for deregulation would result in overregulation in numerous locations that have competitive choice. This issue would become even more pronounced as wireline network providers compete for more locations. On the basis of the *2015 Collection*, deregulating locations with at least three (an incumbent LEC plus two other facilities-based providers) or four (an incumbent LEC plus three other facilities-based providers) suppliers would mean less than one percent of locations would be price deregulated and would re-impose price regulation on the vast majority of locations. Such a radical change would impose substantial regulatory costs on incumbent LECs—and consequently on small businesses, wireless carriers, and other consumers—and would dramatically reduce incentives for all carriers to build out next-generation infrastructure, which directly contravenes our goal of encouraging investment and innovation.

118. Though we believe the record is convincing on the impact of one nearby competitor ensuring reasonably competitive outcomes in the medium term (i.e., over several years), even if it were not, the inability to draw firm conclusions from the data permits the Commission to make a predictive judgment regarding the impact of regulation on the market. Notwithstanding whether one nearby competitor is sufficient for a market to realize the substantive benefits of competition, we note that the *2015 Collection* analysis did not permit a definitive conclusion of incumbent LEC market power.[340] In addition, as demonstrated by the market analysis in this Order, the evidence in the record suggests significant competition for these business data services. We conclude the best policy to encourage competition is to refrain from ex ante pricing regulation when the competitive market test adopted in this order is satisfied. We find this policy to be sound even if our market analysis does not does result in the perfect regulation of every building in the country—for any administrable rule will necessarily be overinclusive in some cases and underinclusive in others. Consistent with our precedent, we conclude that competition is the preferred method of ensuring just and reasonable rates, terms and conditions and preventing unreasonable discrimination.[341] Refraining from ex ante pricing regulation in these instances where we see active and likely near-term competition developing is the most effective means of ensuring continued development of actual and robust competitive outcomes.

c. Potential Unintended Costs of Regulation

119. Finally, we find that there are substantial costs of regulating the supply of BDS and these likely outweigh greatly any costs due to the residual exercise of market power that may occur in the absence of regulation. As a baseline, the presumption, "[c]ompetition is best. . . because competition is the single best way of ensuring that customers benefit"[342] and the promotion of the same guides us. The question is not whether today nearby competition is everywhere fully effective, or even whether it will become so over the next few years. The question is whether the costs of the lack of fully effective competition, even as these decline over time, are likely smaller than the net costs of regulation.

120. Here we explain why we find that the net costs of regulation in the business data services industry are likely to be large, most especially because regulation is likely to undermine entry, potentially postponing the gains from competition for many years. Even well-crafted regulations have unintended consequences, inhibiting competition, reducing investment, and end user benefits.[343] This is especially

[340] *See* Revised Rysman Paper at 20-21; Sweeting Report at 3, para. 7; Valletti Report at 6.

[341] 47 U.S.C. §§ 201(b), 202(a).

[342] *Further Notice*, 31 FCC Rcd at 4725, para. 5.

[343] *See, e.g.*, Dennis W. Carlton and Jeffrey M. Perloff, Modern Industrial Organization 692 (4th ed. 2005); Shelanski at 77; 1A Phillip E. Areeda & Herbert Hovenkamp, Antitrust Law at § 241b (4th ed. 2013); Mark Jamison, *The cost of regulating special access: A 55 percent investment decrease*, TechPolicyDaily.com (Apr. 12,

(continued….)

true in markets as highly dynamic and complex as those for BDS.[344] In general, regulation discourages entry wherever it enforces prices that do not allow firms full cost recovery or raises the costs of entry.[345] As the record before us indicates, both of these side effects are likely in BDS supply.[346] Moreover, regulation in rapidly growing markets is riskier than in otherwise similar stable or stagnating markets.

121. First, it is very difficult for firms to set efficient prices when they must tariff and for a regulator to estimate the efficient price level in a business with the following characteristics: high uncertainty due to frequent and often large unforeseen changes in both customer demand for services and network technologies that are hard to anticipate and hedge against in contracts with customers;[347] a complex set of products and services, which are tailored to individual buyers;[348] costs of provision that vary substantially across different customer-provider combinations;[349] and large irreversible sunk-cost investments that a provider is required to make before offering service.[350] In these circumstances,

(Continued from previous page)
2016), http://www.techpolicydaily.com/internet/the-cost-of-regulating-special-access-a-55-percent-investment-decrease/.

[344] *See* Thomas O. Barnett, *Maximizing Welfare Through Technological Innovation*, at 15 (Oct. 31, 2007) (explaining regulators "must be careful not to pursue immediate, static efficiency gains at the expense of long-term, dynamic efficiency improvements [in high-technology markets], since the latter are likely to create more consumer welfare than the former").

[345] Shelanski at 80.

[346] *See, e.g.*, Letter from Eric J. Branfman, Counsel to Lightower et al., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., Attach. at 4 (filed Aug. 3, 2016) (discussing costs of entry and noting "[i]f the FCC regulates ILEC prices at those locations where it deems competition to be inadequate, Lightower and other competitive fiber providers will never be in a position to exploit imperfect market conditions").

[347] It is rare for end-user contracts to be much longer than three years, and even carrier contracts are generally less than ten years, while the relevant sunk investments have much longer life spans. *See* XO Jan. 27, 2016 Comments, Decl. of James A. Anderson at para. 37 (**[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]; OECD Fixed Broadband Networks at 11 (on substantive fixed costs); Nuechterlein and Weiser at 2, 17-22; Shelanski at 69-70; *see generally* Nevada Department of Taxation, *Expected Life Study: Telecommunications and Cable Assets* (2015), https://tax.nv.gov/uploadedFiles/taxnvgov/Content/Meetings/Expected%20Life%20Study-Telecommunications%20and%20Cable%20Assets.pdf.

[348] *See, e.g.*, ACS Comments, Attach. A (Decl. of David C. Eisenberg) at 2 (customers seek "solutions" to their business needs and "[t]hese solutions are unique and individually tailored to the specific customer and specific business need, and pricing typically is negotiated based on the specific locations and service requirements of the customer"); Comcast Decl. of Joseph Farrell at paras. 72-81. This does not apply to DS1 and DS3 end user channel terminations, and to a lesser extent to packet-based channel terminations. That is, one DS1 channel termination to given location is much like another, and similarly for a DS3. However, complexity quickly increases when channel terminations are sold as part of a bundle of locations or as part of a bundle of other services, or both, such as transport. Moreover, where complex bundling is allowed, that is, in areas granted Phase I or Phase II pricing flexibility, or for services where we forbear from tariff regulation, most purchases of such services occur within complex bundles, evidencing market preferences for such contracts.

[349] Various cost analyses submitted into the record all imply costs vary by location. *See, e.g.*, ACA Comments, Appx. A (Marius Schwartz, Federico Mini, Economic Basis for Not Regulating Competitive Providers of Business Data Services at 15 (dated June 24, 2016).

[350] A sunk cost is an investment that has no value in an alternative use and no scrap value. 2010 Horizontal Merger Guidelines § 5.1 ("Sunk costs are entry or exit costs that cannot be recovered outside the relevant market."). For example, a fiber cable strung or buried connecting a premise to a carrier's network node rarely has any value beyond providing the connection. Consequently, all the costs of installing such connection are sunk. They cannot be recovered if the carrier decides not to service that location.

efficient prices are often tailored to individual purchasers, and are often subject to renegotiations that account for changing circumstances.[351] Moreover, in these circumstances, the efficient price level, which must be reflected in the price cap, is extremely difficult to determine, not least because it must reflect the option value of sinking network investments in a rapidly-changing environment.[352] Both of these sources of regulatory error, especially failure in setting a price cap, can lead to prices that are too low which prevent entry (or alternatively prices that are too high which encourage excessive entry).[353] For example, an inability to quickly adjust a tariff, means prices can be too low where they otherwise would be changed, while the restraints of tariffing can force a provider to set prices that are too low for some customers and too high for others, simply because of barriers to filing separate tariffs that allow such different customers to self-select into the option that suits them best. Similarly, price caps can force, through required averaging (such as the geographic average required in our price caps), prices that are too low in some locations and too high in others. The effect is to rule out entry in the former case, and to sometimes encourage inefficient entry in the latter. Moreover, price caps that are overall too low somewhere discourage entry (as well as long-run network reinvestment) which can have substantive knock-on effects on entry decisions given that supply in BDS is about recovering more than the incremental cost of each customer to pay for total network costs. Such negative effects accumulate over the life of the cap.

122. Second, given most wireline network costs must be sunk for periods of between 20 years and sometimes two or more times that length of time,[354] entrants and incumbents looking to reinvest are extremely sensitive to any increases in costs that might reduce their capacity to recover these costs. In particular, a small rise in cost that remains in place over a long time period can have a substantial impact on whether a particular investment opportunity is viewed positively. That is exactly what regulation does. It directly raises incumbent's costs, making them unwilling to invest, and hence less effective competitors, and it creates an additional source of uncertainty that entrants must contend with when evaluating entry.[355] If there is a small probability that future regulation will harm the entrant's projected income streams, then this can materially discourage entry (because over the course of the decades the expected present value of the accumulated harm can be large).

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[351] *See, e.g.*, ACA Comments, Appx. B (ACA Operator Member Activities in the Market for Business Data Services, (dated June 2016)) at paras. 4.1.1 - 4.1.8.; CenturyLink et al. Comments, Exh. AG (Decl. of Craig Davis) at para. 15 (wireless carriers demanded price cuts within a year of entering into a longer term contract).

[352] *See, e.g.*, Graeme Guthrie, *Regulating Infrastructure: The Impact on Risk and Investment*, 44 J. of Econ. Literature 925, 956 (2006), (showing that when price regulation is periodically adjusted and investments are irreversible , a firm's investment incentives may be severely distorted; in particular, the regulated firm "will favor projects that require low sunk costs at the expense of greater ongoing, and therefore avoidable, operating costs." *See also* Glenn Blackman & Richard Zeckhauser, *Fragile Commitments and the Regulatory Process*, 9 Yale J. on Reg. 73 (1992); and on telecommunications, *see, e.g.*, R.S. Pindyck, "Mandatory Unbundling and Irreversible Investment in Telecom Networks" Review of Network Economics, 6 (3) 2007.

[353] Averaging required under tariffing or price cap baskets can result in some prices being too high and others being too low, even if the average price is equal to what a competitive market would average, while a too rigorous price cap implies that even average prices are lower than what a competitive market would average.

[354] *See, e.g.*, OECD Fixed Broadband Networks at 11 (on substantive fixed costs); Nevada Department of Taxation, "Expected Life Study: Telecommunications and Cable Assets" https://tax.nv.gov/uploadedFiles/taxnvgov/Content/Meetings/Expected%20Life%20Study-Telecommunications%20and%20Cable%20Assets.pdf, *passim*, and GSMA Head Office, Comparison of fixed and mobile cost structures, http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Tax-Comparison-of-fixed-and-mobile-cost-structures.pdf, at 8 (on long lived sunk costs); GSM Association, *Comparison of Fixed and Mobile Cost Structures*, at 8, http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Tax-Comparison-of-fixed-and-mobile-cost-structures.pdf.

[355] *See, e.g.*, Charter Comments at 10.

123. Lastly, we reiterate that "the Commission should construct regulation to meet not only today's marketplace, but tomorrow's as well."[356] Available metrics show the BDS market to be dynamic, evolving rapidly, and becoming increasingly competitive across all service offerings. When a market is changing and growing, it offers tremendous opportunities to new entrants, and hence creates less regulatory concerns. Rather than only having the option of taking customers from existing suppliers by offering them very similar services, new entrants can seek as yet unaffiliated customers, or tempt customers away by offering new services that incumbents either do not offer, or if they do, are no more experts in it than the entrant (in fact, incumbents may be hampered by fears of cannibalizing their legacy services, or by their cultures, etc. that suited the legacy world).[357] In short, competition is better placed in dynamic growing markets to be effective than in a static, or declining market. In addition, a high degree of flux greatly increases the chances that regulatory error will stifle competition and reduce welfare, because it is applied to a circumstance that, without the regulation, may have quickly been overtaken innovation and/or competition.[358] Thus, regulation of such markets is generally considered to be counterproductive.

4. Competitive Market Test Methodology

124. In this section, we adopt the competitive market test methodology that we will use to determine which local markets are sufficiently competitive to warrant deregulation of price cap incumbent LEC provision of DS1 and DS3 end user channel terminations. As we note above, we take a pragmatic approach to structuring the competitive market test, with the goal of promoting innovation and investment and recognizing recent trends and developments in the BDS marketplace. Furthermore, as also discussed above, we take a network-centric approach which takes into account the high sunk cost nature of BDS networks that gives nearby competitors a significant incentive to compete for potential clients within an economically buildable distance from their networks. This is the case for traditional competitive LECs and for newer entrants such as cable providers with near-ubiquitous networks.

125. For the competitive market test to most closely approximate the realities of competition in the business data services market, it ideally should deregulate where there is competition and regulate where there is not. Accordingly, we can use the *2015 Collection* to measure the relative effectiveness of different competitive market tests at that point in time by assessing their respective error rates – i.e., how often they fail to deregulate locations or census blocks that are competitive and how often they fail to regulate locations or census blocks that are not. A competitive market test with an appropriately weighted combination of such error rates will tend toward maximizing competitive effects and minimizing regulatory failure. However, we also consider the importance of minimizing regulatory disruption. In particular, we seek to be conservative in deregulation and reregulation, and we specifically decline to re-regulate counties that were previously granted Phase II pricing flexibility.

126. *Data*. Our first step in establishing a competitive market test is to use data from the *2015 Collection* to identify areas that are competitive. First, we use the location data in the *2015 Collection* to

[356] *Further Notice*, 31 FCC Rcd at 4726, para. 8.

[357] *See, e.g.*, ACA Comments, Appx. B at paras. 3.3.1-3.3.4, 5.1.1; *see also* 2010 Horizontal Merger Guidelines, § 7.2.

[358] *See, e.g.*, Nancy L. Rose, *Learning from the Past: Insights for the Regulation of Economic Activity*, at 6 (a general statement) & 7 (on cable television), and Jerry Hausman and J. Gregory Sidak, *Telecommunications Regulation: Current Approaches with the End in Sight*, at 347 (on telecommunications) *in* Economic Regulation and Its Reform: What Have We Learned? (Nancy L. Rose, ed., 2005); Shelanski at 93, 102 & 104 (also on telecommunications). In the context of the Internet, *see* Johannes M. Bauer & Michael Latzer, *The Economics of the Internet: An Overview*, *in* Handbook on the Economics of the Internet, at 47-48, 49 (Johannes M. Bauer & Michael Latzer, eds. 2016.

determine which buildings or locations with last-mile access demand are within a half mile of a location served by a competitor. We use a half mile distance based on our analysis of the record, discussed above, that determined that competitive providers are actively competing for customers located within that distance and are generally willing to build out that distance in response to business data services demand. We previously determined that two providers in the relevant market are sufficient to ensure competitive prices.[359] Thus, all business locations with demand for last-mile access in a county that are within a half mile of a competitive provider's facilities are deemed competitive.[360]

127. We supplement the *2015 Collection* data with additional and more current data from the Form 477 on broadband availability by cable providers which offers the best available and most current data on the sale of broadband services by cable providers and which is closely correlated with physical presence of cable networks. Data based on census blocks are very granular and therefore provide an appropriate measure on which to base our calculations for cable networks. Census blocks can be very small. If the median census block "were a circle, then it would be approximately 0.2 miles across"[361]—an area that can easily fit (and often does fit) a single building.[362] Indeed, "half [of all census] blocks are smaller than a tenth of a square mile (6.4 acres)."[363] Given the high sunk cost nature of cable broadband networks, we find when a cable provider is capable of providing Internet broadband service within any census block, then generally they have the incentive to make the incremental investment necessary to serve locations with BDS demand in that census block, especially over the medium term. Accordingly, we treat as competitive census blocks in price cap incumbent LEC study areas that the Form 477 data show have a cable presence—whether serving business or residential clients.

128. We conclude that it is necessary to base the competitive market test on data from both the *2015 Collection* and the Form 477 data collections since neither collection captures the full extent of competition. The *2015 Collection* includes data on traditional competitive LECs but only includes a portion of cable competitive facilities both because of the nature of the data reported and the fact that it does not capture cable competition that has emerged since the collection. The Form 477 data includes reasonably comprehensive data from which we can infer the presence of cable network facilities but does not provide comprehensive data on traditional competitive LECs. Because competitive LECs do not typically have locally ubiquitous networks, a report of supply by such a provider in a census block is less likely to mean they can extend their network to cover demand anywhere in the census block, so a traditional competitive LEC's Form 477 report of presence in a census block often is not a good indication whether it can readily extend service to other locations in that census block. Additionally, such providers may offer business data services in a block, but not supply broadband service as defined in the Form 477 data collection and not report that service for Form 477 purposes. Basing our test on both datasets will most closely approximate the full spectrum of competition in the business data services market, including competition from medium-term entrants. As we explain above, recent buildout by cable companies dwarfs that of traditional competitive LECs and, therefore, the *2015 Collection* is likely

[359] *See, e.g., SBC/AT&T*, 20 FCC Rcd at 18308, para. 32 (2005); *AT&T/BellSouth Order*, 22 FCC Rcd at 5682-83, paras. 41-42.

[360] Our analysis of competitive provider facilities does not include UNEs because the availability of UNEs is both restricted by our rules (*see, e.g.*, 47 CFR § 51.319(a)(4), (5)(ii)) and is declining in the market as incumbent LECs transition their circuit-switched to packet-based business data services. Consequently, a CMT based on the presence of UNE availability today may overstate competition in the future. *See Further Notice* at 4748, para. 57; Level 3 Reply at 2.

[361] *Further Notice* at 4818, para. 214.

[362] Third IRW White Paper at 3.

[363] FCC Form 477, More About Census Blocks, at 1 https://transition.fcc.gov/form477/Geo/more_about_census_blocks.pdf (last visited Mar. 28, 2017).

to closely reflect the state of traditional competitive LEC deployment as of 2013. To the extent the test does not capture some recent deployment by traditional competitive LECs, providers have recourse through a section 208 complaint process.

129. *Setting Appropriate Thresholds*. The next step in formulating the competitive market test is to use the highly granular data from both datasets to assess the accuracy of different combinations of thresholds we might adopt for the test. These datasets measure competition at very local levels – individual locations and census blocks. However, for administrative purposes we have chosen to use counties to apply regulation. Thus, we use these more granular data to assess competition at the county level. This entails a higher degree of imprecision than if we were to base the test on locations or census blocks (which would entail more burden and administrative cost). In particular, we do not require a county to be 100 percent competitive to deregulate it. Were we to require this, few counties, if any, would qualify. For similar reasons, we do not require a county to completely lack competition in order to regulate it. We acknowledge that by setting the percentage threshold at something less than 100 percent necessarily leaves a portion of businesses at non-competitive locations within a county deemed competitive without the near-term potential for competition. However, for the reasons discussed above, it is important not to overregulate, and thereby reduce incentives for competitive entry. Indeed, competitors, and particularly near-ubiquitous competitors like cable providers, have an incentive to build to locations even beyond a half mile from their facilities, depending on cost and revenue opportunity. Conversely, setting a percentage threshold too low would also distort the results of the competitive market test by deregulating counties with only a relatively minor competitive presence, leaving a higher percentage of locations with business data services demand without the likelihood of a competitive option. Consequently, we apply our judgement to strike a balance in light of the data at our disposal.

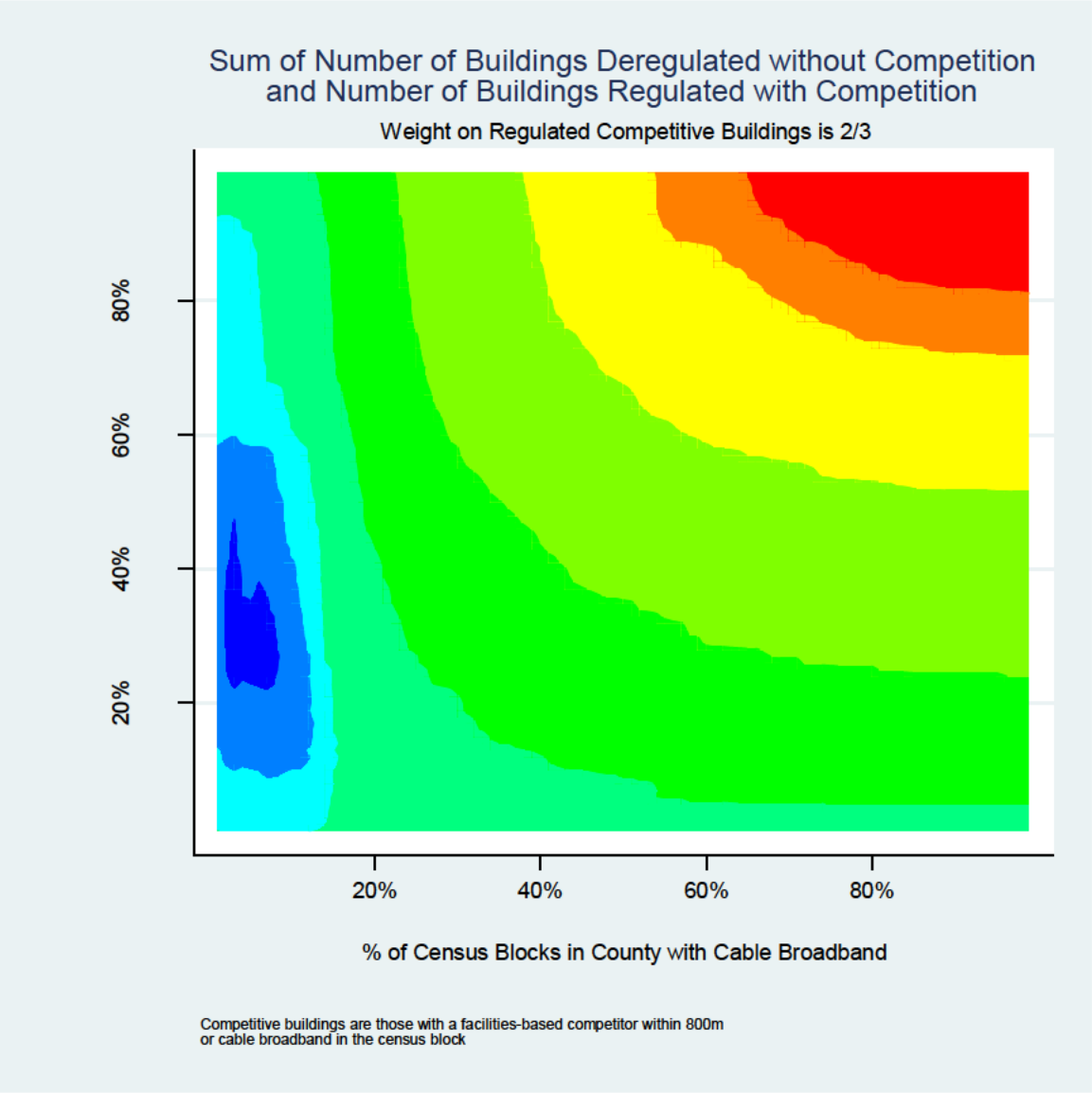
130. We set percentage thresholds that result in a test that more accurately approximates competitive conditions in the county broadly. We set a separate threshold for each of the two datasets we use and note that, given the differences in the two datasets, the percentage thresholds will not be identical. Given the interdependency of the datasets, we analyze combinations of thresholds to assess their impact on the accuracy of our test and to determine which combination yields results with the lowest weighted error rates.

131. Utilizing the data from the *2015 Collection* and Form 477, we tested a variety of thresholds for both datasets. Any pair of thresholds regulates certain price cap counties and deregulates all others. This leads to two types of regulatory error that we can approximately measure using the *2015 Collection*: the first type of error occurs in regulated counties where there will be locations as of 2013 that were within a half mile of a location supplied over the facilities of a competitor (i.e., wrongly regulated), while the second type of error occurs in deregulated counties where there will be locations that were not within such a distance (i.e., wrongly deregulated). We measure these two types of errors by the number of locations in each category. Given the preceding, a natural way to proceed would be to seek a pair of thresholds that minimize some weighted sum of these two error counts.

132. Following our competitive analysis that revealed the high costs of regulating this industry, we could, for example, assign twice as much weight to the first type of error of regulating where we should deregulate (i.e., wrongly regulating) as to the second type of error of deregulating where we should regulate (i.e., wrongly deregulating). Such a measure would overstate the first type of error, regulating locations that should be deregulated. This would reflect the scenario where one thought that the burdens and costs of inappropriately regulating were twice those of inappropriately deregulating. For example, in Figure 2 a weight of 2/3 is assigned to a competitive building that is regulated and a weight of 1/3 is assigned to a noncompetitive building that is deregulated. The darkest blue area shows the range in which the weighted sum of errors takes its lowest values, while the darkest red area shows the range in which the weighted sum of errors takes its highest values. Taking this approach allows us identify the thresholds that minimize the weighted sum of these two errors. In particular, the appropriate thresholds given these weights would deregulate a county where 32 percent of buildings with BDS demand are

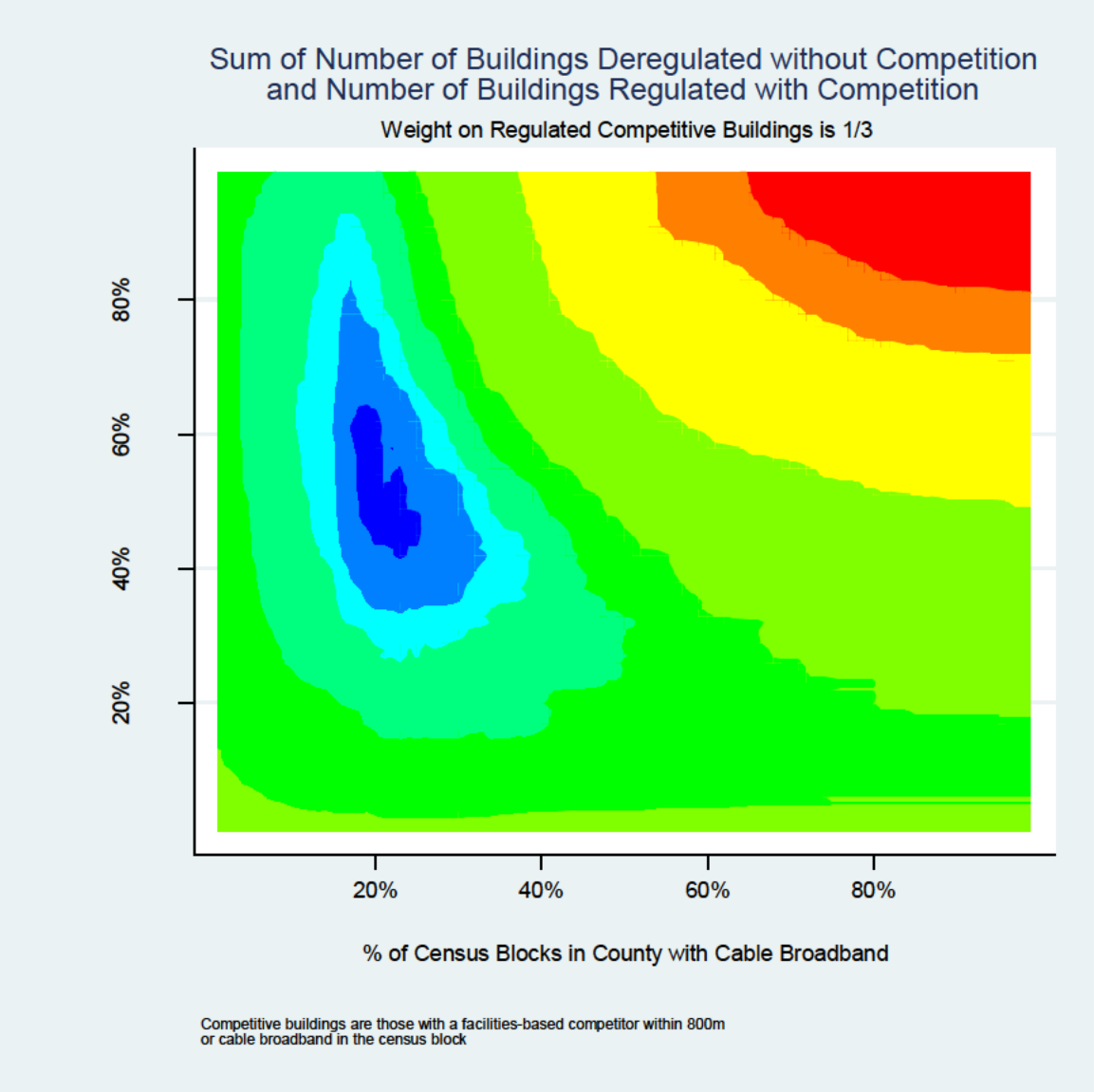
within a half mile of a location supplied over competitive facilities or with 3 percent of census blocks with cable presence.

Figure 2. Threshold percentage combinations (wrongly *regulated* locations given twice as much weight)



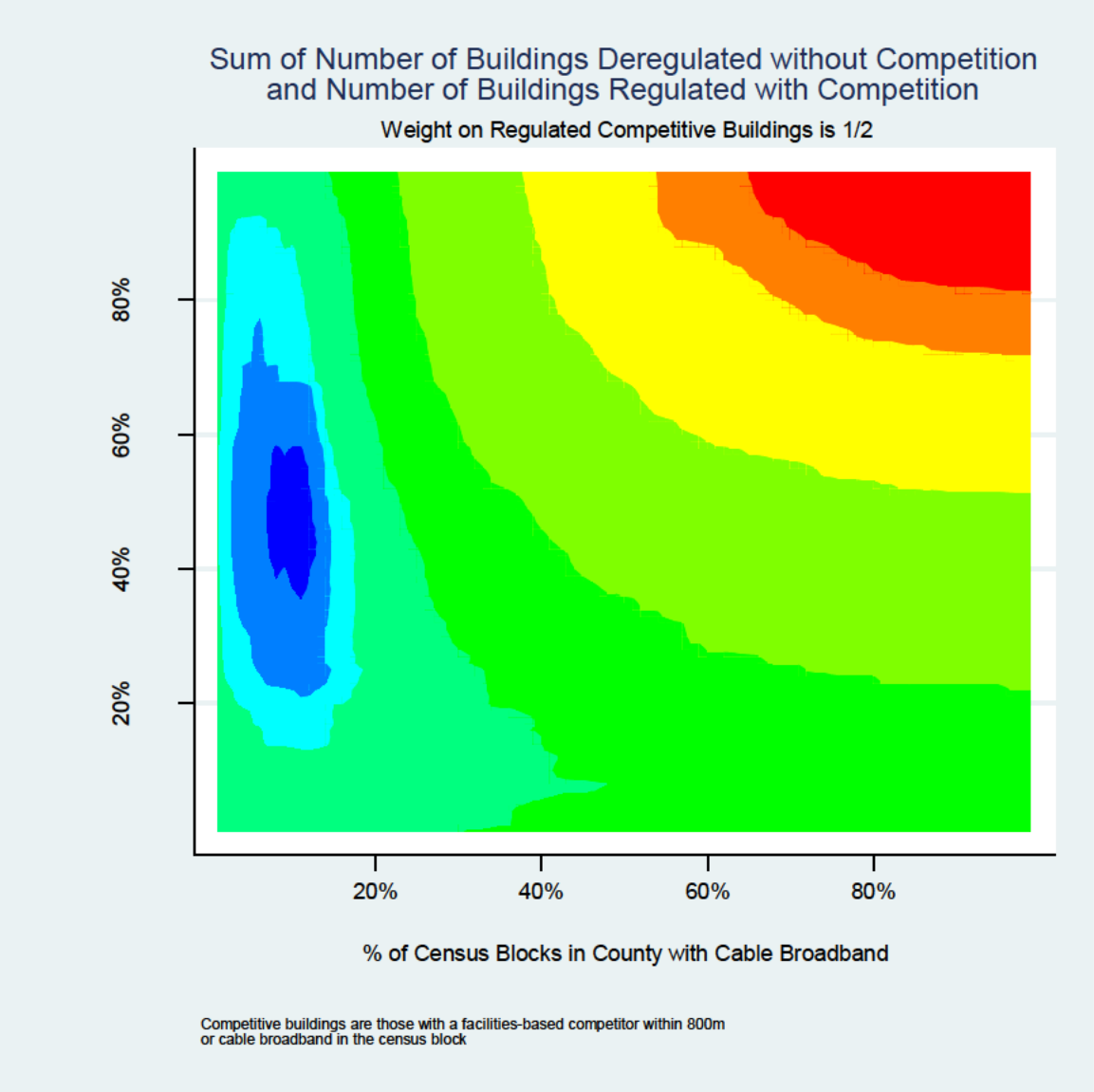
133. We next reverse these weights and instead assign twice as much weight to wrongly deregulated non-competitive buildings as to wrongly regulated competitive buildings. As the dark blue area of the contour map indicates, the appropriate thresholds for deregulating a county would be 48 percent for buildings with BDS demand within a half mile of a location supplied over competitive facilities and 23 percent for census blocks with cable presence.

Figure 3. Threshold percentage combinations (wrongly *deregulated* locations given twice as much weight)



134. Alternatively, we can assign equal weight to both errors—that is, give both types of errors equal importance—then we would choose thresholds that minimize the simple sum of the number of buildings inappropriately regulated or deregulated. Figure 4 demonstrates that under this scenario the resulting thresholds would deregulate a county where about 47 percent of buildings with BDS demand are within a half mile from competitors' facilities as competitive or where about 11 percent of census blocks have cable facilities.

Figure 4. Threshold percentage combinations (wrongly regulated and wrongly deregulated locations equally weighted)



135. This analysis suggests that setting a threshold of 32 to 48 percent for the *2015 Collection* would be reasonable. Out of an abundance of caution—we want to ensure that counties we deregulate will be predominantly competitive—we select the highest threshold—48 percent—and round up to 50 percent, which only slightly increases the error rate. Based on this threshold alone, we find that 1,862 or 59 percent of all counties and county equivalents in the United States that have some census blocks that are within a price cap study area would be treated as competitive, resulting in the deregulation of 91.1 percent of locations with special access demand.[364] If we were to use this threshold alone, we estimate

[364] The competitive market test analysis takes a conservative approach (i.e., more likely over-inclusive) to defining price cap areas. Coverage data from FCC Form 477 are reported at a census block level (using 2010 census blocks), meaning that the analysis requires a list of price cap census blocks. To create that list of price cap census blocks, we (continued….)

that 89.5 percent of locations with special access demand would be appropriately regulated, with 77,900 locations potentially over regulated and 48,045 potentially under regulated.[365]

136. Our analysis suggests that setting a threshold of 3 to 23 percent would be one reasonable means of setting the trigger threshold for the Form 477 data. Nonetheless, we believe a more cautious approach is warranted for three reasons. First, we recognize that all but 8.9 percent of locations with special access demand are already deregulated by the half mile test—and *any* test using the Form 477 data will likely overlap substantially with the locations already targeted by that test. So any additional deregulation using Form 477 must be justified at the margin. Second, we recognize that deployment in any marginal counties targeted alone by the cable census block test is likely to be more sparse than in those targeted by the half mile test, and so the facility of cable deployment to any given location is likely to be somewhat less than in more concentrated areas. Third, we want to ensure that counties we deregulate—now and in future competitive market test updates—will be predominantly competitive in nature. Accordingly, we choose a more conservative approach and adopt a 75 percent threshold for the Form 477 data. With that threshold, an additional 17 or 0.5 percent of all counties and county equivalents would be treated as competitive, resulting in the deregulation of an additional 0.8 percent of locations with special access demand. We estimate that adding that threshold increases the percentage of locations appropriately regulated to 90.2 percent, with 8,367 locations more appropriately regulated. We note also that because Form 477 data encompasses cable's best-efforts business data services, and this source of cable competition is growing rapidly, we expect setting even a conservative threshold such as this one will result in further deregulation going forward.

137. We acknowledge that this competitive market test does not as perfectly delineate areas as we would like; yet we believe it strikes the right balance. It balances the need for precision against the need for a test that is feasible to administer, and also balances the benefits of appropriate regulation of competitive and non-competitive areas while seeking to avoid the costs of inappropriate regulation. It does not require additional data collections and yet closely approximates the results such data collections are likely to yield. It ensures that we adopt competitive thresholds that most closely approximate actual competitive market conditions and minimize regulatory error. It deregulates areas with sufficient

(Continued from previous page)
start with a list of all census blocks in the country, and remove blocks reported as being wholly, or nearly wholly, served by rate-of-return carriers according to the study-area-boundary data collection (where rate-of-return study areas cover, in total, more than 99.4% of the area of a block). Rate-of-return and price cap providers are required to submit and certify the geospatial data representing the areas they serve. *See* FCC, *Study Area Boundary Data*, https://www.fcc.gov/wireline-competition/industry-analysis-and-technology-division/general/study-area-boundary-data. Thus, census blocks that are split between price cap and rate-of-return carriers will be included among the list of price cap census blocks. Blocks that have no provider, or are only partly served by rate-of-return carriers, according to the study-area-boundary data collection, will also be included in this analysis of price cap blocks. This approach is necessary to ensure that all census blocks that could possibly contain price cap service areas will in fact be included in the test.

[365] That is, locations are appropriately regulated if they are not within half a mile of a competitor's facilities according to the *2015 Collection* and if they are not in a cable-served census block according to Form 477. We recognize that the *2015 Collection* does not reflect the recent merger between Verizon and XO, however we believe that merger does not affect our competitive market test outcome. In order for a county to be treated as non-competitive, the number of locations once served by the acquired competitive LEC in the purchasing incumbent LEC's study areas would have to be sufficient to change whether the county meets the deregulatory threshold. To the extent this is possible, the petition process to will provide a venue for affected providers and customers to voice their concerns. (These mergers will not impact the second part of our test that measures the extent of competition from cable companies.) And in the event there are any future mergers that may impact the outcome of the competitive market test, we believe our merger review and the petition process are the appropriate venues in which to raise any such concerns.

potential for competitive entry in response to significant profit opportunities and retains ex ante pricing regulation in areas where competitors are less likely to be able to enter and therefore creates appropriate incentives for just and reasonable rates and continued growth, innovation, investment, and deployment in the dynamic business data services market. Lastly, it is conservative in deregulating, reflecting a desire to not move too quickly and recognizing the nascent nature of cable competition not captured in the *2015 Collection*.

138. We find that it is not necessary to create a special process or mechanism for challenging the results of the competitive market test. For administrability purposes, any such process would need to be limited to a single criterion, for example, the accuracy of the Form 477 data. The Commission has designed the competitive market test in a manner that reduces the need for, and the significance of, any post-decision challenge process because it has established very clear standards based on data that is readily accessible. In addition, we believe that parties can rely on the accuracy of the Form 477 data because it is certified to by company officials, compliance is subject to enforcement actions, and filers are required to submit revised data upon discovery of a significant error. Furthermore, commenters generally agree that the Commission should avoid establishing a separate process that is burdensome on the parties and the Commission.[366] For example, NCTA urges the Commission to forego any extensive and involved challenge process such as in the Connect American Phase II universal program that included more than 140 parties challenging the classification of nearly 180,000 census blocks and that took the Commission nine months to resolve.[367] Finally, we note that our rules already establish procedures for seeking review of the Commission's decisions.[368] Accordingly, consistent with our goals of eliminating unnecessary administrative burdens, we conclude, based on the substantial administrative costs and apparently only minor benefit, there is no reason to implement a challenge process here.

D. Updating Competitive Market Test Results

139. To ensure the results of the competitive market test continue to reflect competitive conditions in the business data services marketplace, we adopt a process for updating those results every three years using Form 477 data across all areas served by price cap carriers.

140. The results of the competitive market test offer a static snapshot of a dynamic and constantly changing business data services market. Most commenters that support the use of a competitive market test also support updating the test periodically.[369] We therefore adopt an administratively efficient process that will periodically update the results of the test to govern the transition of a county from non-competitive to competitive status.

141. We base our initial application of the competitive market test on the two principle data sources we currently have at our disposal, the *2015 Collection* and Form 477. The Form 477 data are updated on a semi-annual basis and will therefore continue to be useful in measuring competition in subsequent updates to the test. The data in the *2015 Collection*, however, will become increasingly stale and therefore less relevant to actual market conditions in subsequent updates of the test. We agree with commenters that express concerns about the burdens such new data collections would entail.[370] At this point, we find that the costs of such collections outweigh the benefits. The *2015 Collection* was the most

[366] *See, e.g.*, Birch et al. Comments at 54 (warning against "the potentially burdensome nature of a challenge process"); NTCA Comments at 79-80.

[367] *See* NTCA Comments at 79-80 ("Approximately 50 cable operators made or were named in challenges and they were compelled to provide data regarding more than 25,000 disputed census blocks.")

[368] 47 CFR § 1.429 (petitions for reconsideration).

[369] *See, e.g.*, CenturyLink et al. Comments at 81; INCOMPAS Comments at 9; Sprint Comments at 36.

[370] *See, e.g.*, NCTA Reply at 51.

comprehensive data collection the Commission has conducted, and the burden of conducting additional such collections, even if streamlined, would likely be considerable.

142. Moreover, we agree with commenters that the Commission "does not need to issue a request for a broad, large-scale data collection as it did in 2012" in order to obtain updated market data.[371] We can instead use the existing Form 477 data collection, which would provide continuity with the initial test that also relies on these data. The Form 477 data on broadband availability are well suited to identify increases in competitive broadband deployment, particularly by cable providers which are the most likely sources of competitive growth. We conclude it is not necessary, as some commenters suggest, to modify Form 477 to request additional information.[372] The current Form 477 data are sufficiently precise to capture the changes in competitive deployment that are likely to occur in a three-year timeframe. Thus we are able to achieve our goals of updating the competitive market test results using accurate data and at the same time avoid imposing any additional burdens on providers or the Commission.

143. We agree with commenters that support the suggestion in the *Further Notice* that the Commission reapply the test every three years.[373] We find that the three-year period strikes the right balance between ensuring the competitive market test remains reasonably accurate and avoiding unnecessary disruption of sales arrangements and administrative burdens by overly frequent updates.

144. As Sprint explains, "[three years] permits the Commission to evaluate whether markets are changing to become more competitive and will ensure that the regulatory framework reflects accurate information about the BDS marketplace."[374] We disagree with commenters arguing for more or less frequent updates.[375] More frequent updates are likely to be unnecessarily disruptive of longer-term business data services sales arrangements, while less frequent updates will be insufficient for the Commission to properly assess changes in the marketplace and to ensure the test remains current.

145. We direct the Wireline Competition Bureau to review Form 477 data on a regular three-year basis and determine whether any additional regulated counties meet the 75 percent threshold. The Bureau shall release a Public Notice that lists newly competitive counties and shall also provide this information on the Commission website. Parties desiring to challenge these results may file petitions for reconsideration or seek full Commission review through an application for review.

146. While commenters may disagree with how to update the initial competitive market test results, commenters widely note that the Commission should select administrative processes that are efficient. We note there are more than 3,100 counties in the U.S. that are included in our initial competitive market test computations. About 37 percent of these are treated as non-competitive and about 63 percent as competitive. We have previously noted that, given the sunk and irreversible cost nature of business data services provision, it is unlikely that locations that were competitive, as evidenced in the *2015 Collection* and Form 477 data, would become noncompetitive. Sunk costs represent the biggest barrier to entry, and these data demonstrate that this barrier has been overcome. On the other hand, given the recent pace of technology, innovation, and the rollout of more efficient products in the business data services market, we are confident that competition will continue to grow in competitive

[371] Sprint Comments at 36-37; *see also* CCA Reply at 21 n. 83; GCI Reply at 13; TDS Metrocom Reply at 3, 9-10, 12;

[372] *See, e.g.,* Birch et al. Comments at 9; Sprint Comments at 38.

[373] *See, e.g.,* Public Knowledge et al. Comments at 11; Sprint Comments at 36; TDS Metrocom Comments at 17.

[374] Sprint Comments at 36.

[375] Birch et al. Comments at 9 (arguing for updating the competitive market test as frequently as annually); Comcast Comments at 55-56 (arguing that a three-year cycle for reviewing market competitiveness would "complicate any effort to enter into long-term service contracts with enterprise customers").

markets. As a result, we find that the cost of reapplying the competitive market test for nearly 2,000 counties already treated as competitive would outweigh the benefit, if any. We thus decide we can achieve our objectives of adopting an administratively efficient process to update the competitive market test by reducing the number of counties subject to retesting. We shall update our test calculations only for the non-competitive counties to determine whether customers in these locations are benefitting from competition. Consistent with this approach, once a county is treated as competitive, it will not be retested.

E. Altering Business Data Services Forbearance

147. Prior forbearance actions and deemed grants have created a situation in which the statutory provisions and rules that apply to a price cap incumbent LEC or a competitive LEC in its provision of business data services vary depending on the provider's identity and the specific services being provided. We expand upon and adjust these prior actions and deemed grants to the extent necessary to level the regulatory playing field for all of these business data services providers. We also amend our rules as appropriate to implement our light-touch regulatory framework for business data services. These actions flow from—and are consistent with—our findings above on the intense and growing competition in business data services.

148. Our actions expanding forbearance are taken pursuant to section 10 of the Communications Act. That provision, enacted as an integral part of the "pro-competitive, de-regulatory national policy framework" established in the Telecommunications Act of 1996 (1996 Act),[376] requires that the Commission forbear from applying any provision of the Act, or any of the Commission's regulations, if the Commission makes certain findings with respect to such provisions or regulations.[377] Under section 10(a), the Commission is required to forbear from any such provision or regulation if it determines that (1) enforcement of the provision or regulation is not necessary to ensure the telecommunications carrier's charges, practices, classifications, or regulations are just, reasonable, and not unjustly or unreasonably discriminatory; (2) enforcement of the provision or regulation is not necessary to protect consumers; and (3) forbearance is consistent with the public interest.[378] In making this public interest determination, the Commission must also consider, pursuant to section 10(b), "whether forbearance from enforcing the provision or regulation will promote competitive market conditions."[379]

1. Detariffing of Packet-based Services and Circuit-based Services Above the DS3 Bandwidth Level

149. We forbear from the application of section 203 of the Communications Act to each price cap LEC in its provision of any packet-based business data services or circuit-based business data services above the DS3 bandwidth level.[380] This action expands upon prior forbearance grants and deemed grants applicable only to certain carriers and certain packet-based and circuit-based business data services.

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[376] Joint Explanatory Statement of the Committee of Conference, S. Conf. Rep. No. 230, 104th Cong., 2d Sess. 113 (1996).

[377] 47 U.S.C. § 160(a).

[378] *Id*.

[379] 47 U.S.C. § 160(b).

[380] 47 U.S.C. § 203 (specifying, among other obligations, that every common carrier, except connecting carriers, shall file with the Commission tariffs for its interstate common carrier services).

150. In 2006, Verizon's Broadband Forbearance Petition was deemed granted by operation of law after the Commission did not act on it within the statutory time limit.[381] That petition had sought forbearance from the application of Title II common carrier and *Computer Inquiry* requirements to "all broadband services" that Verizon "does or may offer . . . ."[382] But Verizon had subsequently narrowed the scope of its forbearance request to exclude DS1 and DS3 services.[383] Following this deemed grant, AT&T, legacy Embarq, legacy Frontier, Qwest, and ACS filed petitions requesting similar forbearance relief.[384] The Commission granted these petitions in part, finding that forbearance from the application of dominant carrier regulation, including tariffing under section 203, to the petitioning incumbent LECs' then existing packet-based and optical transmission broadband data services met the statutory forbearance criteria.[385] These partial grants reflected the Commission's predictive judgment that, in comparison to traditional dominant carrier regulation and for the carriers' and services being addressed, "eliminating the extra layer" of regulation provided by tariffing and the Commission's ex ante pricing rules, "while leaving in place basic Title II common-carrier regulation" under sections 201, 202, and 208, "will better promote competition and the public interest."[386] The record here confirms this predictive judgment and supports expanding the prior forbearance to include additional carriers and services.

151. Currently the vast majority of business data services providers are not subject to section 203 in their provision of business data services—non-incumbent LECs are not required to comply with tariffing requirements, nor are the price cap incumbent LECs that have received forbearance to the extent they provide services within the scope of the forbearance grants and deemed grants.[387] We find that the lack of regulatory parity that stems from the prior applications of forbearance is preventing competition and holding back our efforts to '"encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.'"[388] Thus, our determination is based on '"what the

[381] *See* Verizon News Release.

[382] Verizon Forbearance Petition at 1-2.

[383] Letter from Edward Shakin, Vice President and Associate General Counsel, Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket. No. 04-440, at 2-3 (filed Feb. 7, 2006).

[384] *See AT&T Forbearance Order*, 22 FCC Rcd at 18705-07, paras. 1-2; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19478, paras. 1-2; *Qwest Forbearance Order*, 23 FCC Rcd at 12260, paras. 1-2; *ACS Forbearance Order*, 22 FCC Rcd at 16304, paras. 1-2. CenturyLink also received certain enterprise broadband relief when its forbearance petition was deemed granted by operation of law in 2015. *See CenturyLink News Release*.

[385] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18706-07 n.5 (forbearing "from the requirements contained in section 203 of the Act, 47 U.S.C. § 203, section 214 of the Act, 47 U.S.C. § 214, (as it relates to dominant carriers), and the following sections of the Commission's rules: 47 CFR §§ 61.31-59 (general rules for dominant carriers), 47 CFR § 63.71 (to the extent it provides discontinuance rules for domestic dominant carriers), 47 CFR Part 69 (access charge and pricing flexibility rules)"); *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19480 n.6 (forbearing "from the requirements contained in section 203 of the Act, 47 U.S.C. § 203, section 214 of the Act, 47 U.S.C. § 214 (as it relates to dominant carriers), and the following sections of the Commission's rules: 47 CFR §§ 61.31-59 (general rules for dominant carriers), 47 CFR § 63.71 (to the extent it provides discontinuance rules for domestic dominant carriers), 47 CFR Part 69 (access charge and pricing flexibility rules), as well as the tariffing obligations under the *Computer Inquiry* rules") as well as the tariffing obligations under the *Computer Inquiry* rules").

[386] *Ad Hoc v. FCC*¸ 572 F.3d at 908.

[387] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18710, para. 8; *Hyperion Telecommunications, Inc. Petition Requesting Forbearance et al*., Memorandum Opinion and Order and Notice of Proposed Rulemaking, 12 FCC Rcd 8596, 8607-8609, paras. 21-24 (1997) (*Hyperion Order*) (permissively detariffing "the provision of interstate exchange access services by providers other than" incumbent LECs).

[388] *EarthLink, Inc. v. FCC*, 462 F.3d 1, 8-9 (D.C. Cir. 2006) (quoting 47 U.S.C. § 1302(a)).

agency permissibly sought to achieve with the disputed regulation,'" that is, to ensure that rates, terms, and conditions for the provision of these business data services are just, reasonable, and not unreasonably discriminatory.[389] We find that "in light of an overwhelming record of declining prices, it is simply not credible to argue that rate regulation is necessary to simulate competitive pricing" for these services.[390] Additionally, the lack of regulatory parity among broadband data services providers created by the imbalanced forbearance grants and deemed grants over the years has created barriers to entry and impeded competition. Extending forbearance from tariffing will lead to regulatory parity, and a more level playing field among packet-based and optical transmission business data services providers.

152. We further conclude that disparate forbearance treatment of carriers providing the same or similar services is not in the public interest as it creates distortions in the marketplace that may harm consumers.[391] Allowing such disparate application of our tariffing requirements undermines, rather that promotes, competition among telecommunications services providers within the meaning of section 10(b).

153. We predict that competition in the business data services market, along with the statutory and regulatory requirements that remain, is sufficient to ensure just, reasonable, and not unjustly or unreasonably discriminatory rates, terms, and conditions by business data services providers and to protect business data services consumers. We therefore find that application of section 203 is not necessary within the meaning of sections 10(a)(1) and 10(a)(2).[392] Those same considerations, plus our desire to promote competition and broadband deployment, likewise persuade us that such forbearance is in the public interest. Therefore, consistent with the Commission's prior findings, we find that forbearing from these regulations in an equal manner is consistent with the public interest within the meaning of section 10(a)(3).[393]

2. Detariffing of Other Special Access Services

154. We also forbear from the application of section 203 to each price cap incumbent LEC in its provision of business data services elements that comprise transport pursuant to section 69.709(4) of the Commission's rules, and to DS1 and DS3 end user channel terminations services and any other special access services currently tariffed in competitive counties or in non-competitive counties previously subject to Phase II pricing flexibility.

155. The Commission has previously recognized that "tariffs originally were required to protect consumers from unjust, unreasonable, and discriminatory rates in a virtually monopolistic market,

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[389] *Petition of AT&T Inc. For Forbearance Under 47 U.S.C. § 160 From Enforcement of Certain of the Commission's Cost Assignment Rules*, WC Docket 07-21, Memorandum Opinion and Order, 23 FCC Rcd 7302, 7314, para. 5 (2008) (quoting *Cellular Telecommunications & Internet Ass'n v. FCC*, 330 F.3d 502, 512 (D.C. Cir. 2003) (evaluating the Commission's interpretation of section 10)) (*AT&T Cost Assignment Forbearance Order*); *see* 47 U.S.C. § 160(a).

[390] NCTA Reply at 9; *see* CenturyLink Reply at 51. *But see* NASUCA Comments at 10 (arguing that the conditions found to justify the prior forbearance for business data services "no longer obtain (if they ever actually did)").

[391] *See, e.g., Qwest Forbearance Order*, 23 FCC Rcd at 12292, para. 65; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19508, para. 60; CenturyLink et al. Comments at vii, 67; USTelecom Reply at 4; Petition of tw telecom inc. et al. to Establish Regulatory Parity in the Provision of Non-TDM-Based Broadband Transmission Services, WC Docket No. 11-188 at 23 (filed Oct. 4, 2011) (*2011 Reverse Forbearance Petition*).

[392] 47 U.S.C. § 160(a)(1), (2).

[393] 47 U.S.C. § 160(a)(3); *see, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18738-41, paras. 68, 70, 74; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19508-10, paras. 60, 62, 66; *Qwest Forbearance Order*, 23 FCC Rcd at 12291-94, paras. 64, 67, 71.

and that they become unnecessary in a marketplace where the provider faces significant competitive pressures."[394] We find above that business data services transport is competitive throughout the nation and that DS1 and DS3 end user channel terminations services and other tariffed special access services are competitive in certain counties. Where a price cap LEC provides these services in competitive markets, application of section 203, including its tariffing requirement, is not necessary to ensure that the LEC's charges, practices, classifications, or regulations are just, reasonable, and not unjustly or unreasonably discriminatory. Nor is application of section 203 necessary to protect consumers.

156. We recognize that in some discrete geographic areas, including portions of non-competitive counties previously subject to Phase II pricing flexibility, some customers may not have access to competitive transport services during the near-term. Similarly, in some portions of the counties that we classify as competitive, some end users may not have viable alternatives to the incumbent LEC's DS1 and DS3 end user channel terminations services and other special access services within that time frame. But even in these areas, we believe tariffing may reduce incentives for competitive entry and ultimately inhibit growth in the market and competition over the longer term. Additionally, price cap LECs will remain subject to sections 201 and 202, and to our enforcement of those provisions through the section 208 complaint process. In these circumstances, we find that the additional contribution that tariffing—and other ex ante regulation—of price cap LECs' special access services provides to protection against unjust, unreasonable, and unreasonably discriminatory rates, terms, and conditions is not necessary within the meaning of sections 10(a)(1) and 10(a)(2).

157. Those same considerations, plus our desire to promote competition and business data services deployment, likewise persuade us that forbearance is in the public interest. In competitive markets, tariffing has several adverse consequences, including reducing a carrier's incentives to offer price discounts and ability to respond quickly to changes in demand or costs, delaying and increasing the costs of innovation, and preventing a carrier from tailoring service arrangements to meet its customers' specific needs.[395] Tariffing also imposes significant administrative costs on carriers and the Commission, and ultimately inhibits competitive entry in discrete areas where a price cap LEC currently may be the only provider. Given these costs, we find that forbearance from the application of section 203 to price cap LECs' business data services elements that comprise transport pursuant to section 69.709(4), and to DS1 and DS3 end user channel termination and any other tariffed special access services in competitive counties, is consistent with the public interest within the meaning of section 10(a)(3). We note that the record was supportive of detariffing services in competitive markets.[396]

158. A small number of counties that had been regulated under Phase II pricing are now deemed non-competitive pursuant to our competitive market test. Incumbent LECs in these counties have been providing DS1 and DS3 end user channel termination and other special access services free of price cap, but not tariffing, regulation. Like we do for other services, we conclude that tariffing's costs generally outweigh its benefits to consumers, and that forbearance from the application of section 203 to DS1 and DS3 end user channel termination and other tariffed special access services in these counties is consistent with the public interest.

[394] *AT&T Forbearance Order*, 22 FCC Rcd at 18724, n.124

[395] *See, e.g., Policy and Rules Concerning the Interstate, Interexchange Marketplace*, CC Docket No. 96-61, Second Report and Order, 11 FCC Rcd 20730, 20671, para. 53 (1996).

[396] *See, e.g.*, NCTA Reply at 9; CenturyLink Reply at 51. *But see* NASUCA Comments at 10 (arguing that the conditions found to justify the prior forbearance for business data services "no longer obtain (if they ever actually did)."); *see also* NASUCA Comments at 7 (urging the Commission to use caution in further forbearance, "except for forbearance from tariffing," as long as public disclosures are mandated; NASUCA Reply at 17.

159. In contrast, we conclude it is not practical to detariff carriers that are now subject to—and will remain subject to—price cap regulation, where the tariff is the tool the Commission has used—and will continue to use—to enforce that regulation.[397] This is not a concern with the counties now subject to Phase II pricing where the incumbent LEC has not been subject to price cap regulation and, as we decide below, will not be subject to such regulation going-forward.

3. Detariffing Will Be Mandatory After a Transition

160. Our detariffing actions in this Order will be mandatory after a transition that will provide price cap incumbent LECs sufficient time to adapt their business data services operations to a detariffing regime. We also require that competitive LECs, which are currently subject to a permissive detariffing regime,[398] detariff their business data services by the end of this transition.

161. The transition will begin on the date of *Federal Register* publication of notice of this Order and will end eighteen months thereafter, a period that we find sufficient for carriers to adapt to a detariffing regime. During this transition, tariffing for these services will be permissive—the Commission will accept new tariffs and revisions to existing tariffs for the affected services. This will allow carriers to respond to competitive pressures and introduce new business data services as they adapt to detariffing. Incumbent LECs will be subject to the rules adopted in the Order to the extent they tariff affected business data services during the transition.

162. Carriers, including non-incumbent LECs, may remove the relevant portions of their tariffs for the affected services at any time during the transition. Once the transition ends, no price cap incumbent LEC or competitive LEC may file or maintain any interstate tariffs for affected business data services. This will prevent carriers from obtaining "deemed lawful" status for tariff filings that are not accompanied by cost support and invoking the filed-rate doctrine in contractual disputes with customers.[399] Business data services providers will also be prevented from picking and choosing when they are able to invoke the protections of tariffs.[400]

163. We recognize that our detariffing actions will change the legal framework for existing service arrangements for business data services, many of which assume a tariffing environment and may not expire until after the end of the transition to mandatory detariffing. We do not intend our actions to disturb existing contractual or other long-term arrangements—a contract tariff remains a contract even if it is no longer tariffed.

4. Verizon Deemed Grant

164. In this section of the Order, we conform the forbearance provided to Verizon and its successors in interest, Hawaiian Telcom, and the legacy Verizon portions of FairPoint and Frontier (together the Verizon Legacy Companies), to the forbearance provided other price cap carriers. This action, when coupled with our other forbearance actions in the Order, levels the playing field among price cap carriers providing packet-based and optical transmission business data services. It also ensures that Verizon customers have the benefit of important statutory protections provided for in Title II of the Communications Act.

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[397] AT&T Comments at 80-81 (arguing Commission action to detariff but retain price cap regulations in a market would be unlawful).

[398] *Hyperion Order*, 12 FCC Rcd at 8596, para. 1.

[399] *AT&T Forbearance Order*, 22 FCC Rcd at 18729, para. 42; *Policy and Rules Concerning the Interstate, Interexchange Marketplace*, 11 FCC Rcd at 20765, para. 60.

[400] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18729, para. 42.

165. In 2006, Verizon's 2004 petition seeking forbearance from the application of Title II and *Computer Inquiry* requirements to certain of its enterprise broadband services was deemed granted by operation of law after the Commission did not act on that petition within the statutory time limit.[401] We agree with those commenters that argue that we have statutory authority to reverse the deemed grant.[402] Section 10 directs the Commission to "forbear from applying" statutory provisions and regulations to a telecommunications carrier when certain statutory criteria are met.[403] We read the statute as giving us the authority to modify or reverse forbearance that has been deemed granted when we determine that one or more of those forbearance criteria are no longer met.[404] Otherwise, forbearance based on the lack of a need to apply a statutory provision or regulation, and the public interest in such non-application, under one set of circumstances would remain locked in place even when circumstances change.[405] Congress would not have intended to create such rigidity in enacting statutory provisions requiring "Regulatory Flexibility," as section 10(a) is captioned.[406] As the D.C. Circuit has observed, the Commission's forbearance actions—and the forbearance relief "deemed granted" to Verizon—are "not chiseled in marble."[407] Instead, the Commission may "reassess" that forbearance as it "reasonably see[s] fit based on changes in market conditions, technical capabilities, or policy approaches to regulation" of business data services.[408]

166. We reject certain commenters' argument that statutory silence means that we lack authority to modify or withdraw forbearance once it is deemed granted, or that only Congress can modify

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[401] *See Verizon News Release*.

[402] *See, e.g.*, Ad Hoc Comments at 12 (citing *Ad Hoc v. FCC*, 572 F.3d 903) (claiming the Commission is free to reverse an early grant of forbearance); Birch et al. Comments at 39-40 (arguing "there is no question the Commission has the authority to reverse the default grant of forbearance"); NASUCA Comments at 10 (asserting that reversal of the Verizon deemed grant is "eminently reasonably under *Chevron*"); NTCH Comments at 5-6 (stating that the Commission has the power to reverse forbearance grants, and that forbearance must be rescinded when any of the three criteria no longer met); Sprint Comments at 96 (stating that "the Commission has the authority—and, indeed, the obligation—to reverse forbearance 'deemed granted' to Verizon"); Windstream Reply at 46-48 (emphasizing that Congress' decision to create a deemed grant does not limit the authority of the Commission to act and reach a different policy result).

[403] 47 U.S.C. § 160(a).

[404] *See, e.g.*, NASUCA Comments at 10; NTCH Comments at 5-6; *see also* AT&T Comments at 30 (arguing that to support a forbearance reversal, we must "'provide a more detailed justification than what would suffice for a new policy created on a blank slate'") (quoting *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009)); CenturyLink Reply at 57 (claiming that that before we can act we must make an affirmative finding that regulations are necessary to ensure that charges, practices, classifications, and regulations for the Verizon forborne services are not unjust or unreasonably discriminatory, and that regulation is needed for the promotion of the public interest).

[405] *See* 47 U.S.C. §§ 154(i) (specifying that "'[t]he Commission may . . . issue such orders, not inconsistent with this [Act], as may be necessary in the execution of its functions"); 201(b) (stating that "[t]he Commission may prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this Act"); *see also Motor Vehicle Mfrs. Ass'n of United States v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 42 (1983) (holding that agencies have "ample latitude to adapt their rules and policies to the demands of changing circumstances") (internal punctuation omitted).

[406] Captions can be '"a useful aid in resolving'" a statutory ambiguity. *See United States v. Quality Stores, Inc.*, 134 S. Ct. 1395, 1402, (2014) (quoting *FTC v. Mandel Brothers, Inc.*, 79 S.Ct. 818, 822 (1959)).

[407] *Ad Hoc v. FCC*, 572 F.3d at 911.

[408] *Id.*

or reverse forbearance received through a deemed grant.[409] That argument largely rests on the D.C. Circuit's holding in *Sprint Nextel v. FCC* that the Verizon deemed grant "did not result in reviewable agency action" because "Congress, not the Commission, [had] 'granted' Verizon's forbearance petition"[410] In so holding, the D.C. Circuit did not address the Commission's authority, under section 201(b), to adopt rules necessary "to carry out the 'provisions of this Act,'"[411] which include each Title II provision encompassed within the Verizon deemed grant.[412] Congress's determination in section 10(c) that forbearance will be "deemed granted" in the absence of timely agency action does not in any way limit our authority to later "reassess" the deemed grant as we "reasonably see fit."[413]

167. We recognize that modifying or reversing forbearance once granted by the Commission or by operation of law is a step that should be taken with great care. We find this narrowly tailored action is appropriate in this case because such reversal is consistent with the substance of the statutory forbearance requirements. Verizon's forbearance from core Title II obligations came from the highly unusual circumstance of a deemed grant. Our partial reversal is consistent with the Commission's unanimous commitment, in the *AT&T Forbearance Order*, "to avoid persistent regulatory disparities between similarly-situated" carriers by issuing "an order addressing Verizon's forbearance petition . . . on grounds comparable to those set forth" in the *AT&T Forbearance Order*.[414]

168. Notably, in its own comments in this proceeding, Verizon has recognized the importance of a level playing field in the business data services arena.[415] The forbearance relief "deemed granted" to Verizon encompasses economic regulation that applies to all other common carriers, economic regulation

[409] Hawaiian Telcom Comments at 19-20 (arguing that "the Commission cannot legally modify forbearance that was granted by operation of law" and there is "substantial doubt that the Commission has any statutory authority to reimpose regulations by 'reversing' or 'modifying'" a deemed grant); CenturyLink et al. Comments at 32-34 (arguing that the Commission lacks statutory authority to reverse a grant of forbearance (citing *Sprint Nextel Corp. v. FCC*, 508 F.3d 1129, 1132 (D.C. Cir. 2007)). *But see* NASUCA Comments at 9-10 ("The statute does not contain an explicit provision for withdrawal of a previously-granted forbearance. . . . [But] Congress could not have intended that all forbearances would be permanent, especially if the conditions precedent no longer exist.") (internal footnote and emphasis deleted); Sprint Reply at iv-v; TDS Reply at 20; AT&T Reply at 15 (claiming there are "substantial questions" as to whether the Commission has the authority to reverse forbearance).

[410] *Sprint Nextel Corp. v. FCC*, 508 F.3d at 1132; *see id.* at 1132 ("Congress made the decision in § 160(c) to 'grant' forbearance whenever the Commission 'does not deny' a carrier's petition. When the Commission failed to deny Verizon's forbearance petition within the statutory period, Congress's decision—not the agency's—took effect.").

[411] *AT&T Corp. v. Iowa Utilities Bd.*, 525 U.S. 366, 377 (1999) (quoting 47 U.S.C. § 201(b)).

[412] Contrary to CenturyLink et al.'s argument, the deemed grant did not "extinguish[]" the statutory provisions within its scope. CenturyLink et al. Comments at 33. Instead, under section 10(a), those provisions remain part of the Act while the Commission "forbear[s] from applying" them. 47 U.S.C. § 160(a).

[413] *Ad Hoc v. FCC*, 572 F.3d at 911; *see, e.g.*, Ad Hoc Comments at 12; Birch et al. Comments at 39-40; NASUCA Comments at 10; NTCH Comments at 5-6; Sprint Comments at 96; Windstream Reply at 46.

[414] *AT&T Forbearance Order*, 22 FCC Rcd at 18732, para. 50.

[415] *Verizon/INCOMPAS Joint Apr. 7, 2016 Letter* at 2 (The Commission "should make clear that all providers offering dedicated services are subject to Title II of the Communications Act, including Sections 201 and 202 of the Communications Act. Subject to such a clarification, Verizon would not oppose an order placing Verizon on the same footing today with regard to Ethernet services as cable companies, competitive providers and other incumbent LECs that have received forbearance relief from dominant carrier regulation and is adopted at the same time as an order adopting a permanent framework."); *see* Verizon Comments at 4 (proposing regulation "ensuring that all [business data services] providers comply with their common carrier duties to provide these services on just and reasonable rates, terms, and conditions"); Verizon Reply at 1 (proposing a regulatory framework for business data services that is "technology-neutral and provider-neutral, treating all providers alike").

that applies to all other incumbent LECs or Bell Operating Companies (BOCs), and public policy regulation that applies to all other common carriers.[416] Continued forbearance from this regulation would be inconsistent with the statutory forbearance criteria. For example, as we find above, the protections provided by sections 201 and 202(a), coupled with our ability to enforce those provisions in a complaint proceeding pursuant to section 208, are necessary to protect against unjust, unreasonable, and unjustly or unreasonably discriminatory rates, terms, and conditions for those business data services.[417] Similarly, section 251(b) imposes a number of duties on LECs, including the duty to implement number portability[418] and the duty to provide competing telecommunications service providers with access to the LECs' poles, ducts, and conduits under just and reasonable rates, terms, and conditions.[419] Acting to bring the Verizon Legacy Companies' forbearance into line with the forbearance granted to other carriers is necessary to ensure just, reasonable, and not unreasonably discriminatory rates, terms, and conditions,[420] and is consistent with the Commission's decisions granting more tailored forbearance to other carriers.[421]

169. Other provisions and requirements forborne from by the deemed grant promote access to telecommunications services by individuals with disabilities,[422] protect customer privacy,[423] and increase the effectiveness of emergency services,[424] among other objectives. As the Commission previously found, these and other public policy requirements under Title II "advance critically important national

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[416] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18736-37, paras. 64-75; *Qwest Forbearance Order*, 23 FCC Rcd at 12290-95, paras. 61-72.

[417] *See, e.g., Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, Memorandum Opinion and Order, 17 FCC Rcd 27000, 27010, 27012, paras. 18, 21 (2002) (citing 47 U.S.C. §§ 201-02, 208); *Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance for Broadband Personal Communications Services*, WT Docket No. 98-100 et al., Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 16857, 16865, para. 15 (noting that sections 201 and 202 "codify[] the bedrock consumer protection obligations of a common carrier . . . [and] have represented the core concepts of federal common carrier regulation dating back over a hundred years"); *AT&T Forbearance Order*, 22 FCC Rcd at 18738, para. 67; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19508, para. 59; *Qwest Forbearance Order*, 23 FCC Rcd at 12292, para. 64.

[418] 47 U.S.C. § 251(b)(2).

[419] 47 U.S.C. § 251(b)(4); *see also* 47 U.S.C. § 224. Although AT&T requested forbearance from section 251 in its forbearance petition, the Commission denied forbearance from section 251. It determined that forbearance from section 251 did not meet the statutory forbearance criteria. *AT&T Forbearance Order*, 22 FCC Rcd at 18737-39, paras. 66-68; *see Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19507-09, paras. 58-60; *Qwest Forbearance Order*, 23 FCC Rcd at 12291-92, paras. 63-65.

[420] *See* 47 U.S.C. § 160(a)(1), (2).

[421] *See AT&T Forbearance Order*, 22 FCC Rcd at 18738-39, paras. 67-68, 70; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19508-09, paras. 59-60, 62; *Qwest Forbearance Order*, 23 FCC Rcd at 12291-93, paras. 64-65, 67.

[422] 47 U.S.C. §§ 225 (requiring each common carrier offering voice telephone service to provide TRS so that individuals with disabilities will have equal access to the carrier's telecommunications network); 251(a)(2) (prohibiting telecommunications carriers from installing any "network features, functions, or capabilities" that do not comply with the disability access requirements in section 255), 255 (setting forth access requirements for persons with disabilities).

[423] *See* 47 U.S.C. § 222(c), (f) (restricting telecommunications carriers' use and disclosure of proprietary customer proprietary network information (CPNI)).

[424] *See* 47 U.S.C. § 222(d)(4), (g) (increasing the effectiveness of emergency services by facilitating the provision of vital caller location and subscriber identification information to emergency service providers).

objectives" and thus are necessary to protect consumers.[425] Indeed, continued forbearance from these requirements would be inconsistent with the critical consumer-protection goals that led to their adoption.[426]

170. We further conclude that disparate treatment of carriers providing the same or similar services is not in the public interest as it creates distortions in the marketplace that may harm consumers.[427] Allowing Verizon and its successors in interest, but not its business data services competitors, to continue to avoid compliance with obligations applicable to other business data services providers would undermine, rather than promote, competition among telecommunications services providers within the meaning of section 10(b). Therefore, consistent with the Commission's repeated findings,[428] we find that applying these obligations to the Verizon Legacy Companies is consistent with the public interest.

V. REGULATION IN NON-COMPETITIVE COUNTIES

171. We now turn to the question of what ex ante regulation, if any, we should apply to special access services in counties that are classified as non-competitive pursuant to our competitive market test. To ensure affordability of DS1 and DS3 services without unnecessarily constraining incumbent LECs' incentives to invest and innovate, we will apply price cap regulation in the form of Phase I pricing flexibility (Phase I pricing) to DS1 and DS3 end user channel terminations provided by incumbent LECs in counties that we determine are non-competitive. Allowing Phase I pricing will enable incumbent LECs to timely and effectively respond to any competition that develops in these markets though contract tariffs and volume and term discounts. We also prohibit the use of overly restrictive non-disclosure agreements in contract tariffs for business data services sold in non-competitive areas.

[425] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18739, para. 72; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19509-510, para. 64; *Qwest Forbearance Order*, 23 FCC Rcd at 12293, para. 69; *see also* 2011 Reverse Forbearance Petition at 3.

[426] *AT&T Forbearance Order*, 22 FCC Rcd at 18741, para. 75; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19511, para. 67; *Qwest Forbearance Order*, 23 FCC Rcd at 12294, para. 72.

[427] *See, e.g., AT&T Forbearance Order*, 22 FCC Rcd at 18738, para. 68; *Qwest Forbearance Order*, 23 FCC Rcd at 12292, para. 65; *see also* Sprint WC Docket No. 11-188 Reply at 13; 2011 Reverse Forbearance Petition at 23.

[428] *See AT&T Forbearance Order*, 22 FCC Rcd at 18738-39, paras. 68, 70; *Embarq/Frontier Forbearance Order*, 22 FCC Rcd at 19508-09, paras. 60, 62; *Qwest Forbearance Order*, 23 FCC Rcd at 12292-93, paras. 65, 67.

A. Retaining Price Cap Regulation in Non-Competitive Counties

172. We conclude that, subject to the exception discussed below, we should continue to apply price cap regulation, as modified in this Order, to price cap LECs' DS1 and DS3 end user-channel terminations in non-competitive counties to ensure the rates, terms and conditions for such services are just and reasonable.[429] We agree with the commenters—including Verizon, INCOMPAS, Sprint, Windstream, Ad Hoc, Birch et al., NASUCA, and Public Knowledge—that argue that price cap regulation is the most effective regime for ensuring that rates for non-competitive services are just and reasonable.[430] The price cap system, as modified by the measures we adopt in this proceeding, will limit the extent to which price cap LECs can exercise their market power over the rates for TDM-based end user channel terminations in non-competitive counties.

173. When properly applied, price cap regulation replicates some of the beneficial incentives of competition in the provision of business data services while balancing ratepayer and stockholder interests.[431] Price caps encourage LECs to become more productive and innovative by permitting them to retain reasonably higher earnings while discouraging wasteful investment.[432] At the same time, price cap regulation offers regulated firms flexibility in setting relative prices, instead of relying on uniformed regulatory direction.[433] In sum, price cap regulation helps ensure just and reasonable prices for customers in non-competitive markets while affording providers good incentives to reduce costs and an opportunity to earn a reasonable return on their investments.[434]

174. We do not, however, require incumbent LECs to reinstitute price caps in non-competitive counties that are within former Phase II pricing areas because we find that the costs of doing so exceed the benefits as described above. Incumbent LECs in these counties have been providing DS1 and DS3 end user channel terminations free of price cap regulation for a number of years and have adapted their internal systems accordingly. Bringing these services back into price caps would require that incumbent LECs revamp their billing, information technology, and third-party management systems, at significant cost.[435] Additionally, reinstituting price cap regulation would require the carrier to recreate what the price cap would be had it never received pricing flexibility, which would involve burdensome and complicated calculations. According to the *2015 Collection*, only 98 counties in former Phase II pricing areas are deemed non-competitive pursuant to our competitive market test, and these counties collectively have only **[BEGIN HIGHLY CONFIDENTIAL]** [**END HIGHLY CONFIDENTIAL]** buildings

[429] *See* 47 U.S.C. § 201.

[430] *See, e.g.*, Birch et al. Comments at 12; INCOMPAS Comments at 10; Public Knowledge et al. Comments at 8; Sprint Comments at 61-64; Verizon Comments at 9; Windstream Comments at 60-62; Verizon/INCOMPAS June 27, 2016 Ex Parte at 1.

[431] *See Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, 6787, para. 2 (1990) (*1990 Price Cap Order*), *aff'd*, *Nat'l Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993).

[432] *See* Sprint Comments at 43 (quoting Sappington/Zarakas Decl. at para. 7).

[433] *See* Birch et al. Comments at 62-66.

[434] *Id*.; *see Suspension Order*, 27 FCC Rcd at 10559-60, para. 3; *1990 Price Cap Order*, 5 FCC Rcd at 6792, para. 47.

[435] *See, e.g.*, Letter from Christopher T. Shenk, Counsel to AT&T, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143, et al., at 2 (filed Oct. 6, 2016) (AT&T Oct. 6, 2016 Kelly Declaration Ex Parte) (stating that "when AT&T updated its systems to comply with the Commission revised pricing flexibility rules in 1999, the changes to AT&T's sales, billing, and ordering systems took eighteen months to comprehensively program and test"); *id.*, Martin Kelly Decl. at para. 16 (estimating that updating AT&T's ordering and billing systems would cost between $20 and $35 million based on the cost of similar projects).

with demand for end user channel terminations (only a portion of which is for DS1s or DS3s). We find that the costs of reinstituting price caps in these counties outweigh the potential benefits.[436]

175. To encourage competitive entry into the counties we have identified as non-competitive, we will not apply price cap regulation to DS1 and DS3 end user channel terminations provided by non-incumbent LECs. When a non-incumbent LEC provides DS1 or DS3 services in a non-competitive market, it typically does so in competition with an incumbent LEC that enjoys marketplace advantages, including a ubiquitous network and significant economies of scale. Extending price cap regulation to non-incumbent LECs would impose significant costs while generating few, if any, benefits.[437] These costs would include administrative compliance costs that, by their very nature, would reduce the amount of capital available for the non-incumbent to upgrade its network and expand its business data services footprint to additional locations within the non-competitive county.[438] Of greater concern, such regulation would reduce the non-incumbent's capacity to efficiently set prices and increase its exposure to regulatory risk, further leading to less competitive entry and investment. And, any benefits would be minimal since the incumbent LEC's price cap rates typically will set a ceiling on the rates the non-incumbent can charge for its DS1 and DS3 end user channel terminations.

B. Expanding Pricing Flexibility in Non-Competitive Counties

176. In 1999, the Commission established a process for granting price cap LECs pricing flexibility for special access services when specified regulatory triggers were satisfied.[439] The pricing flexibility framework separates special access services into two segments, end user channel terminations and dedicated transport and special access services other than end user channel terminations, and provides two levels of pricing flexibility relief for each segment.[440] Phase I relief gives price cap LECs the ability to lower their rates through contract tariffs and volume and term discounts, but requires that price cap LECs maintain their generally available price cap-constrained tariff rates to "protect[ ] those customers that lack competitive alternatives."[441] Phase II relief permits a price cap LEC to raise or lower its rates throughout an area, unconstrained by price cap regulations.[442]

177. Business data services remaining within price caps after this Order will consist largely of incumbent LECs' DS1 and DS3 end user channel terminations in non-competitive counties, but will also include various other price cap services that carriers decide to keep regulated pursuant to price caps during the transition to mandatory detariffing. Consistent with the proposal the Commission made in the *Further Notice*, we transition all business data services that remain subject to price caps into Phase I pricing. This will provide price cap LECs with flexibility while precluding them from charging above-cap rates in non-competitive counties.[443] Price cap LECs in non-competitive areas will be able to

[436] *See* CenturyLink Sept. 28, 2016 Ex Parte (arguing that the Commission has often underestimated how long implementation of complicated regulatory transformations actually take, using the example of the Universal Service Fund to Connect America Fund transition).

[437] NCTA Reply, Reply Declaration of Michael L. Katz and Bryan G.M. Keating at 55.

[438] *Id.* at 18-20.

[439] *Pricing Flexibility Order*, 14 FCC Rcd at 14221, para. 1.

[440] We generally equate channel terminations with last-mile access facilities and the Commission specifically defines channel termination as used here as "a dedicated channel connecting a LEC end office and a customer premises, offered for purposes of carrying special access traffic." 47 CFR § 69.703(a)(2).

[441] *Pricing Flexibility Order*, 14 FCC Rcd at 14258, para. 69.

[442] *Id*. at 14301, para. 153. Price cap LECs granted Phase II relief must continue to maintain generally available tariffs, but may file such tariffs on one day's notice. *See id*.

[443] *Further Notice*, 31 FCC Rcd at 4903-04, paras. 499-502.

negotiate individualized rates through contract tariffs and volume and term discounts.[444] Those LECs must maintain generally available tariff rates subject to price cap regulation for end user DS1 and DS3 channel terminations, and other special access services included in their price cap tariffs in non-competitive counties that are not subject to the regulatory relief provided in this Order.

178. The record is clear that contract tariffs benefit both customers and price cap LECs.[445] As Ad Hoc observes, Phase I pricing flexibility allows price cap LECs to respond to competition by negotiating lower contract rates.[446] This flexibility, when coupled with our requirement that price cap LECs choosing to exercise Phase I pricing flexibility remove contract revenues from the relevant price caps basket for purposes of determining their price cap indices and actual price indices, will protect customers that do not negotiate contract tariffs from cross-subsidizing those that do.[447] And the requirement that carriers maintain generally available price cap-constrained tariff rates will "protect those customers that lack competitive alternatives" against unreasonably high rates.[448] We therefore amend our price cap rules to allow all price cap LECs in non-competitive counties to lower their rates through contract tariffs and volume and term discounts in a manner consistent with the Commission's current Phase I pricing flexibility rules. Accordingly, these incumbent LECs will be required to maintain generally available tariffs offering price cap regulated rates available to all subscribers.

179. These requirements will not apply to counties within former Phase II pricing areas that are deemed non-competitive pursuant to our competitive market test. Instead, price cap LECs in these counties will be required to continue offering generally available rates for end user DS1 and DS3 channel terminations, and for the other special access services will remain subject to price cap regulation in other non-competitive counties, as long as those services remain under tariff. This requirement will cease once the services are detariffed.

C. Prohibiting Nondisclosure Agreements in Non-Competitive Areas

180. In order to ensure that purchasers of business data services can fully participate in Commission proceedings and that the Commission can conduct appropriate oversight of business data services, we adopt a rule prohibiting the use of non-disclosure agreements in tariffs, contract tariffs, and commercial agreements for business data services provided in non-competitive areas that forbid or restrict disclosure of information to the Commission. In the interest of protecting sensitive information, a provider may require that information related to its business data services be submitted to the Commission subject to a Commission protective order or, if there is none, with a request for confidential treatment pursuant to the Commission's rules.

181. We agree with commenters that argue that non-disclosure agreements affecting the

[444] Contract tariffs may be filed on one day's notice. 47 CFR § 61.58(c).

[445] *See, e.g.*, Verizon Reply at 11 (arguing that Phase I pricing has benefited consumers and competition through contract tariffs which lower prices and bring other benefits to consumers); Hawaiian Telcom Reply at 4 (contending that pricing flexibility, including contract tariffs, has been "enormously favorable to business and carrier customers").

[446] Ad Hoc Comments at 15; *see* ACS Comments at 13-14 (arguing that pricing flexibility has helped the business data services market in Alaska to flourish); Hawaiian Telcom Comments at 5 (asserting that volume and term discounts, contract tariffs, elimination of price cap rate structures, and short-notice tariff filings have benefitted business and carrier customers); Sprint Comments at 62 (recognizing that customers benefit from individually-negotiated contracts).

[447] Ad Hoc Comments at 15.

[448] *See* Letter from Thomas Jones, Counsel to Level 3 Communications, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 3 (filed Nov. 4, 2016); *Pricing Flexibility Order*, 14 FCC Rcd at 14258, para. 69.

provision of business data services in non-competitive areas that restrict parties from disclosing commercially sensitive information to the Commission deter parties from sharing information with the Commission.[449] The use of such non-disclosure agreements has been described as "ubiquitous" and their impact significant.[450] Such non-disclosure agreements hinder the Commission's access to data important to its oversight of the business data services market and its ability to effectively discharge its core statutory responsibilities under sections 201 and 202.[451] The Commission previously observed in another proceeding that "overly broad, restrictive, or coercive nondisclosure requirements may well have anticompetitive effects" and explained that "demands by incumbents [for such non-disclosure agreements] . . . are of concern and any complaint alleging such tactics should be evaluated carefully."[452]

182. We find misplaced AT&T's assertion that the Commission fails "to identify a single instance where it has actually requested a contract pertaining to BDS and the parties refused to provide it."[453] To the contrary, the record demonstrates that the risks of inhibiting the flow of information about the business data services market to the Commission are real and have at times impacted the conduct of this proceeding.[454] Indeed, as the Commission observed in the *Further Notice*, non-disclosure agreements likely precluded some parties from responding fully to the voluntary data requests issued by the Bureau in 2010 and 2011, contributing to delay in analyzing and resolving the questions at issue in this proceeding.[455] Parties acknowledged that non-disclosure agreements had this effect.[456] Moreover, it is not the instances where the Commission has sought information and been denied that are our chief concern, but rather the instances where the Commission has been unaware of potentially important information about the business data services market and stakeholders have been precluded by non-disclosure agreements from sharing that information in the first place.

183. AT&T also expresses concern that public release of information subject to a non-disclosure agreement will result in "significant competitive harm."[457] Disclosure to the Commission, however, is clearly distinguishable from disclosure to the public generally. We routinely adopt protective orders to protect parties' interests in maintaining the confidential nature of information submitted.[458] As

[449] *See, e.g.*, Birch et al. Comments at 61; NASUCA et al. Comments at 13; Sprint Comments at 85; Level 3 Reply at 10-11; *but see* AT&T Comments at 81-83, USTelecom Comments at 26-27.

[450] NTCH Comments at 2 ("This cloak of secrecy has had the effect of preventing the Commission from properly exercising its regulatory duties . . . .").

[451] *See, e.g.*, Level 3 Reply at 70; NTCH Comments at 2.

[452] *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket Nos. 96-98, 95-185, First Report and Order, 11 FCC Rcd 15499, 15575-76, para. 151 (1996) (*Local Competition Order*).

[453] AT&T Comments at 83

[454] *See, e.g.*, TDS Metrocom Comments at 25-26; TDS Metrocom Reply at 11-12.

[455] *Further Notice*, 31 FCC Rcd at 4850, para. 314.

[456] *See, e.g.*, BT Americas Dec. 5, 2011 Letter at 1 ("BT Americas Inc. ("BTA") is writing in response to the Commission's request for voluntary submissions of data regarding special access pricing and competition issues. One or more of the supply agreements BTA has entered into contain non-disclosure obligations that may not be avoided unless BTA is under legal compulsion to provide the requested data.").

[457] AT&T Comments at 82.

[458] *See* Level 3 Reply at 70 ("The Commission frequently collects and analyzes companies' most sensitive information subject to confidentiality restrictions embodied in its rules and protective orders. AT&T has not offered any basis for concluding that these protections are insufficient to prevent inappropriate disclosure of sensitive information.").

Level 3 explains, "AT&T's claim that such a rule would undermine parties' confidentiality [interests] is without merit because the Commission's rules and procedures prohibit disclosure of information that has been made subject to confidentiality requirements."[459] In this proceeding, the Commission has sought confidential data and information on multiple occasions and has consistently adopted protective orders limiting access to the information to certain individuals in order to ensure the confidentiality of these data and information.

184. We agree with commenters that recognize that the solution for concerns about inappropriate disclosure of sensitive information submitted to the Commission is to ensure such information is submitted subject to a protective order or to a request for confidential treatment pursuant to the Commission's rules.[460] We conclude that because the information in question will not be made generally available to the public, our action here does not undermine parties' interest in insulating confidential or commercially sensitive information from the public. We therefore require that parties submitting to the Commission confidential information that is subject to a non-disclosure agreement seek confidential treatment of that information under the relevant protective orders, or otherwise pursuant to the Commission's rules.

185. We address two types of restrictions non-disclosure agreements impose and determine that both are precluded by the action we take here. First, we find that there is no justification for non-disclosure agreements that contain provisions that prohibit outright the disclosure of confidential information to the Commission. Such agreements are expressly intended to obstruct parties' ability to disclose information to the Commission and the Commission's ability to access information necessary to oversee and evaluate the business data services market. They undermine our ability to render fact-based decisions informed by a complete record, and are generally contrary to the public interest.

186. We also find that non-disclosure agreements that require a direct request or legal compulsion prior to allowing disclosure also inhibit the Commission's conduct of its core regulatory and oversight functions and are therefore contrary to the public interest. By precluding the voluntary disclosure of information, such agreements render it impossible for the Commission to be aware of information in business data services sales agreements or even the existence of such sales agreements, and effectively preclude the Commission's ability to seek that information or those sales agreements.

187. Allowing voluntary disclosure to the Commission, subject to the Commission's protections for confidential information where necessary, will allow parties to disclose relevant information in a more timely fashion, which will in turn make the Commission's oversight and regulatory work more timely and efficient. The Commission's protective orders and confidentiality regulations will effectively insulate against the risk of inappropriate disclosure by ensuring confidential treatment of such information.

188. We agree with commenters that argue that restrictions on non-disclosure agreements for business data services are unnecessary in markets treated as competitive under the competitive market test. In these areas, market forces should be sufficient to protect purchasers of business data services from unreasonable practices.[461] NASUCA asserts, however, that prohibiting overly restrictive non-disclosure agreements is necessary to facilitate competitive conditions in the BDS marketplace generally.[462] We agree that imposing a prohibition on such non-disclosure agreements will foster

[459] Level 3 Reply at 10-11.

[460] TDS Metrocom Comments at 25; Windstream Comments at 79; Sprint Comments at 85.

[461] *See* USTelecom Comments at 27; *see also* AT&T Comments at 81.

[462] *See, e.g.,* NASUCA Comments at 30 ("Essentially by definition, services in competitive markets do not require regulatory control over pricing: The competition itself is assumed to ensure that rates are just and reasonable. As (continued….)

competitive conditions in areas that our data show are not yet competitive. We do not, however, see a need to impose this prohibition in competitive areas. In those areas, the Commission will still have access to relevant industry data through mandatory requests or data collections if needed. We therefore limit our restrictions on business data services-related non-disclosure agreements to those that apply to non-competitive areas as we define them in this Order. This reasoning applies to all non-disclosure agreements that govern business data services sales – whether they are contained in tariffs, contract tariffs, or commercial agreements. The presumption should be that competitive market dynamics would characterize the majority of sales in any arrangements that governed sales in both types of areas. Additionally, the bulk of sales of TDM based business data services in non-competitive areas would presumably be effected through TDM-only tariffs and contract tariffs. Parties are of course free to structure their sales arrangements in such a manner as to avoid including sales of services for both types of areas in a single agreement.

189. Accordingly, we adopt a general rule prohibiting the use of non-disclosure agreements in or related to tariffs or contract tariffs for the sale of business data services in areas treated as non-competitive by our competitive market test to the extent they forbid or impose any restriction on a party's ability to voluntarily disclose information to the Commission pursuant to appropriate safeguards for confidential information. No provider of business data services in areas treated as non-competitive may enter into or enforce a non-disclosure agreement that in any way forbids or prevents any party to that agreement from disclosing any information relevant to the Commission's business data services proceedings to the Commission. The rule we adopt today applies to all forms of agreements for the sale of TDM-based business data services, including price cap tariffs and contract tariffs in non-competitive areas. Parties submitting confidential information to the Commission that is subject to a non-disclosure agreement must either submit such information subject to the relevant protective orders governing this proceeding or, in the absence of a relevant protective order, seek confidential treatment for such information pursuant to sections 0.457 and 0.459 of the Commission's rules.[463]

D. Adjustments to Price Cap Levels

190. Pursuant to the framework adopted in this Order, the primary services that will remain under price cap regulation will be the DS1 and DS3 end user channel terminations that incumbent LECs provide in non-competitive counties. To help ensure just and reasonable rates for these services, we adopt an X-factor of 2.0 percent that reflects our best estimate of the productivity growth that incumbent LECs will experience in the provision of these services relative to productivity growth in the overall economy.[464] We retain Gross Domestic Product-Price Index (GDP-PI) as the measure of inflation that incumbent LECs will use in their price cap index calculations, continue to make a low-end adjustment available to price cap LECs in certain circumstances, and decline to adopt other changes that would affect price cap rates. In particular, we find that that no catch-up adjustment to the price cap indices is warranted.

(Continued from previous page)
discussed above, however, BDS competition must be facilitated by the public disclosure requirements and the prohibition on NDAs.").

[463] 47 CFR §§ 0.457 and 0.459.

[464] Here, "productivity" refers to total factor productivity (TFP), heuristically the ratio of outputs to inputs. *See* Robert M. Solow, *Technical Change and the Aggregate Production Function*, 39 Rev. Econ. & Stat. 312-320 (1957); Dale W. Jorgenson and Zvi Griliches, *The Explanation of Productivity Change*, 34 Rev. Econ. Studies 249-283 (1967).

1. Background

191. The core component of the Commission's price cap system is the price cap index, which is designed to limit the prices that a price cap LEC may charge for services.[465] Each price cap LEC's price cap index historically has been adjusted annually based primarily on a productivity factor or "X-factor" and a measure of inflation (GDP-PI). The X-factor initially represented the amount by which LECs could be expected to outperform economy-wide productivity gains.[466] The X-factor serves as an adjustment to the price cap indices to account for these productivity gains, and is subtracted from GDP-PI in the Commission's price cap formula.[467]

192. The Commission last set X-factors for special access services in the 2000 *CALLS Order*.[468] These X-factors, unlike prior X-factors, were not productivity-based but collectively acted as "a transitional mechanism . . . to lower rates for a specified time period" based on an industry agreement.[469] The CALLS X-factor for special access services increased from 3.0 percent in 2000 to 6.5 percent for 2001 through 2003 but was set equal to inflation beginning in 2004.[470] This frozen X-factor was intended to be an interim measure, lasting only until the expiration of the CALLS plan on June 30, 2005, yet the Commission has not acted to replace it with a productivity-based measure. As a result, price cap LECs' special access rates have remained frozen at 2003 levels, excluding any necessary exogenous cost adjustments.[471]

2. Adopting a Productivity-based X-factor

193. The Commission's price cap system has been running on autopilot since June 30, 2005, with no analysis as to why rate levels from 2003 might have remained reasonable despite widespread changes in the business data services marketplace. We end this freeze by replacing the CALLS era frozen X-factor with a productivity-based X-factor.

194. Our analysis includes several steps. We begin by deciding to use a total factor productivity (TFP) methodology in calculating business data services productivity gains or losses relative to growth in the general economy. We then decide to use the U.S. Bureau of Labor Statistics' Capital, Labor, Energy, Materials, and Services data for the broadcasting and telecommunications industries (KLEMS (Broadcasting and Telecommunications)) in applying our methodology. We use KLEMS (Broadcasting and Telecommunications) data to establish a zone of reasonable X-factor estimates. From

[465] *Suspension Order*, 27 FCC Rcd at 10562-62, para. 10; *1990 Price Cap Order*, 5 FCC Rcd at 6792, para. 47; *see* 47 CFR § 61.46.

[466] *Data Collection Order*, 27 FCC Rcd at 16320, para. 3; *1990 Price Cap Order*, 5 FCC Rcd at 6795-801, paras. 74-119.

[467] 47 CFR § 61.45(b)(1)(i).

[468] *CALLS Order*, 15 FCC Rcd at 13026, para. 156.

[469] *Id.* at 13028, para. 160.

[470] *Id*. at 13025, para. 149; 47 CFR § 61.45(b)(1)(iv). Because rates are both reduced and increased by the inflation rate, they are effectively frozen.

[471] 47 CFR § 61.45(b)(1)(iv) ("Starting in the 2004 annual filing, X shall be equal to GDP-PI for the special access basket."). The Commission hoped that, by the end of the five-year CALLS plan, competition would exist to such a degree that deregulation of access charges (switched and special) for price cap LECs would be the next logical step. *CALLS Order*, 15 FCC Rcd at 12977, para. 35.

that zone, we select an X-factor of 2.0 percent. Price cap LECs will apply this X-factor annually to help ensure that their price cap indices incorporate future productivity growth.[472]

a. Selecting a Methodology for Calculating Productivity Gains or Losses

195. A price cap is intended to mimic competitive-market outcomes. One aspect of a competitive market is that output price growth over time matches the difference between industry input price growth and industry productivity growth. Another aspect of a competitive market is strong cost-reduction and investment incentives. A price cap that grows at a rate equal to the difference between the growth rate of input prices and industry productivity growth might, at least initially, hold prices to competitive levels, but if it were frequently updated on the basis of the regulated firms' behavior, quickly taking away any additional profits obtained either by implementing productivity increases or by negotiating lower input prices, the regulated firms would have little incentive to invest in cost and input price reduction. Consequently, in the *Further Notice*, the Commission proposed to use a proxy for the difference between the growth rate of input prices and industry productivity growth in setting allowed price growth under the cap.[473] That proxy is a measure of the economy-wide rate of inflation, based on a national price index (i.e., GDP-PI), that is adjusted, through an infrequently updated X-factor chosen to account for systematic differences between the growth rates of national prices and the difference between telecommunications industry input price growth and industry productivity growth. This proxy approach provides regulated firms with good incentives to reduce costs.

196. Under the approach outlined above, steps that a firm takes to lower its costs will not immediately affect the price cap. To see why, note that the price cap is adjusted based on two quantities: the national rate of inflation (GDP-PI) and the X-factor. The firm's cost-lowering actions will have, at most, a negligible effect on the national inflation rate. As for the X-factor, while the regulator periodically will assess the extent to which the regulated firms have lowered their costs (and thus might adjust the X-factor and price cap accordingly), this process typically occurs with substantial delays. Between X-factor adjustments, firms can keep any additional profits that they achieve through cost reductions; hence, the price-cap regime provides material incentives for firms to reduce their costs.[474]

197. In summary, our proposed approach is to estimate an X-factor to be subtracted from the annual change in the GDP-PI to determine the annual change, *c*, in the price cap index:

$$c = P - \underbrace{\left(\hat{D} + \hat{t}\right)}_{\text{X-factor}}, \qquad (1)$$

[472] In adopting an X-factor, we reject NASUCA's argument that the Commission should reinitialize price levels to levels that would prevail in a competitive market "because rates set under the existing 'frozen' price cap plan likely exceed those that would prevail in competitive markets. NASUCA Comments at 24-25; *see also* Ad Hoc Comments at 16; CFA et al. Reply at 12 n.20 (supporting reinitialization and contending that it will require cost studies). Not only would reinitialization be incredibly burdensome, but as the Commission has previously observed, calls for reinitialization are a "quarrel…fundamentally with price cap regulation." *See 1990 Price Cap Order*, 5 FCC Rcd at 6813, para. 221; Hawaiian Telcom Comments at 14 & nn.60-61 (citing *Access Charge Reform et al*., CC Docket No. 96-262 et al., First Report and Order, 12 FCC Rcd 15982, 16107, para. 291 (1997); *1990 Price Cap Order*, 5 FCC Rcd at 6813, para. 221)).

[473] *Further Notice*, 31 FCC Rcd at 4872, para. 386 (proposing to continue to use GDP-PI as the inflation measure for the price cap index formula).

[474] *Id.* at 4876-77, paras. 404-05.

where P is the economy-wide rate of inflation (i.e., the GDP-PI), $\hat{D}$ is the projected difference between the economy-wide rate of inflation and the growth rate of industry input prices, and $\hat{t}$ is the projected growth rate of the industry's productivity level.[475] The X-factor, which is the sum of $\hat{D}$ and $\hat{t}$, may be interpreted as a correction term by which the projected growth rates of economy-wide prices are adjusted to account for systematic differences between the broader economy and the regulated industry. Several commenters agree that this approach is sound, no commenters oppose it, and we adopt it.[476]

198. In the past, the Commission has relied on staff studies of the historical total factor productivity (or TFP) growth rate of incumbent LECs to estimate future productivity growth.[477] TFP is the relationship between the output of goods and services to inputs,[478] and is commonly used to measure productivity in the economy as a whole.[479] TFP studies typically measure productivity using the ratio of an index of the outputs of a firm, industry, or group of industries to an index of corresponding inputs. Productivity growth is measured by changes in this ratio over time.[480] In a TFP model, output is typically measured in terms of physical units (e.g., minutes or calls) of the good or service produced. In a case in which more than one good or service is supplied (i.e., there are multiple outputs), a standard practice is to create an index (e.g., an average that weights by output revenue shares) that aggregates the output levels.[481] The resulting output index shows changes in the level of output over time; in other words, it provides the growth rate of the measured output. Similarly, the growth rate of the aggregate input index depends on the combined growth rates of the individual input indices—such as indices for capital, labor, energy, materials and services—weighted, for example, by input expenditure shares.[482]

199. In the *Further Notice*, the Commission proposed to calculate the X-factor by subtracting from the historical rate of change in GDP-PI the historical rate of change in industry input prices and adding to it the historical rate of change in industry TFP.[483] The calculation can be expressed by the following formula:

$$X = \% \Delta \text{ GDP-PI} - \% \Delta \text{ Industry Input Prices} + \% \Delta \text{ Industry TFP} \quad (2)$$

[475] *Id*.; *see infra* Appx. B (explaining this approach in detail).

[476] *See, e.g.*, Letter from Kyle J. Fiet, Counsel for AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark E. Meitzen and Philip E. Schoech, Christensen Associates, "Assessment of the FCC's Proposed Options for the Special Access Price Cap X-Factor," at 3-4 (filed June 28, 2016) (AT&T June 28, 2016 Letter); Sprint Comments at 6 & Ex. E, Sappington & Zarakas Decl. at 5-7.

[477] *See, e.g.*, *1999 Price Cap Review FNPRM*, 14 FCC Rcd at 19721, para. 10. When it last set a last productivity-based X-factor in 1997, the Commission used Automated Reporting Management Information System (ARMIS) data to calculate the historical difference in productivity growth between incumbent LECs and the economy nationwide for a given period, specifically the difference between incumbent LEC TFP change and economy-wide TFP change. *1997 Price Cap Review Order*, 12 FCC Rcd at 16679, para. 91.

[478] *1997 Price Cap Review Order*, 12 FCC at 16679, para. 91 (subsequent history omitted).

[479] *1999 Price Cap Review Order*, 14 FCC Rcd at 19721, para. 11.

[480] *Id.* at 19720-21, paras. 9-11.

[481] *Id.* at 19721, para. 12 & n.25 (citing *1997 Price Cap Review Order*, 12 FCC Rcd at 16657).

[482] *Id.* at 19721, para. 13 & n.26 (citing *1997 Price Cap Review Order*, 12 FCC Rcd at 16657).

[483] *Further Notice*, 31 FCC Rcd at 4877, para. 405.

No commenter challenges this basic TFP methodology. The X-factor analyses presented by the parties generally follow this approach.[484] Consistent with past practice, we conclude that we should apply this TFP methodology in our X-factor calculations.

b. Selecting an Appropriate Data Source

200. Having settled on a methodology for calculating the X-factor, we need to identify an appropriate data source. Upon review of the record, we find that KLEMS (Broadcasting and Telecommunications) is the only reliable and internally consistent dataset in the record for measuring incumbent LEC productivity and input prices.[485] We select that dataset for our X-factor calculations.

(i) Available Data Sources

201. The KLEMS (Broadcasting and Telecommunications) database was one of three datasets on which the Commission invited comment.[486] The other two consist of: (a) data from the peer review process in connection with the development of the Connect America Cost Model (CACM);[487] and (b) those data in combination with cost data that TDS Metrocom (TDS) submitted in this proceeding (CACM-TDS). All three datasets are described more fully in Appendix B. The Commission asked whether these datasets would provide a reasonable basis for estimating business data services productivity growth relative to growth in the general economy.[488]

202. The Commission also asked the parties to suggest adjustments to these datasets that might improve their utility as a measure of business data services productivity growth and requested that the parties suggest additional datasets that might better balance precision with administrative feasibility.[489] Only one party, Sprint, suggests an additional dataset—a version of KLEMS (Broadcasting and Telecommunications) that purportedly is restricted to data from the telecommunications industry (KLEMS (Telecommunications)).[490] Sprint also suggests refinements to the CACM dataset that, in Sprint's view, improve it.[491] We discuss these datasets in turn.

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[484] *See* AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 3-5; Letter from Russell P. Hanser, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark Schankerman and Pierre Régibeau, Charles River Associates, "Response to the FCC Further Notice: Regulation of DS1 and DS3 Services," at 9-14 (filed Aug. 9, 2016) (CenturyLink Aug. 9, 2016 Letter). We note that Sprint suggests a variation on this basic approach that we decline to adopt for the reasons stated in Appendix B. *See infra* Appx. B at 4-5, paras. 9-10 (discussing Sprint's proposed alternative X-factor formula); Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 16-17 (suggesting a different approach to calculate the X-factor).

[485] *See* U.S. Dept. of Labor, Bur. of Labor Statistics, *Multifactor Productivity, Nonmanufacturing Sectors and NIPA-level Nonmanufacturing Industries KLEMS Multifactor Productivity Tables by Industry*, http://www.bls.gov/mfp/mprdload.htm (last visited Oct. 28, 2016); *see also* U.S. Dept. of Labor, Bur. of Labor Statistics, *Industries at a Glance: Broadcasting: NAICS 515*, http://www.bls.gov/iag/tgs/iag515.htm (last visited Oct. 28, 2016); U.S. Dept. of Labor, Bur. of Labor Statistics, *Industries at a Glance: Telecommunications: NAICS 517*, http://www.bls.gov/iag/tgs/ iag517.htm (last visited Oct. 28, 2016).

[486] *Further Notice*, 31 FCC Rcd at 4877-80, paras. 406, 412-16.

[487] FCC, *Peer Review of Connect America Phase II Cost Model, Responses to Peer Reviews: Christiaan Hogendorn*, at 3-4 & Appx., https://www fcc.gov/general/peer-review-connect-america-phase-ii-cost-model (last visited Nov. 1, 2016).

[488] *Further Notice*, 31 FCC Rcd at 4869, para. 377.

[489] *Id.* at 4869-90, paras. 377-78.

[490] Sprint Comments at 48-49 & Ex. E, Sappington & Zarakas Decl. at 8, para. 15.

[491] Letter from Jennifer Bagg, Counsel for Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Declaration of Chris Frentrup and David E.M. Sappington (filed Aug. 31, 2016) (Sprint Aug. 31, 2016

(continued….)

203. *KLEMS (Broadcasting and Telecommunications)*. This dataset provides yearly industry-level measures of input prices and total factor productivity. This dataset has many merits because, as commenters point out, it relies on "publicly available, annual industry-level data on industry-level measures of input prices and total factor productivity" and was "developed using rigorous total factor productivity principles and is a valid source of measuring total factor productivity and input price trends for various industries."[492] It also is "reliable and internally consistent,"[493] and based on "well-accepted economic theory and publicly available data."[494] But instead of being restricted to business data services or wireline telecommunications, this dataset provides data for the broadcasting and telecommunications sectors, which collectively have annual revenues approximately twelve times those for business data services.[495] These sectors include broadcasting, cable television, and satellite television distribution services, wireless telecommunications, mass market Internet access services, and the Voice-over-Internet Protocol (VoIP) industries, each of which has a cost structure and produces outputs different from the business data services industry.[496]

204. The parties dispute the effect of this broad scope on BDS productivity growth estimates that are derived from the KLEMS (Broadcasting and Telecommunications) dataset. Ad Hoc and Sprint contend that this broad scope creates a downward bias in those estimates.[497] AT&T and CenturyLink maintain, however, that any bias would overstate BDS productivity growth relative to productivity growth in the overall economy.[498] AT&T argues that "wireless services, broadband Ethernet services, and cable and wireline Internet access services" supply are more productive than legacy DSn and that the KLEMS (Broadcasting and Telecommunications) dataset therefore may overstate productivity growth for the TDM-based services to which the X-factor will apply.[499] CenturyLink asserts that growth in labor

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Letter); Letter from Dr. Chris Frentrup, Senior Economist, Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al. (filed Oct. 5, 2016) (Sprint Oct. 5, 2016 Letter).

[492] *Id*. at 5.

[493] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4; AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 7.

[494] AT&T Comments at 57.

[495] We calculated this percentage by dividing the total revenue for the combined broadcasting and telecommunications sectors in 2013 ($547 billion) from KLEMS (Broadcasting and Telecommunications) by the total BDS revenue in 2013 ($45 billion) from the *2015 Collection*, and then rounding. *See* U.S. Dept. of Labor, Bur. of Labor Statistics, *Multifactor Productivity, Nonmanufacturing Sectors and NIPA-level Nonmanufacturing Industries KLEMS Multifactor Productivity Tables by Industry*, http://www.bls.gov/mfp/mprdload.htm (last visited Oct. 25, 2016).

[496] *See* U.S. Dept. of Labor, Bur. of Labor Statistics, *Industries at a Glance - Broadcasting (except Internet): NAICS 515*, http://www.bls.gov/iag/tgs/iag515 htm (last visited Nov. 1, 2016); U.S. Dept. of Labor, Bur. of Labor Statistics, *Industries at a Glance—Telecommunications: NAICS 517*, http://www.bls.gov/iag/tgs/iag517 htm (last visited Nov. 1, 2016).

[497] Ad Hoc Comments at 16; Sprint Comments at 49 & Ex. E, Sappington & Zarakas Decl. at 10, para. 17; Letter from Dr. Chris Frentrup, Senior Economist, Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al. (dated Oct. 20, 2016) (Sprint Oct. 20, 2016 Letter).

[498] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 9; AT&T Comments at 57-58; CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4-5; Letter from Russell P. Hanser & Brian W. Murray, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Prof. Mark Schankerman and Dr. Pierre Régibeau, Charles River Associates, Supplemental Declaration: Comments on Frentrup-Sappington Report, at 11 (filed Oct. 6, 2016) (CenturyLink Oct. 6, 2016 Letter); CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 10-11 & Tbl. 1.

[499] AT&T Comments at 58.

productivity has been significantly higher in broadcasting and wireless telecommunications than in wireline telecommunications, and that it is therefore unlikely that broadcasting and wireless telecommunications have experienced lower overall productivity growth than wireline telecommunications.[500] Although the record falls short of providing the information we would need to resolve whether the KLEMS (Broadcasting and Telecommunications) dataset overstates or understates BDS productivity growth, we find that this dataset provides the best available information under the circumstances.

205. *CACM and CACM-TDS.* The CACM and CACM-TDS datasets, even with the refinements suggested by Sprint, are less than ideal. As explained more fully in Appendix B, the CACM dataset combines CostQuest cost share data from the CACM peer review process with labor cost data from the Bureau of Labor Statistics (BLS), and real estate price data from Moody's Investor Service and Real Capital Analytics. While this dataset provides a more direct focus on business data services than KLEMS (Broadcasting and Telecommunications) provides,[501] we find it neither reliable nor internally consistent.[502] Sprint's refinements to this database do not cure these fundamental problems.[503] Both of these datasets rely in part on data from the CACM peer review process that was developed to determine the forward-looking economic costs of providing broadband Internet access services. Those data provide at best a clumsy tool for determining historical total factor productivity growth for business data services.[504] In addition, as refined by Sprint,[505] the CACM dataset includes company-specific data that we and the parties to this proceeding are unable to fully evaluate and, therefore, may be unreliable.[506] We therefore reject the CACM dataset as well as that dataset as refined by Sprint as potential data sources for our X-factor calculations.

206. The CACM-TDS dataset adds historical cost data from TDS's incumbent LEC operations

[500] CenturyLink Oct. 6, 2016 Letter, Schankerman & Régibeau Decl. at 9-11.

[501] *See* Sprint Aug. 31, 2016 Letter, Sappington & Frentrup Decl. at 5-6; Sprint Oct. 5, 2016 Letter at 1-7.

[502] *See, e.g.*, CenturyLink Oct. 28, 2016 Letter, Attach., Prof. Mark Schankerman and Dr. Pierre Regibeau, Charles River Associates, Second Supplemental Declaration, at 5-8; Letter from Keith M. Krom, Executive Director - Senior Legal Counsel, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 1 & Attach., Second Supplemental Declaration of Mark E. Meitzen, Ph.D. and Philip E. Schoech, Ph.D., Christensen Associates, at 2-3 (dated Oct. 18, 2016) (filed Oct. 20, 2016) (AT&T Oct. 20, 2016 Letter).

[503] *See* Letter from Christopher T. Shenk, Counsel for AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Supplemental Decl. of Mark E. Meitzen, Ph.D. and Philip E. Schoech, Ph.D., at 11-17 (filed Sept. 22, 2016) (AT&T Sept. 22, 2016 Letter).

[504] *See* AT&T Sept. 22, 2016 Letter, Meitzen & Schoech Decl. at 3; Sprint Oct. 5, 2016 Letter at 3 (arguing that "it is reasonable for a regulatory agency to reflect the cost changes that an efficient supplier is likely to experience during the upcoming period of price cap regulation"); AT&T Oct. 20, 2016 Letter, Meitzen & Schoech Decl. at 4-5 (arguing that while "the X factor should be forward-looking" it should also "reflect the level of productivity growth that firms actually providing BDS may be expected to achieve" which is "best determined by looking to recent history of what productivity levels BDS producers have actually been able to achieve" as opposed to CACM "hypothetical" productivity).

[505] *See* Sprint Aug. 31, 2016 Letter, Frentrup & Sappington Decl. at 5-8; Sprint Oct. 5, 2016 Letter (responding to criticisms to Sprint's proposed CACM peer review approach).

[506] *See* AT&T Sept. 22, 2016 Letter, Meitzen & Schoech Decl. at 8-18; Letter from Keith M. Krom, Executive Director - Senior Legal Counsel, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., "CACM is not a Valid Basis for an X-factor Input Price Index," Mark E. Meitzen, Ph.D. and Philip E. Schoech, Ph.D., Christensen Associates, at 10 (dated Oct. 4, 2016) (filed Oct. 6, 2016) (AT&T Oct. 6, 2016 *Ex Parte*); CenturyLink Oct. 6, 2016 Letter, Schankerman & Régibeau Decl. at 8-9.

to the CACM dataset.[507] While the addition of the TDS data further tightens the focus on business data services, those data do "not address or eliminate any of the fundamental shortcomings with the CACM data" because they are "proprietary, unvalidated data from a single competitor that is seeking regulation."[508] We therefore reject the CACM-TDS dataset as a potential data source for our X-factor calculations.

207. *KLEMS (Telecommunications)*. To address, in part, the alleged overbreadth of the KLEMS (Broadcasting and Telecommunications) dataset, Sprint proposes a dataset that purportedly excludes broadcasting industry data and therefore, as asserted by Sprint, is preferable to KLEMS (Broadcasting and Telecommunications) as a tool for measuring business data services productivity growth.[509] The KLEMS (Telecommunications) dataset, however, suffers from many of the scope problems of the KLEMS (Broadcasting and Telecommunications) dataset with several additional problems. As an initial matter, excluding broadcasting data from the KLEMS (Broadcasting and Telecommunications) dataset would reduce, but not eliminate, any overbreadth problem. And we are unable to verify Sprint's assertion that the KLEMS (Telecommunications) dataset excludes broadcasting industry data.[510] Indeed, AT&T and CenturyLink et al. make credible arguments that the KLEMS (Telecommunications) dataset "comingle[s] broadcasting and telecommunications data."[511] This uncertainty over which industries are reflected in the KLEMS (Telecommunications) dataset precludes any finding that it provides a more narrow focus on business data services productivity growth than that provided by the KLEMS (Broadcasting and Telecommunications) dataset.[512] We are unable to determine what methodology the European Union used to translate KLEMS (Broadcasting and Telecommunications) data into KLEMS (Telecommunications) data and whether that data source is indeed restricted to telecommunications data.

208. Even if it does exclude broadcasting, the KLEMS (Telecommunications) dataset is problematic for at least two additional reasons. First, the KLEMS (Telecommunications) dataset omits critical energy, non-energy materials, and purchased services inputs, which means that it provides only an incomplete picture of the industries within its scope. This incompleteness means that the dataset fails to capture historical *total* factor productivity growth.[513] The KLEMS (Telecommunications) dataset also provides a value-added, rather than a gross output measure of productivity growth, which precludes an

[507] *See infra* Appx. B, Part III.D.

[508] AT&T Comments at 61 (citing AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 13).

[509] Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 8. Sprint, however, appears to have backed away from KLEMS (Telecommunications) in favor of its CACM dataset. *See* Sprint Aug. 31, 2016 Letter at 1 (determining "that that the Connect America Cost Model ('CACM') data track the input price growth rates for BDS more closely than other available data").

[510] *See* AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 3-4; CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 24, para. 61.

[511] AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 3-4; *see* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 24, para. 61 (citing Reitze Gouma and Marcel Timmer, Groningen Growth and Development Centre, *EU KLEMS Growth and Productivity Accounts 2012 release: Description of methodology and country notes for the United States* (2012), http://www.euklems net/data/nace2/USA_sources_12i.pdf); *see also* AT&T Sept. 22, 2016 Letter at 2.

[512] *See* AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 3-4; CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 21-26, paras. 55-67.

[513] *See* AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 4-5; CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 23, paras. 58-60.

"apples to apples" comparison to input prices which are based on gross input.[514] Each of these problems—lack of transparency, omission of critical inputs, and employing a value-added methodology—provides an independent basis for not using KLEMS (Telecommunications) in our X-factor calculations. We therefore reject this dataset as a potential data source for those calculations.[515]

(ii) Selection of Data Source

209. None of the datasets before us allow us to estimate with precision business data services productivity growth relative to growth in the general economy, and indeed of those datasets only KLEMS (Broadcasting and Telecommunications) is reliable and internally consistent. In these circumstances, we conclude that the better course is for us to use that dataset to determine business data services productivity and input price growth, relative to economy-wide productivity and input price growth, rather than postponing that determination pending a search for a better option. As the D.C. Circuit has recognized, the Commission endeavors to find the best solutions but, at times, must settle for solutions that are "reasonable under difficult circumstances."[516] The D.C. Circuit has noted:

> [W]hen an agency makes rational choices from among alternatives all of which are to some extent infirm because of a lack of concrete data, and has gone to great lengths to assemble the available facts, reveal its own doubts, refine its approach, and reach a temporary conclusion, it has not acted arbitrarily or capriciously.[517]

Here, where our X-factor decision provides only our "'tentative opinion' about the dividing line between reasonable and unreasonable rates for the limited purpose of exercising [our] suspension power" under section 204 of the Act,[518] we believe that we may properly rely on the KLEMS (Broadcasting and Telecommunications) dataset in our X-factor calculations. We now turn to those calculations.

c. X-factor Calculations

210. We determine the productivity-based X-factor as follows. First, we use KLEMS (Broadcasting and Telecommunications) data to develop a range of X-factors for four periods: 1987 to 2014; 1997 to 2014; 2005 to 2014; and 2009 to 2014. Second, from this range of X-factors we develop a zone of reasonableness from which it would be appropriate to select an X-factor. Third, we decide not to adjust that zone to compensate for KLEMS (Broadcasting and Telecommunications)'s overbreadth. Finally, we select the X-factor from within this zone.

211. *Data Periods*. We use four different data periods to calculate four different X-factors to gauge the sensitivity of KLEMS (Broadcasting and Telecommunications)-based calculations to different data periods and because there is no single, correct data period that we might use for this purpose. The

[514] *See* AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 4-5.

[515] *See* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 8.

[516] *NARUC v. FCC*, 737 F.2d 1095, 1141 (D.C. Cir. 1984).

[517] *Id.* at 1141-42.

[518] *See Policy and Rules Concerning Rates for Dominant Carriers, Report and Order and Second Further Notice of Proposed Rulemaking*, CC Docket No. 87-313, Report and Order, 4 FCC Rcd 2873, 3306, para. 895 (1989) (quoting *Trans Alaska Pipeline Rate Cases*, 436 U.S. 631, 653 (1978)); Birch et al. Aug. 28, 2015 Letter at 5. We note that changes to our price cap regime do not require a hearing or implicate the Commission's prescription authority under section 205 of the Act. 47 U.S.C. § 205.

four data periods are: 1987 to 2014; 1997 to 2014; 2005 to 2014; and 2009 to 2014. We note that Sprint supports using 1997 to 2014,[519] and AT&T supports using 2009 to 2014.[520]

212. *1987 to 2014*. This is the longest period for which KLEMS (Broadcasting and Telecommunications) data are available. As the longest timeframe, this data period has the most observations and therefore collectively these observations contain the most information. In particular, this period includes two complete business cycles.[521] This is an advantage because productivity increases when the economy expands and decreases when the economy contracts. Measuring productivity over at least one complete business cycle increases the likelihood that the results represent the future state of the economy. Two complete cycles might be preferred to one because no two business cycles are alike. One business cycle may not represent the future any better than the other.[522]

213. This period also includes a significant amount of time before and after the two business cycles. Using a timeframe that includes the maximum period for which data are available minimizes the likelihood of an arbitrary choice among many possible shorter periods within the longer period, given that there is no obviously correct choice. The disadvantage of this time period is that the data from the earliest years in the period may be stale or otherwise reflect economic conditions that are unlikely to persist into the future. The value of the most recent and most relevant data within this time period might not be apparent if combined with older data that are stale and irrelevant.

214. *1997 to 2014*. This period includes one complete business cycle.[523] As discussed above, at least one complete business cycle should be included in the data on which a productivity study is based because productivity is procyclical. Sprint supports using 1997 to 2014 data instead of 2005 to 2014 data because the latter period largely reflects the longest and deepest recession the U.S. has experienced since 1945.[524] Sprint concludes that a longer time period is therefore likely to provide a better estimate of future productivity growth.[525] An additional reason to use this period, or one longer, is that the current economic expansion is 93-months-old, which is significantly longer than the 58-month average length of prior expansions going back to 1945. A shorter period may give too much weight to a relatively long-period of expansion. Another reason why this current economic expansion is unique is that the average annual growth rate of this expansion is the lowest among expansions since 1945, approximately 2.1 percent per year.[526]

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[519] *See* Sprint Aug. 31, 2015 Letter, Frentrup & Sappington Decl. at 8, para. 16; Sprint Oct. 5, 2016 Letter at 3 ("For purposes of comparability with the [Frentrup and Sappington] analysis, I continue to base the one-time price cap adjustment on TFP values for the period 2005-2014.").

[520] AT&T Reply at 76-77 (noting that BLS revised its TFP statistics to include data for 2014); AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 1-2; *see also* AT&T Comments at 57.

[521] These cycles consist of the periods defined with respect to consecutive troughs beginning in March 1991 and ending in November 2001, and beginning in November 2001 and ending in June 2009.

[522] This assumes the absence, for example, of some type of knowable, significant structural change or persistent trend that is reflected only in the more recent cycle.

[523] This is the period from the trough in November 2001 to the trough in June 2009.

[524] Sprint Aug. 31, 2016 Letter, Frentrup & Sappington Decl. at 10.

[525] *Id*.

[526] Jim Puzzanghera and Don Lee, *The economic recovery just turned 7, here's why it feels so weak*, Los Angeles Times (June 6, 2016), http://www.latimes.com/business/la-fi-economic-expansion-20160606-snap-story.html. Eric Morath, *Seven Years Later, Recovery Remains the Weakest of the Post-World War II Era*, Wall Street Journal (July 29, 2016), http://blogs.wsj.com/economics/2016/07/29/seven-years-later-recovery-remains-the-weakest-of-the-post-world-war-ii-era/.

215. *2005 to 2014*. AT&T argues that this period balances the tradeoff between short and long data periods.[527] AT&T claims that data for a shorter period better captures recent productivity trends, but that such a period might reflect large variation in productivity that would lead to unstable X-factor projections.[528] In contrast, AT&T asserts that a longer period might produce a more stable series, but such a period might include stale data that are irrelevant to forward-looking productivity projections.[529] One disadvantage of this timeframe is that it does not encompass at least one complete business cycle. This problem perhaps is partially mitigated because the period includes the December 2007 peak and June 2009 trough of the current business cycle and a large fraction of the current expansion.

216. *2009 to 2014*. This period minimizes the number of observations that contain stale information and depicts recent trends. The main disadvantage of this period is that it does not contain at least one complete business cycle. In fact, this period only includes years of expansion. So, this period might not provide data representative of future productivity growth.

217. Table 5 provides, for each of these four periods, X-factors calculated using Equation (2) and KLEMS (Broadcasting and Telecommunications) data.

Table 5. KLEMS (Broadcasting and Telecommunications) X-factors

	Compound Annual Growth Rates			
	A	B	C	D = A - (B - C)
Year Range	**GDP Price Index**	**Industry Price Index**	**Industry Productivity**	**X-factor**
1987 – 2014	2.2%	1.5%	1.3%	2.0%
1997 – 2014	2.0%	1.5%	1.9%	2.3%
2005 – 2014	1.9%	1.5%	1.6%	2.0%
2009 – 2014	1.7%	0.8%	0.8%	1.7%

Source: Bureau of Economic Analysis & Bureau of Labor Statistics

d. Zone of Reasonableness

218. The four data periods reflected in Table 5 establish a zone of productivity-based X-factor estimates of between 1.7 and 2.3 percent. This zone is relatively narrow, as the data period does not have a very large impact on the value of the X-factor. For example, the difference between the lowest and the highest percentages is 0.6 percentage points. The arithmetic average and the mid-point of the four X-factors are both 2.0 percent. The average implicitly weights the most-recent observations the most and the earliest observations the least because the most recent observations are in the most periods and the earliest observations are in the fewest periods.

219. We find that it would be unreasonable to adjust this zone either upward or downward to account for the broad scope of the KLEMS (Broadcasting and Telecommunications) dataset from which this zone was derived. Any such adjustment would necessarily reflect our determination that this overbreadth creates either a downward bias in our productivity growth estimates (which could lead to our

[527] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 8-9; *see also* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4.

[528] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 8-9; *see also* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4.

[529] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 8-9; *see also* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4.

adjusting the range upward) or an upward bias (which could lead to our adjusting the range downward).[530] The parties provide sharply divergent views on the direction of any possible adjustment. On the one hand, several parties argue that price cap LECs are realizing decreasing BDS per unit costs from the growth in packet-switched services, such as Ethernet, as customers transition from TDM to packet-switched services.[531] Other parties maintain that price cap LECs have achieved little productivity growth relative to that in the overall economy and that the DS1 and DS3 services that will be subject to price caps have not shared in any decrease in per unit costs.[532]

220. Cost-reducing growth is clearly occurring in price cap LECs' overall BDS operations. A significant portion of the assets, particularly outside plant, used to provide DS1s and DS3s, are also used to provide higher bandwidth circuit-based services or packet-based services, and *vice versa*. The more such sharing occurs (i.e., the more demand density increases), the lower both the incremental and average cost of any service, and total factor productivity increases. These cost reducing effects occur and apply to remaining DS1 and DS3 services, even when higher bandwidth circuit-based services or packet-switched services are substituted for them, so long as the two sets of services share costs.

221. Growth in providing higher bandwidth circuit-based services and packet-based services is outpacing declining DS1 and DS3 services, a trend that strongly suggests that overall unit costs will continue decreasing into the foreseeable future. Price cap LECs are investing aggressively in modern packet-based telecommunications networks and services. AT&T, for example, announced that by the year 2020, 75 percent of its network will be controlled by software.[533] AT&T disclosed in an annual report that it was "focused on building a modern network architecture that will provide the highest efficiency and productivity in the industry" and "[t]o make that happen" the "biggest [front] by far is transforming [AT&T's] network from hardware to software-centric" which allows AT&T to "deliver the most network traffic at the lowest marginal cost in the industry."[534] Verizon announced a software-defined networking-based strategy "to introduce new operational efficiencies and allow for the enablement of rapid and flexible service delivery to Verizon's customers."[535]

222. The record does not make clear, however, to what extent, if any, these decreasing unit costs and overall productivity gains will apply to the services that will remain under price caps, which for practical purposes consist of DS1 and DS3 channel terminations. Indeed, it is possible that, for DS1 and

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[530] *Compare* Ad Hoc Comments at 16; Sprint Comments at 49 & Ex. E, Sappington & Zarakas Decl. at 10, para. 17; Sprint Oct. 20, 2016 Letter at 2 *with* AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 9; AT&T Comments at 57-58; CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4-5; CenturyLink Oct. 6, 2016 Letter, Schankerman & Régibeau Decl. at 10-11 & Tbl. 1.

[531] *E.g.*, Sprint Comments at 44 & Ex. E, Sappington & Zarakas Decl. at 3; CFA et al. Comments at 32-36; Ad Hoc Reply at 14-16 (citing Gately Reply Declaration at 7, para. 11 & n.16).

[532] AT&T Comments at 55-56; ITTA Comments at 22; CenturyLink et al. Comments at 70-76.

[533] John Donovan, Chief Strategy Officer and Group President – AT&T Technology and Operations, *How Do You Keep Pace With a 100,000 Percent Increase in Wireless Data Traffic? Software* (Mar. 02, 2015); http://about.att.com/innovationblog/3215howdoyoukeeppace; Sean Buckley, FierceTelecom, *AT&T enables 34% of network with software capabilities* (Jan. 4, 2017), http://www.fiercetelecom.com/telecom/at-t-enables-34-network-software-capabilities.

[534] AT&T Inc. 2015 Annual Report at 3 (2015), http://www.att.com/Investor/ATT_Annual/2015/downloads/att_ar2015_completeannualreport.pdf.

[535] Press Release, Verizon, Verizon Announces Software Defined Networking Strategy, SDN Initiative Means Rapid Time-to-Market Agile Network and Operational Efficiencies (Apr. 28, 2015), http://www.prnewswire.com/news-releases/verizon-announces-software-defined-networking-strategy-300073315.html; *see Emerging Wireline Order*, 30 FCC Rcd at 9374, para. 2 & n.10.

DS3 services in general, declining utilization of incumbent LEC plant and rising service-specific costs will more than offset any overall gains in BDS productivity.[536] As AT&T points out, "demand for DSn services has been in rapid decline in recent years, as price cap LECs retire their legacy TDM networks."[537] As a result, price cap LECs are likely experiencing "very low utilization on [their] legacy TDM switches" and the "accompanying loss of scale economies suggests that it is unlikely that price cap LECs have achieved productivity gains that are in excess of inflation" for DS1 and DS3 services.[538] This declining utilization of DSn-specific plant means that providers must amortize shared costs among fewer customers (i.e., unit costs are likely rising).[539] It therefore appears that, for DS1 and DS3 services generally, price cap LECs' operating expenses may have fallen at a much slower rate than the demand for their services, causing their average cost of providing DSn services to steadily climb."[540]

223. Nor does the record make clear whether any overall trend in DS1 and DS3 productivity growth extends to the areas that will remain under price caps. These non-competitive areas have significantly less demand density than the competitive areas that will no longer be subject to the price cap regime.[541] The price cap LECs therefore may be less likely to achieve the same gains in economies of scale in non-competitive areas than in competitive areas. Whether these gains would be higher or lower than elsewhere cannot be determined from the record. The price cap LECs' initial price cap indices (and consequently all changes to those indices) reflected the costs of serving all areas within those LECs' service territories. CenturyLink argues adjustments to those indices should account for the higher costs of serving the areas that will remain under prices caps "[w]hether due to unique geographic difficulties, insufficient population density to generate economies of scale, or an array of other possible rationales."[542] However, the X-factor is determined by the rate of change of costs, not by whether the absolute level of costs is higher or lower in a given location.

224. While the record does not enable us to resolve the disputes over price cap LECs' productivity growth and ability to recover the costs of serving non-competitive areas with absolute

[536] AT&T Comments at 55-56; ITTA Comments at 22; CenturyLink et al. Comments at 70-76.

[537] AT&T Comments at 55 & n.158 (citing Brief of AT&T Inc. in Support of its Direct Case, WC Docket No. 15-247, Attach. 1, Decl. of Paul Reid, at para. 4 (filed Jan. 8, 2016) (AT&T Jan. 8, 2016 Direct Case Brief)).

[538] AT&T Comments at 55.

[539] CenturyLink et al. Comments at 70. CenturyLink, for example, asserts that its incumbent LEC operating expense per access line **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** and its per business data service circuit **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** *See* Letter from Melissa Newman, Vice President – Regulatory Affairs, CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 15-247 et al., at 2-3 (Aug. 12, 2016).

[540] *See* Letter from Melissa Newman, Vice President – Regulatory Affairs, CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 15-247, 05-25, RM-10593, at 2 (Aug. 15, 2016).

[541] *See, e.g.*, Letter from Mike Saperstein, Vice President – Federal Regulatory Affairs, Frontier, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Frontier and CenturyLink, "Business Data Services: Proposals vs Market Realities," at 5 (filed Sept. 8, 2016) ("The areas most likely to be deemed non-competitive are likely to be the areas with the highest costs of service because there is limited economic incentive to deploy there.").

[542] CenturyLink et al. Comments at 77-79; *but see* Letter from Michael J. Jacobs, Vice President - Regulatory Affairs for ITTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 2-3 (filed Nov. 4, 2016) (noting that "to the extent that ITTA's price cap member companies were rate-of-return regulated at the time of the *CALLS Order*, when they converted to price cap regulation their business data services rates were far below those price cap rates" that had been subject to the CALLS plan and that "CenturyTel reported that its rate-of-return DS1 and DS3 weighted average composite rates to be 73 percent and 83 percent lower, respectively, than what they would have been under the CALLS plan").

certainty, we find that our KLEMS (Broadcasting and Telecommunications)-based calculations likely overstates, rather than understates, BDS productivity growth in those areas. The price cap LECs have not submitted the company-specific input price and output data that we would need to quantify this overstatement (and adjust the zone of reasonableness downward). We therefore make no such adjustment.

225. We reject Sprint's argument that we should adjust the zone of reasonableness upward to bring it into line with prior X-factor prescriptions, which were based on relatively narrow sets of data related almost exclusively to price cap LEC operations rather than broad datasets such as KLEMS (Broadcasting and Telecommunications). Sprint points out that in the *1999 Price Cap Performance Review* proceeding, Commission staff computed X-factors for each of the years 1986 through 1998 using price cap LEC-specific data that were significantly higher than the X-factors that would have been computed using KLEMS (Broadcasting and Telecommunications) data.[543] We find that this comparison fails to account for differences between the task before the Commission in the *1999 Price Cap Performance Review* proceeding, which was to determine an X-factor for all special and switched access services to be provided by price cap LECs, and our task here of determining an X-factor only for those business data services that price cap LECs will provide in non-competitive areas.[544]

e. Selection of X-factor

226. We conclude that we should select an X-factor below the top of the zone of reasonableness, 2.3 percent, in order to recognize the diminishing share DS1 and DS3 services have had, and will continue to have, of the overall business data services market. Indeed, over the longer term, these services will be replaced by Ethernet services or other more advanced business data services made possible by the transition to IP-based services transmitted over fiber. As demand for DS1 and DS3 services continues to fall, the costs directly attributable to (in contrast to the costs for assets shared between those services and packet-based services) maintaining this legacy technology, will begin to rise. For example, over time the volume of TDM equipment sales will fall to levels that deny manufacturers economies of scale.[545] Similarly, there will likely be additional costs associated with warehousing, work programs, and maintaining expertise in TDM technology, while moving aggressively toward the widespread deployment of Ethernet and other advanced technologies.

227. Requiring DS1 and DS3 rates to be reduced by percentages that ignore the transition from a legacy, TDM technology to an advanced technology could require the incumbent LECs to supply DS1s and DS3s at rates that do not recover their costs, and that inefficiently incentivize businesses to rely on DS1 and DS3 services, rather than more advanced business data services. Presumably, there are customers that will wish to continue to rely on a legacy technology at least for a period of time even though a new technology is readily available because it is less expensive on a net present basis for them to do so. In a competitive market, customers that continued to rely on a legacy technology as a new technology begins to dominate the market would be charged higher prices if costs directly attributable to the old technology were rising. Our X-factor decision should incorporate this aspect of competitive markets.

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[543] *See* Sprint Oct. 20, 2016 Letter at 1-3 (comparing X-factors derived from price cap LEC-specific data with X-factors derived from KLEMS (Broadcasting and Telecommunications) data, with the factors in the first group ranging from 5.31 to 6.14 percent and the factors in the second group ranging from 1.20 to 1.81 percent depending on the time period from which the underlying data are drawn); *see 1999 Price Cap Performance Review FNPRM*, 14 FCC Rcd at 19748-83, Appx. B.

[544] *See* (AT&T Oct. 25, 2016 Letter at 2, 16-19; CenturyLink Oct. 28, 2016 Letter, Schankerman & Régibeau Decl. at 8-9.

[545] *See* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 32-36.

228. The lower-bound of the zone of reasonableness is 1.7 percent, a percentage based on data from 2009 to 2014. While this percentage provides insight into the most-recent trends in productivity and input prices, it reflects only a period of unusual macroeconomic expansion, as explained above. We find this period too short and too unrepresentative by itself to provide reliable insight into future business data services productivity growth. No party has submitted an X-factor study or similar data-based analysis purporting to show that the X-factor should be lower than 2.0 percent. AT&T's proposed X-factor, like our X-factors, reflect KLEMS (Broadcasting and Telecommunications) data. AT&T used data for 2005 to 2014 in calculating its X-factor, a period for which the X-factor is 2.0 percent. In these circumstances, we find that the X-factor we select should be above the lower bound of reasonableness.

229. As mentioned, the KLEMS (Broadcasting and Telecommunications) data on which this zone of reasonableness is based is overly broad; and, although we think an upward bias more likely, we are unable to resolve the dispute among the parties as to whether this broad scope creates a downward or upward bias. Our inability on the record before us to quantify either the magnitude or the direction of this bias supports selection of the average or the mid-point of the four X-factors, both of which are 2.0 percent. Taking all of these factors into account, we prescribe an X-factor of 2.0 percent. This X-factor reasonably assigns weight to the four different X-factors and accounts to the extent possible for the uncertain effects of bias in the overly-broad data.

3. Methodology for Setting Inflation Measure

230. We retain the U.S. Department of Commerce's Bureau of Economic Analysis's (BEA's) chain-weighted GDP-PI as the measure of inflation that price cap LECs will use in their price cap index calculations. As a chain-weighted index, GDP-PI captures economy-wide inflation over the medium-term and long-term comprehensively and "significantly more accurate[ly]" than fixed-weighted indexes, which become unrepresentative after a few years of change.[546] We find no alternative measure of inflation that is as accurate as GDP-PI in the medium and long-term and that is not susceptible to carrier influence or manipulation. Accordingly, we retain GDP-PI as the inflation measure in our price cap formula.

4. No Catch-Up Adjustment Is Warranted

231. The price cap indices have been effectively frozen since the CALLS plan expired on June 30, 2005. We conclude that no catch-up adjustment to those indices is warranted.

232. We use KLEMS (Broadcasting and Telecommunications) data for 2005 to 2014 to determine whether a catch-up adjustment is warranted. Calculations based on those data will identify, to the extent possible on the record before us, changes not otherwise reflected in incumbent LEC industry productivity and input price growth, relative to economy-wide productivity and input price growth, since the day after the CALLS plan expired (July 1, 2005).[547] First, we use KLEMS (Broadcasting and Telecommunications) data to calculate compound annual rates of growth in broadcasting and telecommunications productivity and input prices, and then calculate the difference between these two rates. Second, we grow the value of this annual difference over a 12-year, five-month period at the compound annual rate of growth represented by the value itself to calculate the total difference between incumbent LEC productivity and input price growth over the period. This final number is the percentage

[546] *See CALLS Order*, 15 FCC Rcd at 1038, para. 183; AT&T Reply at 81 ("GDP-PI is the measure that the Commission has used since the inception of price caps. GDP-PI is preferable: 'because GDPPI comprehensively amalgamates national productivity and input price growth, [and] there is no need to separately determine economy-wide total input price growth and economy-wide total factor productivity growth in the X factor calibration.'") (quoting AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 6).

[547] We decline to adopt any catch-up adjustment for the period prior to the expiration of the CALLS plan, as AT&T suggests. *See* AT&T Comments at 64. Any such adjustment would reopen matters resolved in the *CALLS Order*. *See CALLS Order*, 15 FCC Rcd at 13035, para. 175.

by which the baseline price cap levels would be adjusted, upward or downward, to accurately reflect productivity changes during the period since the CALLS plan expired. Finally, we evaluate whether we should adjust price cap levels by this catch-up factor.

233. We use KLEMS (Broadcasting and Telecommunications) data for 2005 to 2014 to estimate historical changes in levels of productivity and input prices for purposes of the catch-up calculation. The year 2014 is the most recent year for which KLEMS (Broadcasting and Telecommunications) data are available, and data are published only for calendar years. As we explain below, we adopt December 1, 2017 as the effective date for the going-forward X-factor. As we have no data for 2015 to November 2017, we extrapolate annual growth rates based on 2005 to 2014 data for an additional 35 months beyond the end of the data (i.e., for 2015, 2016, and 11 months of 2017), because mathematically it is simple, the period of extrapolation is relatively short, and there is no obviously superior method. We also assume that productivity and input price growth rates over the second half of 2005 were the same as over the entire year, again for simplicity and the lack of any obviously superior way to exclude the first six months of that year or reconcile the use of calendar-year data with an estimation period that reflects tariff years that begin on July 1.

234. KLEMS (Broadcasting and Telecommunications) compound annual rates of growth in productivity and input prices for 2005 to 2014, and the difference (the potential catch-up factor) between these two rates of growth are set forth in Table 6 below. To calculate the potential catch-up factor, we grow the annual difference in the compound rates of growth over a 12-year, five-month period.

Table 6. Potential Catch-up Adjustment for the Period from July 1, 2005 to November 30, 2017

	Compound Annual Growth Rates			
	A	B	C = A - B	(1 + C) ^ 12.417 - 1
Data Period	**Industry Price index**	**Industry Productivity**	**Annual Difference**	**Catch-up Adjustment**
2005 - 2014	1.49%	1.60%	-0.11%	-1.40%

Source: Bureau of Economic Analysis & Bureau of Labor Statistics.

235. We decline to require price cap LECs to implement a catch-up adjustment to baseline price cap levels. First, the annual difference between the KLEMS (Broadcasting and Telecommunications) industry price index and productivity is only -0.11 percent annually, which when compounded over a 12-year, five-month period results in only a -1.40 percent potential reduction in baseline price cap levels. This suggests that historical BDS productivity gains for the period 2005 to 2017 were almost exactly offset by inflation, which is what the X-factor has been set to since the expiration of the CALLS plan on June 30, 2005.[548] Indeed, the annual and 12-year, five-month differences of -0.11 percent and -1.40 percent, respectively, are so small as to be well within the margin of error for our calculations. Any catch-up adjustment would apply only to lower bandwidth business data services, such as DS1s and DS3s, and only to the extent price cap LECs provide them within non-competitive areas. We find it likely that productivity growth for these services in these areas lagged productivity growth for price cap LECs' business data services generally by at least 0.11 percent annually and 1.40 percent cumulatively between 2005 and 2017.[549]

[548] *See* AT&T Oct. 25, 2016 Letter at 16-17.

[549] *See, e.g.*, AT&T Comments at 19 (citing Second IRW Paper at 7-17) (noting that "competitors tend to enter in areas where prices will naturally be lower due to other conditions, such as favorable economic conditions (e.g., lower costs and higher revenue opportunities"); CenturyLink et al. Comments at 66-81; *see also* Letter from Karen Brinkmann, Counsel for Cincinnati Bell, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 2 (filed Nov. 4, 2016) (asserting that for mid-sized incumbent LECs there would be a "disproportionate impact the forced reductions would have on these carriers that, unlike the largest price cap companies, do not realize significant (continued….)

236. Two additional factors drive our determination not to adopt a potential catch-up adjustment. First, and most importantly, the X-factors used during the CALLS plan itself were not productivity-based and the X-factors adopted before that were struck down by the D.C. Circuit. In other words, if we were going to adjust price caps to "catch up" to productivity changes, there are compelling arguments that we could not stop at 2005 but might instead need to return to 2000 or even 1997—with price caps increasing appreciably. Rather than seeking to determine the exact path of productivity over the past 20 years, we believe it more prudent to rely on existing price caps levels, which at least have the benefit of minimizing potential rate shock to consumers. Second, we recognize that carriers have entered price-cap regulation at different points over the last 25 years, and so any catch-up adjustments would need to reflect that fact. It would make no sense, for example, to impose a catch-up adjustment calculated to reflect productivity over the last 12 or 20 years to a carrier that converted to price cap regulation just five years ago. And weighing the uncertain benefit of such adjustments to consumers against the cost to carriers (and ultimately consumers) of applying these differing adjustments as well as the cost to the Commission to monitor compliance, we conclude that not imposing a catch-up adjustment serves the public interest.

a. Additional Price Cap Adjustment Mechanisms

237. We consider several potential features of the price cap regime whose implementation could affect price cap rates.[550] We retain the low-end adjustment mechanism for price cap LECs that meet certain conditions. We, however, decline to incorporate into our price cap regime three mechanisms that would affect the X-factor—a consumer productivity dividend, a growth or "g" factor, and earnings sharing between ratepayers and carriers, or to subdivide the special access price cap basket into different categories or subcategories.[551]

238. *Low-End Adjustment*. We retain a low-end adjustment mechanism because we find it provides an appropriate backstop to ensure that carriers are not subject to protracted periods of low earnings that impair their ability to attract capital and provide service. This adjustment will only be available to price cap LECs to the extent they provide business data services in non-competitive areas. Carriers that obtained pricing flexibility under the Commission's prior rules, exercise downward pricing flexibility pursuant to this Order (for example, by entering into a contract tariff with a customer), or elect the option to use Generally Accepted Accounting Principles (GAAP) rather than the Part 32 Uniform System of Accounts as set forth in our recent *Part 32 Accounting Order* will be ineligible for a low-end adjustment.[552] We find that, consistent with past practice, setting the low-end adjustment mark at 8.75 percent, 100 basis points below the authorized rate of return for rate of return carriers, will continue to ensure that price cap LECs have the opportunity to attract sufficient capital.

239. Historically, the low-end adjustment permitted price cap LECs that earn a rate of return 100 basis points or more below the prescribed rate of return for rate-of-return carriers to temporarily

(Continued from previous page)
offsetting savings from wireless, long-distance and CLEC operations that purchase BDS services") (Cincinnati Bell Nov. 4, 2016 *Ex Parte*).

[550] *See Further Notice*, 31 FCC Rcd at 4872-75, paras. 387-400.

[551] *Id*.

[552] *See Comprehensive Review of the Part 32 Uniform System of Accounts, Jurisdictional Separations and Referral to the Federal-State Joint Board*, WC Docket No. 14-130, CC Docket No. 80-286, Report and Order, FCC 17-15, para. 29 (rel. Feb. 24, 2017) (*Part 32 Accounting Order*) (allowing price cap LECs to use certain targeted accounting rules in lieu of the Part 32 Uniform System of Accounts rules). In view of this condition, we find moot Sprint's argument that we will have no reliable basis for determining whether a low-end adjustment is warranted. *See* Sprint Comments at 60. On the contrary, any price cap LEC seeking a low-end adjustment will have present Part 32 accounting data supporting its request.

increase their price cap indices in the next year to a level that would allow them to earn 100 basis points below the prescribed rate of return.[553] Unusually low earnings may be attributable to an error in the productivity factor, the application of an industry-wide factor to a particular LEC, or unforeseen circumstances in a particular area of the country. Failure to include any adjustment for such circumstances could harm customers as well as stockholders of such a LEC, as a below-normal rate of return over a prolonged period could threaten the LEC's ability to raise the capital necessary to provide modern, efficient services to customers.[554] We therefore retain the low-end adjustment mechanism.

240. The low-end adjustment mechanism permits a one-time PCI adjustment to a single year's rates to avoid back-to-back earnings below a benchmark.[555] If a price cap LECs' earnings fall below the low-end adjustment mark in a base year period, it is entitled to adjust its rates upward to target earnings to an amount not to exceed the low-end mark, using the period as a baseline.[556] In the past, the Commission used 100 basis points below the authorized rate of return for rate-of-return carriers as the low-end adjustment mark.[557] The authorized rate of return for rate-of-return carriers is presently 9.75 percent, and 8.75 percent is 100 basis points below that percentage.[558] The latter percentage is above the embedded cost of debt the Commission determined for each price cap LEC in March 2016. An 8.75 percent rate of return should provide each eligible price cap LEC with the opportunity to meet its existing obligations to debtholders and attract sufficient capital while continuing to provide services.

241. We reject Sprint's argument that we should not base our low-end mark on the authorized rate of return for rate-of-return carriers because that rate does not reflect the large price cap LECs' cost of capital.[559] The rate reflects a weighted average cost of capital that was calculated using data from a proxy group that included large price cap LECs (e.g., AT&T, Verizon, and CenturyLink), mid-sized price cap LECs (e.g., FairPoint, Frontier, Hawaiian Telcom, and Windstream), as well as publically traded rate-of-return LECs.[560] Accordingly we set the low-end adjustment mark at 8.75 percent.

242. *Consumer Productivity Dividend.* We decline to incorporate a consumer productivity dividend (CPD) adjustment into the X-factor adopted in this Order.[561] In instituting price caps in 1990, the Commission expected that incentive regulation would result in greater productivity gains than LECs had historically achieved under rate of return regulation.[562] The CPD was designed to ensure that

[553] 47 CFR § 61.45(d)(1)(vii) (including within the exogenous cost changes adjustments to the price cap indices, retargeting the price cap indices to the level specified by the Commission for carriers whose base year earnings are below the level of the lower adjustment mark); *2005 Special Access NRPM*, 20 FCC Rcd at 2011, paras. 45-47.

[554] *1990 Price Cap Order*, 5 FCC Rcd at 6804, para. 147; *see* Sprint Comments at 60.

[555] *1999 Pricing Flexibility Order*, 14 FCC Rcd at 14307, para. 168.

[556] *1990 Price Cap Order*, 5 FCC Rcd at 6802, para. 127.

[557] *Further Notice*, 31 FCC Rcd at 4873, para. 391.

[558] *Connect America Fund et al*., WC Docket Nos. 10-90 et al., Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, 31 FCC Rcd 3087, 3171, para. 226 (2015) (*2015 Rate of Return Order*).

[559] *See* Sprint Comments at 60.

[560] *See 2015 Rate of Return Order*, 31 FCC Rcd at 3322-23, Appx. J & K (listing price cap LECs as part of the proxy group used to calculate the WACC).

[561] *Further Notice*, 31 FCC Rcd at 4871, para. 384. The Commission has previously noted that in a competitive market cost reductions are passed to consumers in the form of lower prices. *1997 Price Cap Review Order*, 12 FCC Rcd at 16690-91, para. 124. The CPD was an effort to replicate the competitive market.

[562] *See 1990 Price Cap Order*, 5 FCC Rcd at 6799, para. 124.

ratepayers would benefit from these additional gains.[563] The 2.0 percent X-factor adopted in this Order reflects all anticipated future business data services productivity growth.[564] There should be no additional gains beyond those captured in this X-factor. We therefore do not include a CPD in the X-factor.

243. *Growth Factor*. We decline to adopt a growth or "g" factor adjustment to the price cap indices because we find that our 2.0 percent X-factor already accounts for average cost decreases due to demand growth, which the "g" factor was designed to capture.[565] We find that a "g" factor is unnecessary because the 2.0 percent X-factor should capture all of the productivity changes for business data services, including demand growth.[566] If business data services demand growth leads to the realization of scale economies, input prices fall, and productivity increases, which our X-factor calculations should capture. Therefore, we do not include a growth factor similar to the "g" factor in the price cap index formula for special access services.

244. *Earnings Sharing*. We decline to reinstate earnings sharing arrangements between ratepayers and carriers. In the *Further Notice*, the Commission asked whether it should reinstate earnings sharing, which had been a feature of the Commission's original price cap system.[567] In 1997, the Commission eliminated earnings sharing, finding that it blunted price cap LECs' efficiency incentives and that eliminating it would remove vestiges of rate of return regulation from the price cap system.[568] The only party directly addressing this area opposes reinstating earnings sharing.[569] We find that the Commission's prior reasoning supporting eliminating earnings sharing persuasive, and there is no record support to overturn the Commission's past finding and reinstate earnings sharing.

245. *Baskets and Bands*. We decline to subdivide the special access basket into different categories and subcategories.[570] The only party addressing this area, Inteliquent, asks that we create a service basket subcategory for multiplexing services to ensure that any required TDM rate reductions flow through to these services, which it asserts have unreasonably high rates.[571] Simply creating a

[563] *See Id.* at 6799, para. 100.

[564] *See, e.g.*, AT&T Comments at 61 (arguing that there is no "conceivable justification" for a CPD); AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 4 (claiming a CPD is not appropriate because "the current proposed price cap plan for BDS represents neither a transition to a more incentivizing regulatory regime nor a relaxing of a regulatory constraint"); Sprint Comments at 58 (asserting we can craft an appropriate price cap regime to protect consumers without the CPD); CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 50 (stating that there is no economic theory to determine what a sensible "consumer dividend" should be, and there are no good economic reasons to introduce a CPD).

[565] *See* Sprint Comments at 54-58.

[566] *See* Sprint Comments at 54-58; *but see* NASUCA et al. Comments at 6.

[567] *Further Notice*, 31 FCC Rcd at 4872-73, para. 390.

[568] *1997 Price Cap Review Order*, 12 FCC Rcd at 16699-703, paras. 147-55.

[569] Sprint Comments at 46 (opposing implementing features of our prior price cap regime). *But see* NASUCA et al. Comments at 6 (generally supporting additional adjustments to the price cap regime).

[570] *See Further Notice*, 31 FCC Rcd at 4874-75, para. 397; *see also* 47 CFR § 61.42(e)(3) (describing special access basket categories or subcategories).

[571] *E.g.*, Letter from Russell M. Blau, Counsel for Inteliquent, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143 et al. at 1 (filed Aug. 5, 2016) (Inteliquent Aug. 5, 2016 *Ex Parte*); *see* Letter from Tamar E. Finn, Counsel for Inteliquent, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143 et al., at 2 (filed Sept. 19, 2016) (Inteliquent Sept. 19, 2016 *Ex Parte*) (asserting that the "costs of multiplexing equipment have plummeted over the past 20 years due to improvements in technology, while [incumbent LEC] multiplexing rates have been essentially unchanged).

multiplexing subcategory within the special access basket, however, would not by itself result in lower multiplexing rates. Even if we were to accept Inteliquent's premise that multiplexing rates are unreasonably high, the record in this proceeding would not enable us to determine a reasonable level.[572]

5. Implementation

246. Having adopted a new X-factor for use in the price cap index for price cap LECs in non-competitive areas, we now set forth the path for implementing that new approach. We require revised tariff review plans (TRPs) implementing the X-factor to be filed with the Commission to become effective on December 1, 2017.

247. Incumbent LECs that file tariffs under the price cap ratemaking methodology are required to file revised annual access charge tariffs every year, which become effective on July 1.[573] The annual filings include submission of TRPs that are used to support revisions to the rates, including revisions that pertain to the X-factor.[574] To ease the burden on the industry, and because base period demand and the value of GDP-PI reflected in the price cap indices typically are not updated during a tariff year, we permit incumbent LECs to use the same base period demand and value of GDP-PI in their December 1, 2017 filings as in their July 1, 2017 annual filings.

248. Consistent with that approach, each price cap incumbent LECs must file, for business data services, revised TRPs and rates to reflect the newly revised X-factor. In particular, the new X-factor should be reflected in the calculation of the price cap index for the special access basket and the pricing bands for each service category and subcategory within this basket. Rates must be established at levels where the actual price index does not exceed the price cap index and the service band index for each service category and subcategory does not exceed its upper limit. For purposes of this filing, the price cap incumbent LECs must base the calculation of these indices on our rules for an annual filing, other than for the periods used to measure base period demand and the value of GDP-PI.[575] Further specific direction on the material required to be filed in the TRPs will be provided in a public notice or order preceding the December 1, 2017 effective date of the 2.0 percent X-factor, which will address compliance with price cap tariff filing procedures (including required certifications).

E. Wholesale Pricing

249. We decline to adopt ex ante rules governing the relationship between wholesale and retail rates for business data services, or to otherwise intervene in the marketplace for wholesale business data services.

250. The Communications Act and Commission precedent provide ample guidance regarding the pricing of wholesale business data services. Section 201(b) of the Act requires that "[a]ll charges . . . for and in connection with [interstate or international telecommunications service] shall be just and

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[572] Inteliquent "proposes to set pricing flexibility for the multiplexing category at --20% (negative twenty percent) for the first five years only, which would have the effect of requiring rate reductions to adjust for existing pricing disparities between multiplexing and other services." Inteliquent Sept. 19, 2016 *Ex Parte* at 2. Inteliquent, however, provides no data or other support to demonstrate how it calculated the specific percentage reduction it proposes or how that reduction would result in just and reasonable multiplexing rates if the Commission were to adopt their proposal.

[573] *See Further Notice*, 31 FCC Rcd at 4880, at para. 417 (citing 47 CFR § 61.45(a)) ("[P]rice cap carriers file adjustments to the price cap index for the business data services basket as part of their annual price cap tariff filing.").

[574] *See, e.g., Material to be Filed in Support of 2016 Annual Access Tariff Filings*, WC Docket No. 16-71, Order, 31 FCC Rcd 3557, 3560, para. 17 (WCB 2016).

[575] *See* 47 CFR §§ 61.45-47.

reasonable . . . ."[576] Section 202(a) of the Act prohibits "any unjust or unreasonable discrimination in charges . . . for or in connection with like communication service . . . ."[577] It has long been the Commission's policy that, under these provisions, "interstate access services should be made available on a non-discriminatory basis and, as far as possible, without distinction between end user and . . . [wholesale] customers."[578] But, as the D.C. Circuit has explained, "[b]y its nature, section 202(a) is not concerned with the price differentials between qualitatively different services or service packages. In other words, as far as 'unreasonable discrimination' is concerned, an apple does not have to be priced the same as an orange."[579]

251. In response to requests for comments on the issue in the *Further Notice*,[580] some commenters offer anecdotal evidence that price caps LECs provide retail services at rates lower than the prices they charge competitive LECs for components of those services.[581] They argue that charging retail rates that are lower than wholesale rates violates the Act's prohibitions on unjust and/or unreasonable discrimination in charges and that we should adopt a rule prohibiting providers from charging more for resale than wholesale services.[582] However, despite competitive LEC assertions to the contrary, we find that there is little concrete evidence that incumbent LECs charge their wholesale customers higher rates

[576] 47 U.S.C. § 201(b).

[577] 47 U.S.C. § 202(a).

[578] *See Implementation of the Subscriber Carrier Selection Changes Provision of the Telecommunications Act of 1996 and Policies and Rules Concerning Unauthorized Changes of Consumers' Long Distance Carriers*, CC Docket 94-129, Second Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 1508, 1541, n.438 (1998) (*Subscriber Carrier Selection Second Report*) (quoting *Petition of First Data Resources, Inc., Regarding the Availability of Feature Group B Access Service to End Users*, Memorandum Opinion and Order, 1986 WL2911786, para. 13 (Com. Car. Bur. 1986)).

[579] *Competitive Telecommunications Ass'n v. FCC*, 998 F.2d 1058, 1064 (D.C. Cir. 1993).

[580] *Further Notice*, 31 FCC Rcd at 4888, para. 444.

[581] *See, e.g.*, Letter from Tamar E. Finn, Counsel to TDS, to Marlene H. Dortch, Secretary, FCC, WC Docket 16-143 et al., at 2 (filed Aug. 25, 2016) (asserting that "AT&T's publicly posted bid prices for 20 and 50 Mbps Ethernet Internet services (carrier's facilities) were significantly lower than the price AT&T offers TDS CLEC for the Ethernet loop portion" of that retail service); Windstream Reply, Attachment A (providing a table of retail versus wholesale BDS costs); Fourth Declaration of Matthew J. Loch at para. 5 (on behalf of TDS attached to Letter from Tamar. E. Finn, Counsel to TDS, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, RM-10593 (filed Mar. 24, 2016)); Declaration of James A. Anderson at para. 22, (on behalf of XO attached to XO Jan. 27, 2016 Comments); Windstream Comments at 41-42 (asserting that **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]); TDS Comments at 19-20 (citing Fourth Loch Declaration, para. 5) (asserting that AT&T's average wholesale prices for 10 Mbps Ethernet and 20 Mbps Ethernet are **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** higher than its retail rate for a similar service); Letter from Paul Margie, Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, RM-10593, at 5 (filed Sept. 24, 2015) (stating that Sprint lost a longtime enterprise broadband customer "because an ILEC undercut Sprint's pricing by nearly $1 million per year because the ILEC's *retail rates* were less than the inflated wholesale access costs that Sprint pays for last-mile [business data services] circuits" from the same incumbent LEC); TDS Reply at 11 (citing the Fifth Loch Declaration, para. 5) (claiming that "AT&T's publicly posted bid prices for *retail* 20 and 50 Mbps Ethernet Internet services were a few hundred dollars per month lower than the price AT&T offered TDS CLEC for the *wholesale* Ethernet *loop portion* of the retail service AT&T bid" to the customer).

[582] *See, e.g.*, TDS Reply at 13.

than they charge retail customers for like business data services. At most, the record provides selective information regarding a handful of incidents where an incumbent LEC's wholesale pricing policies allegedly impeded a competitive LEC's ability to compete. As such the record provides no basis for us to adopt generally applicable rules governing the application of section 201(b)'s prohibition against unjust and unreasonable practices or section 202(a)'s prohibition against unreasonable discrimination to alleged problems in the wholesale business data services marketplace.

252. In reaching this conclusion, we also reject requests that we mandate that, as a general matter, wholesale business data services rates must be lower than the retail rates for like services.[583] Certain parties argue that because it costs business data services providers less to provide wholesale services than to provide like retail services wholesale rates should reflect these lower costs.[584] However, any such mandate could have the unintended effect of preventing providers from reducing retail rates to competitive levels, as the provider would then have to reduce its wholesale rates to below those levels.

253. Three commenters suggest potential methods and amounts for an industry-wide discount.[585] Advocates of action on wholesale pricing share an underlying premise, that wholesale services pricing should exclude avoided retail sales expenses. We do not find it necessary to make a finding concerning the accuracy of this premise and decline to set an industry-wide wholesale discount. As stated above, incumbent LECs are not required to tailor prices based solely on costs, although rates must be just and reasonable and not unreasonably discriminatory.[586] We expect that continued growth in competition as a result of this Order will have a positive effect on the marketplace without the need for a wholesale discount. Additionally, our section 208 complaint procedures remain available to remedy any claimed anticompetitive or discriminatory behavior.[587]

254. Sections 201(b) and 202(a) do not explicitly require rates to correspond to costs—only that such rates be just and reasonable and not unreasonably discriminatory.[588] Indeed, with any generally available offering, it is unlikely that the costs to provide service to any two customers would be exactly

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[583] *See, e.g.*, INCOMPAS Reply at 19 (claiming that costs associated with providing services that are part of the retail option but not part of the wholesale input should discount the wholesale prices below the retail prices); Windstream Comments at 39 (arguing that wholesale rates should be priced below similar retail offerings); Sprint Comments at 73 (arguing that wholesale BDS rates offered by an incumbent LEC must be lower than its lowest retail rates); TDS Reply at 15 (asserting that, at a minimum, wholesale rates should be discounted compared to retail by the amount of sales and marketing costs that are avoided).

[584] *See, e.g.*, INCOMPAS Reply at 19 (identifying retail costs like sales commissions and compensation, designing a communications network, and middle mile facilities that are not incurred in providing wholesale services). *But see* AT&T Reply at 64-65 (arguing that there are no avoided costs in selling wholesale and that any avoided costs are offset by "wholesale-specific" costs); *see also* CenturyLink Comments at 80 (claiming there is no reason why wholesale rates must always be lower than retail because wholesale costs often are higher than retail).

[585] *See* TDS Reply at 11-15 (proposing that wholesale rates be discounted by the costs a carrier avoids compared to retail and suggesting that wholesale rates be discounted by the commission rate TDS pays its third-party agents as a proxy); Windstream Comment at 39-44 (asserting that the Commission implement the "Parity Pricing Rule" and establish a safe harbor proxy for seller's retail costs not incurred offering wholesale services). Windstream says wholesale prices should be discounted between 17 to 25 percent. *Id.* at 43. *See also* Birch et al. Comments at 73-74 (advocating that the FCC require incumbent LECs to file with the Commission contracts governing the lowest prices for bundles in each state in which it operates).

[586] 47 U.S.C. §§ 201(b); 202(a).

[587] 47 U.S.C. § 208.

[588] The Commission typically looks at costs as a factor in considering whether rates are just and reasonable. *See AT&T Cost Assignment Forbearance Order*, 23 FCC Rcd at 7304, para. 5 (the FCC's Part 69 rules help to ensure that incumbent LECs access charges are just and reasonable).

the same, and we do not require carriers to price their offerings based on the myriad of different costs imposed by various customers. In fact, we prohibit carriers from discriminating against similarly-situated customers.[589] The same analysis is true in this situation.

255. Additionally, Sprint and Windstream ask that we "confirm that carriers cannot avoid [their] resale obligations merely by bundling non-Internet telecommunications services with Internet access or with add-on information services."[590] We find that these practices do not lend themselves to blanket rules or detailed pricing methodologies, and we therefore reject these requests.

VI. ADDITIONAL MODERNIZING ACTIONS

A. Certain Services Described In the Record Are Not Common Carrier Services

256. A number of commenters dispute the accuracy of a seemingly-categorical statement in the *Further Notice* "not[ing] that business data services are telecommunications services, regardless of the provider supplying the service," and going on to assert that "BDS providers are therefore common carriers . . . subject to Title II in the provision of their services . . . ."[591] As we discuss below, that terse suggestion in the *Further Notice* does not accurately reflect the nuanced analysis required for such a classification decision. This proceeding is not the appropriate place to make any generalized or comprehensive classification decisions of that sort for business data services. We do, however, discuss the services described in detail in the record by certain providers, which we find to be private carriage offerings based on the facts provided here. In doing so, we reiterate the Commission's longstanding approach to the associated classification issues, guarding against any lingering misunderstandings regarding classification flowing from statements in the *Further Notice*.

1. Background

257. Under the analytical framework for distinguishing between services offered on a common carriage or private carriage basis—commonly known as the '*NARUC* analysis' (or the like) for the court cases from which it derives—common carriage under the Act has two prerequisites: (1) an indifferent holding out of service to all potential users; and (2) the transmission by customers of "intelligence of their own design and choosing."[592] By contrast, "a carrier will not be a common carrier where its practice is to make individualized decisions, in particular cases, whether and on what terms to deal."[593] As the D.C. Circuit explained in *NARUC I*, "[t]he original rationale for imposing a stricter duty of care on common carriers was that they had implicitly accepted a sort of public trust by availing themselves of the public at

[589] It has long been the Commission's policy that, under these provisions, "interstate access services should be made available on a non-discriminatory basis. . . ." *Subscriber Carrier Selection Second Report*, 14 FCC Rcd at 1541 n.438 (1998) (quoting *Petition of First Data Resources, Inc., Regarding the Availability of Feature Group B Access Service to End Users*, Memorandum Opinion and Order, 1986 WL2911786, para. 13 (Com. Car. Bur. 1986).

[590] Sprint Comments at 76 (citing Windstream Jan. 27, 2016 Comments at 63).

[591] *Further Notice*, 31 FCC Rcd at 4836-67, para. 257 (internal citations omitted); *see also, e.g., id.* at 4726, para. 6 ("[b]usiness data services are a quintessential form of telecommunications services").

[592] *Southwestern Bell Telephone Co. v. FCC*, 19 F.3d 1475, 1480 (D.C. Cir. 1994) (quoting *National Association of Regulatory Utility Comm'rs v. FCC*, 533 F.2d 601, 608-09 (D.C. Cir. 1976) (*NARUC II*) and citing *National Association of Regulatory Utility Comm'rs v. FCC*, 525 F.2d 630 (D.C. Cir. 1976) (*NARUC I*)); *see also, e.g., FCC v. Midwest Video Corp.*, 440 U.S. 689, 701 (1979) (*Midwest Video II*) ("A common-carrier service in the communications context is one that 'makes a public offering to provide [communications facilities] whereby all members of the public who choose to employ such facilities may communicate or transmit intelligence of their own design and choosing . . . . A common carrier does not 'make individualized decisions, in particular cases, whether and on what terms to deal.'") (footnote and citations omitted).

[593] *NARUC I*, 525 F.2d at 641.

large."[594] This "quasi-public character . . . coupled with the lack of control exercised by" customers of the carriers' services "was seen to justify imposing upon the carrier" heightened duties.[595]

258. In the Telecommunications Act of 1996 (1996 Act),[596] Congress added new statutory categories of "telecommunications," "telecommunications services," and "telecommunications carriers" to the Communications Act.[597] Telecommunications is defined in relevant part as "the transmission . . . of information of the user's choosing," echoing the second prong of the traditional *NARUC* analysis. Telecommunications services, in turn, involve the offering of telecommunications for a fee to the public, which the Commission has found to "encompass only telecommunications provided on a common carrier basis," relying on the longstanding *NARUC* analysis for that evaluation.[598] As the Commission found, this interpretation gives meaning to the 'to the public' criteria in the telecommunications service definition in a manner that accords with the relevant legislative history.[599] Because telecommunications services meet the standard for common carriage, providers of telecommunications services—*i.e.*, telecommunications carriers—are acting as common carriers to the extent that they are providing such services.[600]

2. Discussion

259. Against the backdrop of the Commission's established approach to addressing private carriage, common carriage, and telecommunications service classification issues, we agree with commenters that statements in the *Further Notice* were unduly broad insofar as they could be read to suggest that all business data services necessarily are telecommunications services subject to common

[594] *Id*. at 642.

[595] *Id*. at 640.

[596] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

[597] 47 U.S.C. §§ 153(50) (defining 'telecommunications'); 153(51) (defining 'telecommunications carrier'); 153(53) (defining 'telecommunications service').

[598] *Federal-State Joint Board on Universal Service*, Report and Order, CC Docket No. 96-45, 12 FCC Rcd 8776, 9177-78, para. 785 (1997) (*Universal Service First Report and Order*); *see also, e.g.*, *Appropriate Framework For Broadband Access To the Internet Over Wireline Facilities, et al.*, Report and Order and Notice of Proposed Rulemaking, CC Docket No.02-33 et al., 20 FCC Rcd 14853, 14909-10, para. 103 (2005) (*Wireline Broadband Order*) (recognizing that whether something meets the definition of a telecommunications service requires an analysis of the *NARUC* precedent), *aff'd*, *Time Warner Telecom, Inc. v. FCC*, 507 F.3d 205 (3d Cir. 2007); *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Order on Remand, 16 FCC Rcd 571, 573, para. 6 (2000) (*ICN Order on Remand*) (The Iowa Communications Network "satisfies both prongs of the *NARUC* common carriage test and, therefore, is a telecommunications carrier."), *aff'd*, *United States Telecom Ass'n v. FCC*, 295 F.3d 1326 (D.C. Cir. 2002); *AT&T Submarine Systems, Inc., et al.*, File No. S-C-L-94-006, Memorandum Opinion and Order, 13 FCC Rcd 21585, 21587-88, paras. 6-7 (1998) (*AT&T Submarine Cable Order*) (observing that "[a]s the Commission has previously held, the term 'telecommunications carrier' means essentially the same as common carrier," and looking to the *NARUC* analysis to make that evaluation), *aff'd*, *Virgin Islands Telephone Corp. v. FCC*, 198 F.3d 921 (D.C. Cir. 1999) (*Vitelco*).

[599] *See, e.g.*, *Universal Service First Report and Order*, 12 FCC Rcd at 9177-78, para. 785 ("This conclusion is based on the Joint Explanatory Statement, which explains that the term telecommunications service 'is defined as those services and facilities offered on a 'common carrier' basis, recognizing the distinction between common carrier offerings that are provided to the public . . . and private services.'") (citation omitted).

[600] *See, e.g.*, *Sw. Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1481 (D.C. Cir. 1994) ("As we said in *NARUC II*, 'it is at least logical to conclude that one can be a common carrier with regard to some activities but not others.') (quoting *NARUC II*, 533 F.2d at 608); *see also* 47 U.S.C. § 153(51) ("[a] telecommunications carrier shall be treated as a common carrier under this chapter only to the extent that it is engaged in providing telecommunications services").

carrier regulation.[601] Our approach to such classification issues requires an understanding and analysis of the facts regarding particular service offerings that the record underlying the *Further Notice* was lacking.[602] To the contrary, as discussed below, the record generated in response to the *Further Notice* demonstrates that some business data services currently are being offered on a private carriage basis in the marketplace today.[603] The record is not sufficiently detailed and comprehensive to provide a basis to broadly classify all business data services.[604] By addressing examples where particular providers submitted more detailed information regarding certain of their services, however, we can mitigate the risk of continued uncertainty or confusion regarding the Commission's approach to such classification questions that potentially were introduced by statements in the *Further Notice*.[605]

260. *Affirmative Arguments for Private Carriage Classification of Certain Services.* Comcast and Charter each submitted detailed information about certain categories of services sufficient to enable us to classify those as private carriage offerings based on the record here.[606] With respect to its wholesale cellular backhaul service and E-Access service, Comcast explains that it makes individualized decisions whether it will, in fact, offer such services in a given instance or to a given customer.[607] Comcast describes its offering of retail Ethernet Dedicated Internet Access Service (EDI) and Ethernet transport similarly, explaining that it does not hold out such services to all interested buyers.[608] For its part, Charter explains that particularly in the case of business data services provided to enterprise customers, it makes individualized decisions whether to offer service to given customers.[609] The case-by-case decisions about whether to offer these services to a given customer described by Comcast and Charter stand in contrast to the "quasi-public character" that is a "critical" premise of common carrier classification—and the

[601] *See, e.g.*, Comcast Comments at 61-62, 66; NCTA Comments at 14; ACA Reply at 12-13.

[602] *See, e.g.*, Comcast Comments at 61, 66; NCTA Comments at 14; *see also Further Notice*, 31 FCC Rcd at 4836-37, para. 257 n.671 (noting the limited discussion of the issue in the record).

[603] There appears to be no dispute in the record that business data services enable the transmission by customers of "intelligence of their own design and choosing and meet the telecommunications definition. *See, e.g.*, Public Knowledge et al. Reply at 6-7 n.24 ("There is no dispute that BDS qualifies as 'telecommunications,' *see* 47 U.S.C. § 153(50) . . . ."). We thus focus on whether the offering of particular services involve an indifferent holding out of service to all potential users, or instead involve individualized decisions, in particular cases, whether and on what terms to deal.

[604] The fact that we do not broadly classify business data services renders moot the concerns raised by some commenters that we provided insufficient notice under the Administrative Procedure Act (APA) to take such an action. *See, e.g.*, Charter Comments at 17; Comcast Comments at 66; NCTA Comments at 14.

[605] Although not comprehensively classifying business data services here, the Commission will, of course, treat other business data services provided under materially similar facts similarly to its treatment of the services addressed in this Order.

[606] Comcast and Charter also appear to reference the existence of some additional universe of offerings that they also view as meeting the standard for private carriage. *See, e.g.*, Comcast Comments at 15; Charter Comments at 18-19. Comcast and Charter do not discuss those services in the record here to the same degree as the services we address, however. We focus here just on those services for which Comcast and Charter provide more details regarding the manner in which they are offered.

[607] *See, e.g.*, Comcast Comments at 15-16, 63-64; Comcast Comments, Exh. E at para. 13 (Comcast Decl. of David Allen); Comcast Reply at 30-33; Letter from Matthew A. Brill, Counsel to Comcast, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 2, 5-6 (filed Oct. 5, 2016) (Comcast Oct. 5, 2016 Letter).

[608] *See, e.g.*, Comcast Comments at 16-17, 65; Comcast Decl. of John Guillaume at para. 12; Comcast Comments, Exh. G at paras. 3-8 (Comcast Decl. of Robert Victor); Comcast Reply at 30.

[609] *See, e.g.*, Charter Comments at 18; Charter Comments, Exh. A at para. 8 (Charter Decl. of Phil Meeks).

associated heightened duties—identified by the D.C. Circuit in *NARUC I*.[610] The absence of this critical factor is central to our private carriage analysis of these services.[611]

261. Comcast and Charter each further explain that they make highly-individualized decisions regarding any rates and terms they do offer for the relevant categories of services in order to meet the particular needs of a given customer.[612] The plausibility of these descriptions is reinforced by the fact that the customers for these services typically include large wireless carriers, other large service providers, or enterprises.[613] The record reveals that such entities are likely to have the size and sophistication to demand uniquely-tailored wholesale or retail offerings that enable them to meet particularized needs.[614] Although a few commenters dispute the private carriage claims in the record, for the reasons described below in our response to those arguments, we are not persuaded that they require a different conclusion with respect to the services we classify as private carriage here. Thus, considering the totality of the circumstances, we conclude that the Comcast and Charter services identified above, when offered in the manner described in the record, constitute private carriage services—not common carrier services or telecommunications services.

262. As other examples, Mediacom, ACS, and BT Americas also argue that services they each provide constitute private carriage. Although the information they submitted is not quite as detailed or

[610] *NARUC I*, 525 F.2d at 641; *see also* Comcast Reply at 30 ("without any indiscriminate 'holding out' to the public . . . the central rationale for common carrier treatment—the notion that the carrier 'ha[s] implicitly accepted a sort of public trust by availing themselves of the business of the public at large'—vanishes") (quoting *NARUC I*, 525 F.2d at 641-42).

[611] Indeed, even in *Orloff v. FCC*—a decision the D.C. Circuit has referred to as "the high water mark" for common carriage, *Cellco P'ship v. FCC*, 700 F.3d 534, 546 (D.C. Cir. 2012)—the court emphasized that although the provider engaged in some negotiation with customers, it did not "refuse 'to deal with any segment of the public whose business is the 'type normally accepted.'" *Orloff v. FCC*, 352 F.3d 415, 420 (D.C. Cir. 2003). The court thus affirmed the Commission's decision that the provider had not violated its obligations as a common carrier. *Orloff v. FCC*, 700 F.3d at 419-21.

[612] *See, e.g.*, Charter Comments at 18-19; Charter Decl. of Phil Meeks at para. 7, 8; Comcast Comments at 15-17, 63-65; Comcast Decl. of John Guillaume at paras. 13, 14; Comcast Decl. of David Allen at para. 13; Comcast Oct. 5, 2016 Letter at 2, 5; Letter from Samuel L. Feder, Counsel to Charter, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 4-4 nn.18, 21 (filed Oct. 3, 2016) (Charter Oct. 3, 2016 Ex Parte); *see also, e.g.*, NCTA Comments at 12 (describing elements of how Comcast and Charter offer service). The record reveals that this individualization occurs across a wide range of key elements of the service offerings and is further supported by the influential role of potential customers in the process. *See, e.g.*, Charter Comments at 18-19; Charter Comments, Exh. A at para. 7 (Charter Decl. of Phil Meeks); Comcast Decl. of John Guillaume at paras. 4, 14; Comcast Decl. of David Allen at paras. 11, 13; Comcast Comments, Exh. A at paras. 72-80 (Comcast Decl. of Joseph Farrell); Charter Reply at 8-9.

[613] *See, e.g.*, Charter Decl. of Phil Meeks at para. 7; Comcast Decl. of David Allen at paras. 3, 4; Charter Reply at 8-9.

[614] *See, e.g.*, American Cable Association Comments, App. A at 14 (ACA Schwartz-Mini White Paper); Charter Decl. of Phil Meeks at para. 12; BT Americas Reply at 12; Charter Reply at 8-9; Letter from Glenn Woroch, Senior Consultant, Compass Lexecon and Adjunct Professor of Economics at the University of California, Berkeley, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach. at 39 (filed June 28, 2016) (Second IRW White Paper). Nothing in the Commission's longstanding classification approach categorically classifies wholesale services as private carriage offerings. Nor does the mere fact that a service is offered on a wholesale, rather than retail, basis play a role in our analysis separate and apart from our consideration of customer sophistication as a relevant corroboration of the plausibility of service providers' claims of individualization. We thus reject concerns that our approach somehow undercuts the Commission's recognition that wholesale services can be offered on a common carrier basis as telecommunications services. *See, e.g.*, INCOMPAS Reply at 26; Verizon Reply at 33.

specific as that of Comcast and Charter, we nonetheless agree that, as described, these services reflect private carriage offerings. Notably, each of these providers explains with respect to its relevant services that, rather than offering service to all potential customers and offering rates and terms indifferently, they instead make individualized decisions about whether and on what terms to offer service.[615] There also is little indication in the record of any disagreement that these particular providers are offering service on a private carriage basis, as they contend.[616] Building on our analysis for Comcast and Charter above,[617] under our evaluation of the totality of the evidence here, we likewise conclude that the services described by Mediacom, ACS, and BT Americas are private carriage when offered as these providers describe.[618]

263. *Responses to Arguments Disputing that Those Services are Held Out on a Private Carriage Basis Under the* NARUC *Analysis.* Some commenters purport to provide evidence that business data service providers generally, or Comcast and Charter in particular, offer business data services in a manner that reflects an indifferent holding out of service to the public, and thus should be classified as common carrier telecommunications services. We reject such claims in the context of the specific providers' services addressed above for a number of reasons.

264. First, generalized statements about marketplace trends broadly, or Comcast's or Charter's networks or services generally—but which do not purport to address more specifically the particular services we discuss above—do not provide a basis to reject the evidence put forward by Comcast, Charter

[615] *See, e.g.*, ACS Comments, Attach. A at 2-3 (ACS Decl. of David C. Eisenberg); Mediacom Comments at 3 n.3; ACS Reply at 9-10; BT Americas Reply at 11-13; Mediacom Reply at 14; Letter from Paul B. Hudson, Counsel for Mediacom, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 1-2 (filed Oct. 13, 2016) (Mediacom Oct. 13, 2016 Ex Parte). We note that ACS does not describe the intersection (if any) between the services it discusses in its filings here and the listed telecommunications services for which ACS of Anchorage previously sought, and received, forbearance from certain dominant carrier common carrier regulations. *See Petition of ACS of Anchorage, Inc. Pursuant To Section 10 of the Communications Act Of 1934, As Amended (47 U.S.C. § 160(c)), For Forbearance From Certain Dominant Carrier Regulation of Its Interstate Access Services, and For Forbearance From Title II Regulation Of Its Broadband Services, In the Anchorage, Alaska, Incumbent Local Exchange Carrier Study Area*, WC Docket No. 06-109, Memorandum Opinion and Order, 22 FCC Rcd 16304, 16316, para. 22 (2007) (*ACS Forbearance Order*) (listing certain business data services offered by ACS for which it requested forbearance). Given that ambiguity in the record, we make clear that the views offered in this Order regarding ACS's services do not encompass the ACS of Anchorage services identified in that prior forbearance proceeding, and we do not opine here on the present classification of any of those services.

[616] Although some commenters make claims about general marketplace trends, we are not persuaded that those undercut more specific evaluations of the actions of particular providers for the reasons discussed below in our response to those arguments. Beyond that, there appears to be no meaningful evidence in the record regarding ACS or BT Americas specifically that disputes those providers' characterizations of how they offer service and its status as private carriage. As to Mediacom, there likewise appears to be nothing in the record beyond illustrative examples of Mediacom marketing materials included among the attachments to Verizon's reply comments. *See* Verizon Reply, App. C (examples of Mediacom retail Ethernet offerings). We explain below the limited weight we give such marketing materials here as a general matter, and note also that no commenter subsequently raised any meaningful objection to the specific characterization of Mediacom's service offerings reflected in its filings.

[617] For example, beyond these other service providers' general characterizations of their offerings, they also claim a broad scope of individualization in rates and terms and identify the role of sophisticated customers in tailoring the offering that appear reasonably similar to the characteristics described in greater detail by Comcast and Charter. *See, e.g.*, ACS Reply at 9-10; BT Americas Reply at 12-13; Mediacom Oct. 13, 2016 Ex Parte at 1-2.

[618] As is always the case, the Commission can revisit any classifications addressed in this order should a provider's "actual operation more closely resemble common carriage." *Norlight Request for Declaratory Ruling*, File No. PRB-LMMD 86-07, Declaratory Ruling, 2 FCC Rcd 132, 134-35, para. 22 (1987) (*Norlight Order*).

or the other providers addressed above that is specific to those providers' services.[619] Even assuming *arguendo* that certain characterizations of the marketplace as a whole or particular providers' networks or offerings might commonly hold true in a general sense, we find no basis to assume that they hold true with respect to particular service offerings sufficient to overcome more specific contrary evidence.[620]

265. Second, we are unpersuaded by arguments that particular aspects of how these providers offer service do not inherently require a classification of private carriage as to the offering of the relevant services, or can be consistent with common carriage.[621] We do not base our decision on any single aspect of the manner in which Comcast, Charter, Mediacom, ACS, or BT Americas offer the specified services. Rather, we confirm those providers' claims of private carriage based on the totality of the evidence before us describing the manner in which the relevant services are offered. Under that analysis we find sufficient evidence of individualized determinations whether to offer service to given customers and, when services are offered, individualization on a sufficient range of key terms of the offering to warrant a finding of private carriage.[622] Thus, whether any subset of actions taken by those providers would or would not be sufficient to support a private carriage classification is not an issue we confront or address here.[623]

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[619] *See, e.g.*, INCOMPAS reply at 22-27; Public Knowledge *et al*. Reply at 6-7, 9 Sprint Reply at 66-68; Verizon Reply at 26-36; Verizon Reply, App. A (Verizon Decl. of Jerry Holland and Daniel Higgins); Verizon Reply, App. B (Verizon Decl. of Sam Giannini); Verizon Reply, App. C (citing marketing materials for different services from the providers discussed above or for different providers); Verizon Reply, App. D (similar); Letter from Curtis L. Groves, Assistant General Counsel, Federal Regulatory and Legal Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 3-4 (filed Sept. 27, 2016) (Verizon Sept. 27, 2016 Letter).

[620] *See, e.g.*, *Sw. Bell Tel. Co. v. FCC*, 19 F.3d at 1481 ("Whether an entity in a given case is to be considered a common carrier or a private carrier turns on the particular practice under surveillance.").

[621] *See, e.g.*, INCOMPAS Reply at 24-25, 27; Public Knowledge *et al.* Reply at 7; Sprint Reply at 67; Verizon Reply at 27-36; Verizon Decl. of Jerry Holland Daniel Higgins; Verizon Decl. of Sam Giannini; Verizon Reply, App. C (attaching certain marketing and similar materials); Verizon Reply, App. D (similar). Given conduct can be consistent with common carriage without constituting common carriage *per se*. *See, e.g.*, *Cellco P'ship v. FCC*, 700 F.3d 534, 547 (D.C. Cir. 2012) (evaluating whether conduct required by rule constitute common carriage *per se*). As discussed in more detail below, certain commenters raise policy arguments that appear focused primarily on advocating compelled common carriage or on advocating statutory interpretation that makes it more likely that service would be classified as common carrier telecommunications services. To the extent that those policy arguments also are advanced as reasons to classify as common carrier telecommunications services the relevant business data services of the providers discussed above within the "gray area" between private carriage and comment carriage, *see Cellco P'ship v. FCC*, 700 F.3d at 547, we are unpersuaded to impose the burdens of a common carriage classification under our longstanding classification analysis for the same reasons we reject such arguments below.

[622] As Verizon observes, "a provider's self-characterization of its service offerings is not controlling." Verizon Reply at 28. While not inherently dispositive, the Commission has, for example, relied on a provider's claims that it is holding itself out as a common carrier as a relevant factor supporting telecommunications carrier treatment notwithstanding some other actions by the providers that could be viewed as consistent with private carriage. *Bright House Networks, LLC v. Verizon California, Inc.*, File No. EB-08-MD-002, Memorandum Opinion and Order, 23 FCC Rcd 10704, 10718, para. 39 (2008) (*Bright House Order*), *aff'd, Verizon California, Inc. v. FCC*, 555 F.3d 270 (D.C. Cir. 2009). Thus, while the claims of private carriage here are not themselves dispositive, they are relevant, and distinguish these circumstances from others where providers with some superficial similarities in operation—but that also purported to be acting as common carriers—were ultimately confirmed to be common carriers. *See, e.g.*, *Iowa Telecommunications Servs. v. Iowa Utilities Bd.*, 563 F.3d 743, 749-50 (8th Cir. 2009).

[623] As an illustrative example, commenters cite prior orders or other precedent indicating that the mere fact that a provider engages in some negotiation does not itself preclude telecommunications service classification. *See, e.g.*, INCOMPAS Reply at 27; Public Knowledge *et al*. Reply at 7-8; Sprint Reply at 67; Verizon Reply at 30. While the fact of some negotiation, in the abstract, does not inherently preclude a telecommunications service or common

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266. We also find a variety of those claims overstated, even on their own terms. For example, some commenters cite marketing materials or other statements from certain of the providers discussed above as undercutting these providers' claims that, as to the relevant services, the providers make individualized decisions whether and on what terms to deal.[624] In many cases, the cited materials or statements, while focused on particular services or categories of services, nonetheless still are too high-level or generalized to provide meaningful insight into the more granular details of how particular services are offered in practice.[625] Even materials or statements purporting to speak to particular service offerings on a somewhat more granular basis do not lend themselves to simplistic analysis.[626] Where service is offered via a tariff, the analysis can be more straightforward not only because the filed tariff doctrine requires the tariffed rates and terms to be controlling,[627] but even more fundamentally because only common carrier services may be offered on a tariffed basis.[628] Outside the tariffing context, we

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carriage classification, it also do not compel such classifications—in other words, such actions are consistent with private carriage, as well. In our application of the *NARUC* framework, we consider such actions, where present, as part of our overall evaluation, including not merely their presence or absence but also any evidence regarding the scope, extent, and nature of any negotiations. We find here that the overall weight of the evidence cuts against a finding that the providers identified above have the necessary "quasi-public character" when offering the relevant services, and we thus classify the providers' offering of those services as private carriage on the record here. *NARUC I*, 525 F.2d at 641. By clarifying that the mere fact of some negotiation is not itself dispositive of a service's classification, we also address INCOMPAS's concerns that a contrary holding would imperil interconnection under section 251(a) of the Communications Act. *See* INCOMPAS Reply at 28. We note further in that regard that although section 251(a)(1) requires telecommunications carriers to interconnect with one another directly or indirectly, nothing in the text of that provision requires that such interconnection be accomplished via an arrangement that is itself a common carrier service. *See* 47 U.S.C. § 251(a)(1).

[624] *See, e.g.*, INCOMPAS Reply at 22-23; Public Knowledge *et al.* Reply at 7 n.29, 9; Sprint Reply at 66, 68; Verizon Reply at 28-30, 32; Verizon Decl. of Jerry Holland and Daniel Higgins at paras. 3, 7; Verizon Decl. of Sam Giannini at paras. 7, 10, 17; Verizon Decl. of Sam Giannini at para. 7; Verizon Reply, App. C (attaching marketing and similar materials for Comcast, Charter (including Time Warner Cable and Bright House), and Mediacom); Verizon Reply, App. D (attaching marketing and similar materials for Comcast and Charter (including Time Warner Cable)).

[625] *See, e.g.*, Verizon Reply, App. C (Comcast "Ethernet Services for Business—Comcast Business" attachment); Verizon Reply, App. C (Charter "Spectrum Business Enterprise Solutions Optical Ethernet High-Speed Data Solutions" attachment); Verizon Reply, App. C (Mediacom "Mediacom Business Gigabit+" attachment).

[626] *See, e.g.*, Verizon Reply at 27; Verizon Reply, App. C (Comcast Business "Ethernet Private Line Technical Specifications" and "Ethernet Private Line Service Technical Description" attachments).

[627] *See, e.g.*, *Petition For Declaratory Ruling On Issues Contained In Thorpe v. GTE*, CG Docket No. 03-84, Memorandum Opinion and Order, 23 FCC Rcd 6371, 6388-89, para. 31 (2008) ("The 'filed tariff doctrine,' which is also called the 'filed rate doctrine,' requires carriers, as well as their customers, to abide by the terms of the tariff and precludes them from acting outside it."). Even where negotiation has been permitted in the context of a tariffing regime, the analysis remains somewhat more straightforward given need to offer a negotiated result to any other similarly situated customers. *See, e.g.*, *Competition in the Interstate Interexchange Marketplace*, CC Docket No. 90–132, Memorandum Opinion and Order on Reconsideration, 10 FCC Rcd 4562 (1995) (recognizing "individually negotiated contracts could satisfy the nondiscrimination provisions" for common carrier services under section 202 "of the Act if the terms of the contract were made generally available to similarly situated customers"); *Orloff v. FCC*, 352 F.3d at 420-21 (in cases involving tariffed services "the Commission and this court have allowed common carriers to charge customer-specific-rates only if they offered the same terms to other, similarly situated customers"). The facts here do not fall within the scope of even that scenario, however. In addition to involving non-tariffed offerings, the record here gives no indication that the providers addressed above hold out any given negotiated outcome as an offer to the other customers to which the service could be of use.

[628] *See, e.g.*, *Electronic Tariff Filing System (ETFS)*, WC Docket No. 10-141, Notice of Proposed Rulemaking, 25 FCC Rcd 9513, 9520, para. 17 n.37 (2010) (The Commission's rules governing tariff filings "benefit the public by
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agree with commenters that marketing materials or the like might well be used merely to make it known that a given company is a potential provider of particular services without representing a formal offer of service to all customers to which the service might legally and practicably be of use.[629] On their face, we do not find the marketing materials or other provider statements cited here to represent a formal holding out of the services addressed above to all potential users. Nor are we persuaded by the record that, in practice, Comcast, Charter, Mediacom, ACS, or BT Americas treat those statements or marketing materials in such a manner. Insofar as the statements and marketing materials thus are compatible with those providers' representations regarding whether and how they offer the relevant services, we are not persuaded to reject the providers' representations on the basis of such materials and statements.

267. Also overstated are commenters' claims regarding common technical characteristics or terms of agreements, whether in marketing materials, "rate sheets," or from practical interactions with Comcast, Charter, Mediacom, ACS, or BT Americas. These claims do not dissuade us from the private carriage determination we make as to those providers.[630] Such considerations can be relevant to the classification analysis, but the evidence before us in that regard does not require a common carrier classification here. Even to the extent that such evidence here directly applies to the particular providers' services addressed above, we are persuaded that, in significant part, they do not reflect a formal offer of service at particular rates and terms that these providers genuinely anticipate potential customers accepting, but merely serve a starting point for negotiations of relevant rates and terms.[631] In addition, to the extent that Verizon identifies certain similarities in its interactions with a variety of different service providers (when acting as a customer) and with its own operation (when acting as a service provider), that is distinct from the relevant question of whether a single provider treats all potential customers similarly

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providing information on the rates, terms, and conditions for certain telecommunications services.") (quotation omitted); *MTS and WATS Market Structure*, CC Docket No. 78-72, Third Report and Order, 93 FCC 2d 241, 313-14, para. 244 (1982) ("Only common carrier services can be tariffed.").

[629] *See, e.g.*, Comcast Oct. 5, 2016 Letter at 5-7.

[630] *See, e.g.*, INCOMPAS Reply at 23-24; Public Knowledge *et al*. Reply at 10; Verizon Reply at 27, 31-32, 34-35; Verizon Decl. of Jerry Holland and Daniel Higgins at paras. 3, 17, 18; Verizon Decl. of Sam Giannini at para.4.

[631] *See, e.g.*, Comcast Comments at 64-66; Comcast Decl. of John Guillaume; ACA Reply at 15; Comcast Oct. 5, 2016 Letter at 5; Charter Oct. 3, 2016 Ex Parte at 5 & n.21; *see also AT&T Submarine Cable Order*, 13 FCC Rcd at 21588-89, para. 8 (affirming a finding of private carriage "[f]or the reasons stated by the Bureau," including the finding that "even though AT&T-SSI stated it would provide cable capacity at market prices, AT&T-SSI would have to engage in negotiations with each of its customers on the price and other terms which would vary depending on the customers' capacity needs, duration of the contract, and technical specifications," "and because of AT&T-SSI's recent statements concerning its individualized negotiations with potential customers"); *LightNet*, File No. W-P-C-5166, Memorandum Opinion and Order, FCC 85-276, 58 Rad. Reg. 2d (P&F) 182, para. 9 (rel. May 20, 1985) (finding the "elements [of private carriage] present in the sale and lease arrangements proposed by LightNet," where, among other things "LightNet states that its sale and lease agreements are intended to serve as a starting point, or check list, for individual negotiations"); *General Telephone Company of the Southwest Request for Declaratory Ruling*, No. 7320-04/L-2244. Memorandum Opinion and Order on Reconsideration, 3 FCC Rcd 6778, 6779, para. 10 (Priv. Rad. Bur. 1988) ("The use of a form contract, or similarity of terms in some contracts, does not of itself indicate an absence of individual negotiation. Simply put, given the overwhelming use of form contracts in modern business, we cannot conclude that because most of the contracts are similar, Invescom is a common carrier."), *aff'd*, 5 FCC Rcd 1189 (1990). *Cf. Verizon v. FCC*, 740 F.3d 623, 658 (D.C. Cir. 2014) (suggesting that certain rules that, "while perhaps establishing a lower limit on the forms that broadband providers' arrangements with edge providers could take, might nonetheless leave sufficient 'room for individualized bargaining and discrimination in terms' so as not to run afoul of the statutory prohibitions on common carrier treatment," but noting that the Commission had not presented such a theory in its order or briefs there).

and thus should be classified as a common carrier.[632] Further, some uniformity in technical characteristics in a given provider's service offering appears largely inevitable given the need to conform to industry standards, common equipment, and the like, and if that were enough to warrant a finding of common carriage, the notion of private carriage could be rendered a nullity. Additionally, issues regarding the rates and terms of any offering are distinct from the question of whether any offering (whatever the rates and terms) is made to all potential users of the service—a "critical" issue under *NARUC I*—and do not implicate our findings in that regard discussed above.[633] Thus, while relevant to consider as part of arguments about a providers' individualization in rates and terms, under the totality of the circumstances here, we conclude that the alleged "uniformity" in service offerings cited by commenters is limited and does not preclude our private carriage classification for Comcast, Charter, Mediacom, ACS, and BT Americas.

268. Third, we reject common carriage claims based on asserted similarities between particular aspects of these providers' offering of service and the manner in which incumbent LECs or others offer service.[634] We are not persuaded that comparisons or analogies to how other providers such as incumbent LECs or others have offered service necessarily are illuminating. Although there are a variety of prior decisions where the Commission has suggested that business data services are telecommunications services, those decisions are best understood as descriptive of the agency's general sense of how providers—and particularly incumbent LECs—were, in practice, offering such services at the time.[635] They do not expressly claim (or justify) any formal, comprehensive classification of business data services under our longstanding classification approaches.[636] Those prior decisions thus also do not

[632] *See generally, e.g.*, Verizon Reply at 31-32; Verizon Decl. of Jerry Holland and Daniel Higgins; Verizon Decl. of Sam Giannini. We likewise find no basis to conclude that providers are offering services on an indifferent basis to the public based on Verizon's subjective expectations regarding lit building lists or pricing information or the like that it obtains from various service providers. *See, e.g.*, Verizon Reply at 34; Verizon Decl. of Jerry Holland and Daniel Higgins at paras. 12-15, 17.

[633] *NARUC I*, 525 F.2d at 641.

[634] *See, e.g.*, Public Knowledge *et al.* Reply at 10; Verizon Reply at 27-35; Verizon Decl. of Jerry Holland Daniel Higgins at paras. 8-11, 13-14, 16-22; Verizon Decl. of Sam Giannini at paras. 3-4, 8-12, 17.

[635] Consistent with our overall conclusion that certain statements regarding classification of business data services in the *Further Notice* were overly broad, we likewise reject as overbroad characterizations of prior decisions insofar as the *Further Notice* adopted a broader reading of them than we find justified based on a more careful analysis here. *See, e.g., Further Notice*, 31 FCC Rcd at 4863-64, para. 257 n.672. For the reasons explained in this paragraph, we likewise reject commenters' proposed broader interpretations of those orders. *See, e.g.*, Verizon Sept. 27, 2016 Letter at 5 (citing *Wireline Broadband Order*, *AT&T Forbearance Order*, and *Title II Order*).

[636] *See, e.g., Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601, 5797-98, para. 420 (2015) (*Title II Order*) (citing "investments by incumbent LECs in the Ethernet market, which is regulated under Title II" without any justification of an across-the board classification for all incumbent LECs, and no mention of other providers); *id*. at 5764, para. 364 (referencing "*certain* enterprise broadband services, which the Commission has long held to be common carriage telecommunications services subject to Title II") (emphasis added); *id*. at 5800, para. 424 (stating that "key provisions of Title II apply to *certain* enterprise broadband services" and citing the offerings of certain incumbent LECs) (emphasis added); *Qwest Petition For Forbearance Under 47 U.S.C. § 160(c) From Title II and Computer Inquiry Rules With Respect To Broadband Services, Memorandum Opinion and Order*, WC Docket No. 06-125, Memorandum Opinion and Order, 23 FCC Rcd 12260, 12269, para. 15 (2008) (*Qwest Forbearance Order*) (listing certain business data services offered by Qwest for which it requested forbearance); *Petition of the Embarq Local Operating Companies For Forbearance Under 47 U.S.C. § 160(c) From Application of Computer Inquiry and Certain Title II Common-Carriage Requirements; Petition of the Frontier and Citizens ILECs For Forbearance Under Section 47 U.S.C. § 160(c) From Title II and Computer Inquiry Rules With Respect to Their Broadband Services*, WC Docket No. 06-14, Memorandum Opinion and Order, 22 FCC Rcd 19478, 19486-87, 19505, paras. 14, 50 n.178 (2007)

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prejudge the classification of services being offered in the marketplace today or in the future—whether by competitive providers or incumbent LECs—which potentially could be appropriately classified as private carriage, as well.[637] We need not and do not resolve such broader classification issues here.

269. *Responses to Arguments Advocating Compelled Common Carriage or a Different Classification Approach.* We also reject arguments for requiring that some or all business data services be offered on a common carriage basis as telecommunications services even where providers otherwise have elected to offer them on a private carriage basis.[638] Although the traditional *NARUC* analysis recognizes the possibility that a service provider might be under a legal compulsion to offer service on a common carrier basis, the record does not demonstrate grounds for imposing such a requirement here.[639] As a threshold matter, we agree with commenters that the *Further Notice* did not provide adequate APA notice for the Commission to compel common carriage for business data services generally, or to do so for some segment of the industry, via the adoption of a legislative rule of general applicability.[640]

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(*Embarq/Frontier Forbearance Order*) (listing certain business data services offered by Embarq and Frontier for which they requested forbearance and noting that "the specified broadband services all *appear to be* transmission services that the petitioners choose to offer on a common carrier basis *today*") (emphasis added); *Petition of AT&T Inc. For Forbearance Under 47 U.S.C. § 160(c) From Title II and Computer Inquiry Rules With Respect to Its Broadband Services; Petition of Bellsouth Corporation For Forbearance Under Section 47 U.S.C. § 160(c) From Title II and Computer Inquiry Rules With Respect To Its Broadband Services*, WC Docket No. 06-215, Memorandum Opinion and Order, 22 FCC Rcd 18705, 18713-14, 18733 paras. 14, 52 n.189 (2007) (*AT&T Forbearance Order*) (similar); *ACS Forbearance Order*, 22 FCC Rcd at 16316, para. 22 (listing certain business data services offered by ACS for which it requested forbearance); *Wireline Broadband Order*, 20 FCC Rcd at 14860-61, para. 9 (listing types of business data services "that carriers and end users have traditionally used for basic transmission purposes" and stating that "[t]hese broadband telecommunications services remain subject to current Title II requirements" without justifying a categorical classification or opining on how such services might be offered in the future); *Universal Service First Report and Order*, 12 FCC Rcd at 9175, para. 780 (stating that "access is a tariffed service that is offered on a common carrier basis to any subscriber ordering it" without justifying a categorical classification or opining on how such services might be offered in the future); *Hyperion Telecommunications, Inc. Petition Requesting Forbearance et al*., CC Docket No. 97-146 et al., Memorandum Opinion and Order and Notice of Proposed Rulemaking, 12 FCC Rcd 8596 (1997) (*Hyperion Order*) (granting requests for forbearance from tariffing requirements for CLEC exchange access services without analysis of the classification issue).

[637] Where a provider subject to section 214 of the Act initially offers a given interstate service on a common carriage basis, that provider first would need to obtain discontinuance approval for that common carrier offering before offering that service on a private carriage basis. *See, e.g.*, *Competition in the Interstate Interexchange Marketplace*, Notice of Proposed Rulemaking, CC Docket No. 90-132, 5 FCC Rcd 2627 2645, para. 152 (seeking comment on allowing interexchange carriers to provide services on a private carriage basis, and recognizing that to effectuate such a proposal "[p]rivate carriage would be authorized only upon approval of a § 214 discontinuance application"). By contrast, that would not be the case with respect to a service that a provider introduces as a private carriage offering in the first instance. Because there is a "gray area" where conduct can be consistent with either a common carriage or private carriage classification, the outcome of a classification analysis in a particular case thus can be informed by such historical regulatory considerations. *See, e.g.*, *Cellco P'ship v. FCC*, 700 F.3d at 547. We note that the record here does not reveal that the providers whose services we find to be private carriage above initially purported to introduce those services on a common carriage basis.

[638] *See, e.g.*, Public Knowledge *et al*. Reply at 10-14; BT Americas Reply at 10-11 (making this argument with respect to a subset of providers).

[639] *See, e.g.*, *NARUC I*, 525 F.2d at 642 ("In making this [classification] determination, we must inquire, first, whether there will be any legal compulsion thus to serve indifferently, and if not, second, whether there are reasons implicit in the nature of SMR operations to expect an indifferent holding out to the eligible user public.").

[640] *See, e.g.*, Charter Comments at 19; Comcast Oct. 5, 2016 Letter at 6.

270. In addition, we also find insufficient the policy grounds cited by commenters advocating compelled common carriage here. As a number of commenters recognize, our precedent generally has identified market power as a prerequisite for potentially compelling common carriage,[641] but the record here does not reveal that the specific providers offering particular business data services on a private carriage basis have market power with respect to those services.[642] While arguing that the Commission also can compel common carriage based on other public interest considerations, Public Knowledge *et al.* nonetheless acknowledge that even then the Commission must consider "whether the public interest benefits outweigh the costs of applying regulation."[643] Yet even that standard is not met on the record here. Although some commenters seek to minimize the perceived extent of regulatory burdens that would flow from compelled common carriage,[644] the Commission itself has acknowledged that meaningful burdens do, in fact, flow from common carrier treatment.[645] Some service provider commenters also explain that they have relied on their ability to operate on a private carriage basis, and the flexibility it provides, when electing to enter the marketplace with particular business data service offerings.[646] Thus, we find it likely that Commission action broadly treating as common carriage services that providers wish to offer as private carriage would discourage investment in such services. At the same time, we find any

[641] *See, e.g.*, Comcast Comments at 67-68 (citing precedent); NCTA Comments at 14 (citing precedent); Charter Reply at 9 (citing precedent).

[642] For their part, the commenters advocating compelled common carriage make only generalized arguments in this regard not specific to the specific offerings of the specific providers we classify above, nor as to any other universe of private carriage offerings from other providers in the marketplace today. *See, e.g.*, BT Americas Reply at 10 (making broad assertions about incumbent LECs generally); Public Knowledge *et al*. Reply at 12-13 (making general assertions about the extent to which locations are served by no more than two providers and identifying general concerns about the adequacy of competition in such cases).

[643] Public Knowledge *et al*. Reply at 12 (citing *AT&T Corp. et al., Joint Application for a License to Land and Operate a Submarine Cable Network Between the United States and Japan*, File No. SCL-LIC-19981117-00025, Cable Landing License, 14 FCC Rcd 13066, 13080, para. 39 (1999) (*AT&T US-Japan Order*)).

[644] *See, e.g.*, Verizon Comments at 19 (common carriers need not serve every prospective customer); Public Knowledge *et al*. Reply at 11 (common carriers need only "provide service in response to *reasonable* requests and on terms that do not *unreasonably* discriminate").

[645] *See, e.g.*, *Title II Order*, 30 FCC Rcd at 5612, para. 38 (acknowledging that "the application of Title II to incumbent wireline companies in the 20th Century" resulted in the application of "a swath of utility-style provisions"); *id*. at 5791, para. 410 (stating that the Commission "appreciate[s] carriers' concerns that our reclassification decision could create investment-chilling regulatory burdens and uncertainty"); *Bright House Order*, 23 FCC Rcd at 10718, para. 39 ("We give significant weight to these attestations [that providers operate on a common carrier basis] because being deemed a 'common carrier' (*i.e*., being deemed to be providing 'telecommunications services') confers substantial responsibilities as well as privileges."); *AT&T US-Japan Order*, 14 FCC Rcd at 13080, para. 39 (declining to compel common carriage there because "any public interest benefits of imposing additional burdensome regulation in this case would be outweighed by the benefits of promoting the certainty that the Japan-US CN will be deployed as scheduled"); *Implementation of Sections 3(n) and 332 of the Communications Act; Regulatory Treatment of Mobile Services*, GN Docket No. 93-252, Second Report and Order, 9 FCC Rcd 1411, 1419, para. 17(1994) ("In deciding whether to impose regulatory obligations on service providers under Title II, we must weigh the potential burdens of those obligations against the need to protect consumers and to guard against unreasonably discriminatory rates and practices. In making this comparative assessment, we consider it appropriate to seek to avoid the imposition of unwarranted costs or other burdens upon carriers because consumers and the national economy ultimately benefit from such a course.").

[646] *See, e.g.*, Comcast Oct. 5, 2016 Letter at 2-4; *see also* Mediacom Oct. 13, 2016 Ex Parte at 2 ("The risk of incurring costs to defend negotiated BDS agreements and the risk of being ordered to re-price BDS after many costs of providing the service had been incurred would depress investment in new facilities, especially in smaller and rural markets and other locations that would be costlier to serve.").

alleged countervailing public interest benefits entirely speculative. The generalized claims in the record about the need for common carriage,[647] even assuming *arguendo* that they held true in some cases, do not demonstrate the nature and extent of any benefits (if any) that would flow from compelling common carriage by the specific providers discussed above as to the specific services that we find here to be offered on a private carriage basis.[648] We thus find no policy rationale for compelling common carriage by any particular providers here.[649]

271. For similar reasons, we decline to adopt a new approach to classification here that departs from our longstanding reliance on the *NARUC* analysis as some commenters propose.[650] Commenters advocating that we classify business data services solely through our own interpretation of the statutory "telecommunications service" definition do not put forward a theory of interpretation that we find reasonable.[651] Instead, these commenters focus to such a degree on the desired outcome of such a

[647] *See, e.g.*, BT Americas Reply at 10-11 (arguing that "leading providers" possess market power and compelled common carriage would benefit customers that might have difficulty "obtain[ing] comparable services"); Public Knowledge *et al*. Reply at 10-11 (arguing that business data services are "'critical' inputs" and that it is good policy to require that all such services—even those that the provider would elect to offer on a private carriage basis—be subject to the requirements of common carrier services to protect the interests of customers of services that otherwise would be offered as private carriage not subject to those statutory duties); *id*. 12-13 (arguing that customers of business data services might have few competitive alternatives and compelling business data services to be offered on a common carrier basis would result in benefits to customers of the formerly-private carriage offerings by newly applying the requirements of sections 201 and 202 of the Act to those services); *id*. at 13-14 (arguing that compelled common carriage would promote a level regulatory playing field). *Cf.* Birch *et al.* Comments at 38-39 (while not expressly arguing for compelled common carriage, arguing that all business data services should be treated as common carrier services because the "crucial nature" of those services means customers would benefit from the application of requirements in sections 201 and 202 of the Act, providing a backstop of regulatory protection even where *ex ante* rules do not apply). Although not raised in the context of advocating compelled common carriage, some commenters do express concern about the actions of Comcast in declining to serve particular wholesale customers. *See, e.g.*, Sprint Reply at 68; INCOMPAS Reply at 26; Verizon Sept. 27, 2016 Letter at 2. Insofar as these commenters presume that Comcast is offering to serve all potential wholesale customers other than a single (or some *de minimis* number) of potential customers, we do not find that theory borne out by the information in the current record here. To the extent that the Commission were presented with evidence revealing such a scenario, it would need to revisit its analysis of the totality of the circumstances regarding whether that offering was being made on a private carriage or common carriage basis under the *NARUC* analysis—an issue we do not prejudge at this time. Under the analysis of the record here, however, where we find certain Comcast services to be offered on a private carriage basis, we are not persuaded that the concerns raised by these commenters require that Comcast offer its service on a common carrier basis. The record reveals neither the extent to which customers that Comcast elects not to offer to serve are unable to find adequate alternatives—whether self-provisioning or service from other providers—nor does it reveal the extent to which any benefits from common carriage truly would be public benefits, rather than simply private benefits for particular customers.

[648] Those generalized arguments likewise do not demonstrate the benefits (if any) of compelling common carriage by any universe of providers other than those we address above, insofar as those other providers also offer business data services on a private carriage basis in the marketplace today.

[649] As Public Knowledge *et al.* observe, the Commission's universal service contribution rules require certain contributions from private carriers. *See* Public Knowledge *et al*. Reply at 14. Nothing in this order modifies those universal service contribution rules.

[650] *See, e.g.*, INCOMPAS Reply at 21-23, 28; Public Knowledge *et al.* Reply at 8-9; Verizon Reply at 37; Verizon Sept. 27. 2016 Letter at 3, 4.

[651] Some commenters overstate the *USTelecom v. FCC* decision as having held that the Commission reasonably can interpret and implement the definition of 'telecommunications service' without reference to the *NARUC* analysis. *See, e.g.*, INCOMPAS Reply at 28; Public Knowledge *et al*. Reply at 8-9. The D.C. Circuit there stated only that "US Telecom cites no case, nor are we aware of one, holding that when the Commission invokes the statutory test

(continued….)

classification approach that we are left unclear how the Commission could achieve that outcome without adopting such a sweeping interpretation of "telecommunications services" as to virtually eliminate any distinction between offerings "to the public" and private offerings.[652] Thus, as a matter of statutory construction, the record does not persuade us to depart from our longstanding classification approach, which gave full meaning to the relevant statutory language consistent with the legislative history.

272. Independently, we are not persuaded by policy arguments that we should depart from our longstanding classification approach even if we could do so as a matter of statutory interpretation. The arguments in favor of such action are, like the arguments commenters raised in favor of compelled common carriage, generalized assertions about providing perceived benefits or remedying perceived risk of harms that are divorced from any specific circumstances where application of our longstanding classification approach would yield private carriage classifications.[653] As we explained when rejecting proposals to compel common carriage, such arguments do not demonstrate what public benefits would

(Continued from previous page)
for common carriage, it must also apply the *NARUC* test" and found that, other than an argument already rejected by the court (and not relevant here), USTelecom never challenged the Commission's application of the statutory definition. *USTelecom v. FCC*, 825 F.3d 674, 710 (D.C. Cir. 2016). Given the court's interpretation of the scope of issues before it, the D.C. Circuit had no reason to opine broadly on the reasonableness of any particular alternative approach to interpreting the telecommunications service definition that did not rely on the *NARUC* analysis, and the limits of its own statements reveal that the court did not, in fact, opine on that issue. Confronted with requests here to depart from the longstanding classification approach relying on the *NARUC* analysis where such requests present serious concerns about the reasonableness of the new statutory interpretation that would be required and no justified need for any new approach in this context, we instead adhere to our longstanding classification approach that relies on the *NARUC* analysis. Furthermore, however the D.C. Circuit viewed the Commission's actions in the *Title II Order* as the issues were framed for the court on review, the *Title II Order* does not itself identify a reasonable alternative interpretational approach that would adequately address our concerns here, particularly given the *Order*'s many citations to, and reliance on, *NARUC I* and the Commission's longstanding approach to 'telecommunications service' classification that relies on the *NARUC* framework. *See, e.g.*, *Title II Order*, 30 FCC Rcd at 5757, 5763-65, paras. 355 n.969, 363 nn. 1008, 1011, 364 nn. 1013, 1017, 1022. Given the concerns we identify here, which were not addressed in *USTelecom v. FCC* or the *Title II Order*, we reject the view that we can and should depart from our longstanding classification approach when evaluating business data services.

[652] *See, e.g.*, INCOMPAS Reply at 22-23 (quoting language from the telecommunications service definition and asserting that certain providers satisfy that definition without indicating the interpretive framework or any outer limits); Public Knowledge *et al*. Reply at 9 (similar); Verizon Reply at 37 (suggesting that the Commission can apply the statutory definition without using the *NARUC* analysis without elaborating on the interpretive framework or any outer limits); Verizon Sept. 27, 2016 Letter at 4 (quoting language from the telecommunications service definition and asserting that certain providers satisfy that definition without indicating the interpretive framework or any outer limits). Although Verizon suggests that "providers, including Verizon, still can . . . offer *other* services as private carriage," it does not demonstrate how, or to what extent, that could be true in practice given an interpretive approach that would result in in "all business data services [being] common-carrier services." Verizon Sept. 27, 2016 Letter at 5 (emphasis added).

[653] *See, e.g.*, INCOMPAS Reply at 26 (arguing that classifying some business data service offerings as private carriage could allow "strategic denials"); Verizon Reply at 26-27 (arguing that classifying some business data service offerings as private carriage could undercut technology neutrality, make regulation of business data services harder to administer, limit the ability to ensure just and reasonable rates for business data services, and be at odds with the nature of the marketplace); *id*. at 35 ("cable companies are key suppliers" of certain wholesale services for Verizon); Verizon Sept. 27, 2016 Letter at 2-3 (arguing that allowing private carriage could undermine competition and technology and competitive neutrality). While not entirely clear, it appears that Public Knowledge *et al*. raise the same arguments in support of a new, broader statutory interpretation that we described above in the context of their arguments for compelled common carriage. *See* Public Knowledge *et al*. Reply at 11-14. To the extent that providers raise in this context certain specific concerns about denial of service by Comcast already discussed above, we reject them here on those same grounds.

flow if the specific services of certain providers that we find to be offered on a private carriage basis—or those of other providers not addressed here—were instead classified as common carriage.[654] That shortcoming is even more problematic for any argument to revisit the Commission's classification approach, because absent some theory for limiting the interpretation just to this context, increasing the reach of the telecommunications service definition would also result in regulatory burdens for providers of other communications services that would be classified as common carrier telecommunication services under that interpretive approach. We thus find no grounds for adopting an approach to service classification here that departs from our longstanding reliance on the *NARUC* analysis.

273. Given that we do not depart here from our longstanding approach to evaluating private carriage and common carriage classification, we also continue to adhere to our precedent under which shared use arrangements typically were classified as private carriage.[655] Consequently, this addresses the concerns of some commenters that research and education (R&E) networks that historically had been treated as private carriage under that framework might newly be classified as common carrier telecommunications services under a new approach to classification.[656]

B. Expiration of the Section 214 Interim Wholesale Access Rule

274. By this Order, the Commission "identifies a set of rules and/or policies that will ensure rates, terms, and conditions for special access services [BDS] are just and reasonable."[657] As a result, the interim wholesale access rule for discontinued TDM-based BDS and unbundled network element platform (UNE-P) replacement services (also called commercial wholesale platform services) established

[654] We also are not persuaded by a number of these policy arguments even on their own terms. Neither the concept of technology neutrality nor of competitive neutrality requires the Commission to blindly treat all technologies or competitors identically, regardless of similarities or differences. Our classification approach based on how services are held out to the public instead reasonably treats all technologies and competitors neutrally where they are similarly situated. When a provider holds out an offering on a common carrier basis the service is a common carrier telecommunications service regardless of the identity of the provider or the technology being used. Likewise, when the manner of a provider's offering satisfies the test for private carriage, the service will be classified as private carriage regardless of the identity of the provider or the technology being used.

[655] In the *Resale and Shared Use Order*, the Commission considered, among other things, various scenarios where entities have "a communications need (other than a need to resell the service to others)" and some group of these entities "collectively use communications services and facilities obtained from an underlying carrier or a resale carrier" to meet that need, apportioning among themselves "the communications related costs associated with subscription to and collective use of the communications services and facilities." *Regulatory Policies Concerning Resale and Shared Use of Common Carrier Services and Facilities*, Docket No. 20097 et al., Report and Order, 60 FCC 2d 261, 316-17, paras. 120, 122 (1976) (*Resale and Shared Use Order*). The Commission anticipated that such a group would obtain the required services and facilities through the use of an intermediary that obtained such services from a carrier in order to provide them to the group, or by one of the group members acting in that same basic role. *Id*. at 321, para. 129. In such scenarios, the Commission found it likely that the intermediary (or group member acting in such a role) would be acting as a private carrier, rather than as a common carrier. *Id*. at 316-17, 319, paras. 120, 125; *see also Universal Service First Report and Order*, 12 FCC Rcd at 9177, para. 784 ("[W]e note that cost sharing for the construction and operation of private telecommunications networks does not render participants 'telecommunications carriers' because such arrangements do not involve service 'directly to the public.'").

[656] *See, e.g.*, Internet2 et al. Reply at 11 (discussing R&E networks and the *Resale and Shared Use Order*); *see also, e.g.*, The Quilt Reply at 2 ("The Commission has a long history of treating R&E networks as private carriers."); Letter from Jen Leasure, President and CEO, The Quilt, to Marlene H. Dortch, Secretary, FCC, WC Docket No.16-143 et al. (filed Sept. 22, 2016) (similar).

[657] 47 CFR § 63.71(d)(1)(i).

in the *2015 Technology Transitions Order* will expire when these rules and policies become effective.[658] We decline to extend the interim rule for UNE-P replacement services.

275. *Background*. UNE-P replacement services are wholesale voice services that consist of a DS0 loop, switching, and shared transport, and allow competitive carriers to provide local exchange service without facilities.[659] In the *2015 Technology Transitions Order*, the Commission concluded that, as a condition to receiving authority to discontinue a legacy TDM-based service used as a wholesale input by competitive providers, an incumbent LEC must provide wholesale access to UNE-P replacement services and business data services at DS1 speed and above on reasonably comparable rates, terms, and conditions to any requesting telecommunications carrier.[660] This interim rule will expire when the requirements established in this Order are published in the Federal Register and become effective.[661] In the *2015 Technology Transitions Further Notice*, the Commission asked whether it should extend the interim rule for UNE-P replacement services only for a further interim period beyond completion of this proceeding, and if so, for how long.[662] The Commission "recognize[d] that incumbents are currently offering such commercial arrangements in TDM on a voluntary basis" and further "recognize[d] the benefits of agreements reached through market negotiations."[663]

276. *Discussion.* We return to the Commission's longstanding policy of "encourag[ing] the innovation and investment that come from facilities-based competition."[664] Thirteen years ago, the Commission found that "[i]t is now clear, as discussed below, that, in many areas, UNE-P has been a disincentive to competitive LECs' infrastructure investment."[665] We will no longer deter investment in next-generation facilities or distort the market by extending the interim rule.[666]

277. We find some merit to the argument that it did not make sense to tie the interim rule's termination as to UNE-P replacement services to the end of this proceeding.[667] However, unlike proponents of the interim rule, we find that the appropriate remedy for this arguably erroneous decision is to permanently terminate the interim rule as expeditiously as possible.

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[658] *Technology Transitions et al.*, Docket 05-25 et al., Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, 30 FCC Rcd 9372, 9443, para. 132 (2015) (*2015 Technology Transitions Order* or *2015 Technology Transitions Further Notice*).

[659] *2015 Technology Transitions Order*, 30 FCC Rcd at 9453-54, para. 147.

[660] *Id.* at 9443, para. 132.

[661] *Id.* at 9443, para. 132. Specifically, pursuant to the *2015 Technology Transitions Order*, as to both UNE-P replacement services and business data services at DS1 speed or above the interim rule ends when (1) the Commission identifies a set of rules and/or policies that will ensure rates, terms, and conditions for special access services are just and reasonable; (2) it provides notice such rules are effective in the Federal Register; and (3) such rules and/or policies become effective. *Id.*

[662] *Id.* at 9496-97, para. 244.

[663] *Id.* at 9496, para. 243.

[664] *Triennial Remand Order*, 20 FCC Rcd at 2535 para. 2 (2004).

[665] *Id.* at 2653, para. 218; *see also id.* (stating that UNE-P "was designed as a tool to enable a transition to facilities-based competition").

[666] Since the interim rule's inception, no party has filed a discontinuance application that would trigger application of the interim rule.

[667] *See, e.g.*, INCOMPAS Oct. 26, 2015 Comments, GN Docket No. 13-5, at 14; Granite Oct. 26, 2015 Comments, GN Docket No. 13-5, at 2-3; *see also 2015 Technology Transitions Further Notice*, 30 FCC Rcd at 9496, para 242 (acknowledging that this proceeding does not address the status of UNE-P replacement services).

278. We are not persuaded that competition will be harmed by the termination of the interim rule. Proponents of the interim rule ask us to ensure that the specific wholesale inputs on which they depend are available at "reasonably comparable" rates, terms, and conditions if and when incumbent LECs transition those inputs fully to Internet Protocol (IP). But "[o]ur statutory duty is to protect efficient competition, not competitors."[668] Companies that offer multilocation enterprise voice service—such as Granite and the members of the Wholesale Voice Coalition—contend that their service is difficult to provide without access to regulated inputs due to the high cost of serving some individual customer locations, the typically low number of lines per customer location, and the need to serve numerous locations per customer.[669] However, neither Granite nor any other party has linked these challenges to competitive impact. For instance, Granite has not quantified how many of its customers would become uneconomical to serve without the interim rule, shown how it would choose among constructing its own facilities, reselling cable, and reselling incumbent LEC services in the absence of the rule, nor shown how these issues would affect overall competition in the market.[670] Instead, supporters of extending the interim rule call for *us* to conduct a detailed examination of the marketplace for wholesale voice platform services and—if we are unwilling to cement the rule permanently in place—extend the interim rule until the study is complete.[671] We decline to expend public resources to further distort the market and introduce regulatory uncertainty.

279. We find the remainder of the arguments in the record in support of extending the condition similarly unpersuasive. Granite has argued that its overall costs would increase 159 percent if it were required to convert from purchasing UNE-P replacement services to resold incumbent LEC voice lines,[672] but it has not demonstrated that absent the interim rule such a conversion would be necessary, nor supported that assertion beyond submitting a generalized declaration. We are equally unpersuaded by a June 2015 study that purports to find that loss of wholesale access to incumbents' voice services would result in customer harm of between $4.443 billion and $10.168 billion per year.[673] This calculation is

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[668] *Bell Atlantic Mobile Systems, Inc. and NYNEX Mobile Communications Company*, Memorandum Opinion and Order, 12 FCC Rcd 22280, 22288, para. 16 (1997).

[669] *See* Letter from Thomas Jones, Counsel to Granite Telecommunications, LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 2 and Attach. (filed June 3, 2015) (stating that Granite serves 400,000 customer locations for 4,800 companies across over 13,000 wire centers, 57 percent of its customer locations have only one or two lines, and in 66 percent of cases its customers are the sole occupant of the location); *id.* (stating that service from a cable provider is already available at 15 percent of Granite customer locations, while cable extension is available for construction costs of over $3,500 at 33 percent of its customer locations and cable is unavailable at the remaining 21 percent); Letter from Eric J. Branfman, Counsel to the Wholesale Voice Line Coalition, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1 (filed June 11, 2015) (arguing that "[t]he locations are widely dispersed, and often in suburban, exurban and rural areas where no competitive carrier has facilities and it is not economical for a CLEC to construct facilities duplicating the ILEC's, given the very limited demand at each location").

[670] *Cf.* CenturyLink Nov. 24, 2015 Reply Comments, GN Docket No. 13-5 et al., at 12 ("[T]here is no evidence that CLECs . . . would be harmed, much less 'impaired' in their ability to compete without a commercial platform service, as they can, and do, offer their own interconnected VoIP services to any customer with a broadband connection.").

[671] *See* Letter from Paula Foley, Legal & Regulatory Counsel, Granite, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., 1-2.

[672] *See* Letter from Michael B. Galvin, General Counsel, Granite, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1 and Attach. para. 5 (filed Oct. 23, 2015).

[673] *See* Letter from Michael B. Galvin, General Counsel, Granite, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., Attach. at 5-6 (filed June 12, 2015) (Granite June 12, 2015 *Ex Parte* Letter).

based on Granite's estimate that competitive carriers provide $30 per line of value to their customers,[674] a remarkable assertion for which the study provides no particularized or verifiable support.

280. Finally, we note that arguments in favor of extending the interim rule are premised on the expectation that wholesale voice arrangements will not occur absent regulatory action. We disagree. Incumbent LECs—in particular, BOCs such as AT&T, Verizon, and CenturyLink—offer UNE-P replacement services in TDM on a voluntary basis under commercially negotiated terms.[675] In the course of forbearing from local switching and shared transport unbundling obligations under section 271 in the 2015 USTelecom forbearance proceeding, the Commission concluded that it did "not find persuasive Granite's argument that BOCs would never offer UNE-P replacement services [in TDM] but for the section 271 'backstop.'"[676] Since that time, neither Granite nor others have shown that prices or availability of TDM-based UNE-P replacement services have changed as a result of the forbearance. We see no convincing reason in the record to assume that the market would operate differently in IP.[677] Granite attempts to show otherwise by pointing to negotiations in which AT&T refused Granite's request to include a clause acknowledging the interim rule.[678] However, the interim rule was a time-limited regulatory obligation independent of any contract. We fail to see how AT&T's refusal of Granite's requested belt-and-suspenders protection is probative.

VII. OTHER ISSUES

A. Denying Applications for Review

281. The Commission delegated authority to the Bureau to implement the *2015 Collection*. In carrying out this responsibility, the Bureau released the *Data Collection Implementation Order*[679] and the *Data Collection Reconsideration Order*,[680] making certain modifications and clarifications to the *2015 Collection* requirements. CenturyLink and USTelecom each filed applications for review (AFR), seeking reversal of certain Bureau actions in these orders. We deny these applications. We conclude that the CenturyLink AFR is moot in light of the reforms adopted in the Order, and we deny the USTelecom AFR because we find that the Bureau acted within its delegated authority in limiting the data collection to one year.

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[674] Granite June 12, 2015 *Ex Parte* Letter Attach. at 4-5.

[675] *See* AT&T Oct. 26, 2015 Comments, GN Docket No. 13-5, at 19; USTelecom Oct. 26, 2015 Comments, GN Docket No. 13-5, at 17-18; Frontier Nov. 24, 2015 Reply, GN Docket No. 13-5, at 10 (quoting USTelecom Comments); s*ee also* USTelecom Comments, WC Docket No. 16-132 at 16 (filed Dec. 5, 2016).

[676] *Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. 160(c) from Enforcement of Obsolete ILEC Legacy Regulations That Inhibit Deployment of Next-Generation Networks*, WC Docket No. 14-192 et al., Memorandum Opinion and Order, 31 FCC Rcd 6157, 6176-77 para. 34 (2015); *cf.* Granite Oct. 26, 2015 Comments, GN Docket No. 13-5, at 4 (asserting that Granite "does not agree that wholesale platform services are wholly 'voluntary' ILEC offerings").

[677] *See* Letter from Frank S. Simone, Vice President-Federal Regulatory, AT&T, Inc., to Marlene H Dortch, Secretary, FCC, GN Docket No. 13-5 *et al.*, at 1 (Mar. 21, 2017) ("Granite already has commercial agreements with AT&T and other carriers for the provision of a 'commercial wholesale platform voice service'. Importantly, many of these agreements were first entered into before the Commission instituted the interim rules Granite now claims are in need of an extension. And, there is no record evidence purporting to show that absent an extension of the interim rules, Granite would be unable to obtain future wholesale agreements.").

[678] Letter from Thomas Jones, Counsel to Granite Telecommunications, LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1-2 and Attach. (filed Apr. 6, 2016).

[679] *Data Collection Implementation Order*, 28 FCC Rcd 13189.

[680] *Data Collection Reconsideration Order*, 29 FCC Rcd 10899.

282. On September 18, 2013, the Bureau released the *Data Collection Implementation Order* clarifying the scope of the collection, providing instructions on how to respond to the data collection questions, and providing a list of all modifications and amendments to the data collection questions and definitions.[681] These actions were based on feedback received from potential respondents, including the Paper Reduction Act (PRA) comments filed with the Commission during the 60-day public comment period, and the Bureau's further internal review.[682] The *2015 Collection* required providers to report locations with connections. In the *Data Collection Implementation Order*, the Bureau clarified that this meant the connections were considered capable of providing a dedicated service for the purposes of reporting locations.[683] The Bureau further clarified that cable system operators in their local franchise areas were required "to report those *Locations* with *Connections* owned or leased as an *IRU* (i.e., an indefeasible right of use) that are connected to a *Node* (i.e., headend) that has been upgraded or was built to provide Metro Ethernet (or its equivalent) service, . . . regardless of the service provided over the *Connection* or whether the *Connection* is idle or in-service."[684] For connections not linked to a MetroE-capable node, cable system operators were only required to report in-service connections used "to provide a *Dedicated Service* or a service that incorporates a *Dedicated Service* within the offering as part of a managed solution or bundle of services sold to the customer."[685]

283. On October 22, 2013, CenturyLink filed an AFR, seeking reversal of the Bureau's decision in the *Data Collection Implementation Order* to exclude from the collection those cable system operator locations neither used to provide a dedicated service nor connected to a MetroE-capable node.[686] CenturyLink argued the decision would "result in a failure to account fully for robust and growing cable-based competition" and the Bureau thus exceeded its delegated authority.[687] ACA, NCTA, and Sprint opposed the CenturyLink application for review.[688]

284. Following the release of the *Data Collection Implementation Order*, the Bureau submitted the collection to OMB for review as required by the PRA, and after a lengthy review process,

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[681] *See Data Collection Implementation Order*, 28 FCC Rcd at 13192, para. 7.

[682] *Id*.

[683] *Id*. at 13200-01, paras. 25-27.

[684] *Id*. at 13200, para. 26. Metro Ethernet is an Ethernet metropolitan area network service offering that involves centrally positioning one or more gigabit Ethernet (GbE) or 10 gigabit Ethernet (10 GbE) switches in a metro area. It offers the advantage of carrying all traffic in native Ethernet format, with no requirement for introducing SDH/SONET, frame relay, ATM or other Physical Layer or Data Link Layer protocols that can increase both complexity and cost, while adding overhead. *See Webster's New World Telecom Dictionary* (2010); *see also* Ralph Santitoro, Metro Ethernet Forum White Paper, *Metro Ethernet Services – A Technical Overview* (2006), http://metroethernetforum.org/Assets/White_Papers /Metro-Ethernet-Services.pdf (providing a comprehensive technical overview of Ethernet services) (last visited Sept. 9, 2013).

[685] *Data Collection Implementation Order*, 28 FCC Rcd 13201, para. 27.

[686] CenturyLink Application for Review, WC Docket No. 05-25, RM-10593 (filed Oct. 22, 2013), https://www.fcc.gov/ecfs/filing/6017471312/document/7520949605 (CenturyLink AFR).

[687] *Id*. at 1, 6.

[688] Opposition of ACA, WC Docket No. 05-25, RM-10593 (filed Nov. 6, 2013), https://www.fcc.gov/ecfs/filing/6017475662/document/7520956582; Opposition of NCTA, WC Docket No. 05-25 (filed Nov. 6, 2013), https://www.fcc.gov/ecfs/filing/6017475632/document/7520956551; Opposition of Sprint, WC Docket No. 05-25, RM-10593 (filed Nov. 6, 2013), https://www.fcc.gov/ecfs/filing/6017475660/document/7520956580.

OMB approved the collection subject to modifications on August 15, 2014.[689] The most notable modifications to the collection were: (1) collecting data for a single year, 2013, instead of data for two years, 2010 and 2012; (2) reducing the mapping requirements for cable companies to report only fiber routes making up the local transport network and not reporting feeder routes to end user locations; (3) modifying the definition of purchasers required to respond to exclude entities spending less than $5 million dollars on business data services in 2013; and (4) making many of the questions directed at purchasers optional. On September 15, 2014, the Bureau released the *Data Collection Reconsideration Order*, which implemented these changes to the collection.[690]

285. On October 24, 2014, USTelecom filed an application seeking Commission review of the Bureau's modification of the collection, in the *Data Collection Reconsideration Order*, to one year's worth of data as approved by OMB pursuant to the PRA.[691] USTelecom asserted this change "exceeds the Bureau's delegated authority, and threatens to undermine the Commission's goals for the data collection effort."[692] Oppositions to the USTelecom AFR were filed by Sprint and a coalition of competitive LECs, urging the Commission to reject the application as a meritless tactic to delay the proceeding.[693]

286. We first deny the CenturyLink AFR as moot in light of the reforms adopted in this Order. CenturyLink's concern was that the Bureau's decision would result in the Commission's failing to take into account the growing cable competition present in the business data services market. By using Form 477 data in addition to the *2015 Collection* data to craft the competitive market test, the Commission has ensured that the competitive market test fully takes cable competition into account, both in this initial test and in future updates.

287. We also deny the US Telecom AFR. In the *Data Collection Order*, the Commission directed the Bureau that "[t]o the extent the Bureau cannot obtain Office of Management and Budget approval for some portion of the data collection . . . to proceed with the remainder of the collection."[694] The OMB approval restricted the data collection to one year. The Bureau thus properly proceeded pursuant to Commission delegation and continued with the data collection as allowed by OMB.

B. Addressing Motion to Strike

288. On June 17, 2016, CenturyLink et al. filed a motion seeking to strike from the record the analysis contained in the Rysman Paper that was attached to the *Further Notice* and other analyses contained in the record and *Further Notice* that were based on the *2015 Collection*.[695] According to

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[689] *See Information Collection(s) Being Submitted for Review and Approval to OMB*, 78 Fed. Reg. 73861 (Dec. 9, 2013); Notice of Office of Management and Budget Action, OMB Control No. 3060-1197 (Aug. 15, 2014), http://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=201311-3060-001#.

[690] *See Data Collection Reconsideration Order*, 29 FCC Rcd 10899.

[691] USTelecom Application for Review, WC Docket No. 05-25, RM-10593 (filed Oct. 24, 2014), https://www.fcc.gov/ecfs/filing/60000974216/document/60000975717 (USTelecom AFR).

[692] *Id*. at 3.

[693] Opposition of Sprint to the USTelecom AFR, WC Docket No. 05-25, RM-10593 at 1 (filed Nov. 10, 2014), https://www.fcc.gov/ecfs/filing/60000977443/document/60000980460 (Sprint Opposition); Opposition of Birch, BT Americas, Integra, and Level 3, WC Docket No. 05-25, RM-10593 at 2 (filed Nov. 10, 2014), https://www.fcc.gov/ecfs/filing/60000977422/document/60000980429 (Birch et al. Opposition).

[694] *Data Collection Order*, 27 FCC Rcd at 16340, para. 52, n.111.

[695] CenturyLink et al. Motion to Strike, WC Docket Nos. 16-143, 15-247, 05-25 and RM-10593 (filed June 17, 2016), https://www fcc.gov/ecfs/filing/60002166255/document/60002367197 (Motion to Strike).

CenturyLink et al., the Rysman Paper and *Further Notice* were based on flawed data regarding cable entry and capability in the market, which massively distorted the competitive landscape evaluated by Dr. Rysman. [696] USTelecom filed comments supporting the motion.[697] In light of the reforms adopted in the Order, which rely on cable entry as reported in the Form 477 data, we conclude that the motion to strike is moot.

289. CenturyLink et al.'s motion to strike is in response to various cable reporting errors contained in the *2015 Collection*. After release of the *Further Notice*, the Commission discovered that four cable companies – Comcast, Charter, Cox, and Legacy TWC – had failed to report all locations connected to Metro-E capable headends.[698] These companies did report in their original submissions each location to which they provided business data services in 2013.[699] Subsequent to this discovery, these companies supplemented their submissions, as necessary, with information to indicate, or to allow the Commission to determine, those census blocks with non-residential locations serviceable by Metro-E headends in 2013.[700]

290. Commission staff have already accounted for the supplemented cable information in the context of the rulemaking proceeding and updated its analysis accordingly. Moreover, the competitive market test relies heavily on data from the Form 477 to determine where cable competition is present in the business data services market and has based significant regulatory relief on the presence of a single cable provider located in 75 percent of the census blocks in a county. The arguments from CenturyLink et al. are based on the concern that the Commission would not have the appropriate evidence of cable competition in evaluating the business data services market. Because we have included the Form 477 data in our analysis and based significant regulatory relief on the presence of cable competition, we conclude that the motion to strike has been rendered moot and is therefore denied.

C. Addressing Previously-Filed Motion Seeking Additional Information on Fiber Maps

291. The Bureau on September 18, 2015, released an order clarifying and modifying the Protective Order initially adopted for the *2015 Collection*.[701] In that order, the Bureau declined to make available to authorized parties fiber mapping files showing "the starting points for connections to end user locations," "the transmission paths," or "the connections to end user locations" in order to mitigate potential risks to critical communications infrastructure.[702] The Bureau as an alternative offered to

[696] Motion to Strike at 3.

[697] Comments of USTelecom in Support of the CenturyLink et al.'s Motion to Strike, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593 (filed June 23, 2016).

[698] Letter from Michael Pryor, Counsel to Cox, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 (filed May 18, 2016) (Cox May 18, 2016 *Ex Parte* Letter); Letter from Matthew Brill, Counsel to Legacy TWC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 1 (filed May 12, 2016) (Legacy TWC May 12, 2016 *Ex Parte* Letter) Letter from Samuel Feder, Counsel to Charter, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 1 (filed May 27, 2016) (Charter May 27, 2016 *Ex Parte* Letter).

[699] *Id*.; Letter from Matthew Brill, Counsel for Comcast, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 1-2 (filed Apr. 26, 2016) (Comcast Apr. 26, 2016 *Ex Parte* Letter).

[700] Charter May 27, 2016 *Ex Parte* Letter at 1; Cox May 18, 2016 *Ex Parte* Letter at 1-2; Legacy TWC May 12, 2016 *Ex Parte* Letter at 1; Letter from Matthew Brill, Counsel for Comcast, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 1-2 (filed June 1, 2016).

[701] *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*, WC Docket No. 05-25, RM-10593, Order and Modified Data Collection Protective Order, 30 FCC Rcd 10027 (WCB 2015) (*Modified Protective Order*).

[702] *Modified Protective* Order, 30 FCC Rcd at 10038, para. 25.

"provide maps depicting the presence of fiber by listing all the providers with fiber facilities in a census block or by indicating a connected end-user location's distance to fiber without including information on the specific route of the fiber."[703]

292. On March 17, 2016, AT&T filed a motion seeking access to the highly confidential fiber route maps submitted by competitive providers in response to the *2015 Collection*.[704] Denying access, according to AT&T, would violate the Administrative Procedure Act by not allowing it to refute claims by competitive LECs that competition only exists at the building level because AT&T could not "show where the CLECs have actually deployed fiber."[705] Specifically, AT&T asserted it could not refute arguments by showing "precisely how many locations with special access demand are within the CLECs' own stated distances for lateral build-out from their fiber facilities" or "calculate the full reach of each competitor's network."[706]

293. At the time AT&T had filed its motion, the Commission staff had only made available a data file identifying the census blocks in which fiber routes reported by competitive providers were present. On March 30, 2016, the Bureau made available an additional data file providing the distances from each unique reported location to each competitive provider's fiber network. AT&T, its economists, and other commenters have relied on this information in advocating their positions in this proceeding.[707] We find the alternative data file that Commission staff provided addresses AT&T's identified concerns, and we therefore deny the motion.

D. Severability

294. All of the rules and policies that are adopted in this Order are designed to work in unison to ensure that rates for business data services are just and reasonable while also encouraging facilities-based competition and facilitating technology transitions. However, each of the separate reforms we undertake in this Order serves a particular function toward these goals. Therefore, it is our intent that each of the rules and policies adopted herein shall be severable. If any of the rules or policies is declared invalid or unenforceable for any reason, it is our intent that the remaining rules shall remain in full force and effect.

E. Delegation of Authority to Bureau to Correct Errors and Omissions

295. Given the complexities associated with modifying existing rules as well as other reforms adopted in this Order, we delegate authority to the Wireline Competition Bureau to make any further rule revisions extending only to technical and conforming edits to ensure that the reforms adopted in this Order are properly reflected in the rules. If any such rule changes are warranted, the Bureau shall be responsible for such changes. We note that any entity that disagrees with a rule change made on delegated authority will have the opportunity to file an Application for Review by the full Commission.[708]

296. In addition, we take this opportunity to make several non-substantive rule amendments as reflected in Appendix A. We find that notice and comment is unnecessary for rule amendments to ensure

[703] *Id*.

[704] Motion of AT&T Inc. to Make Fiber Maps Available, WC Docket No. 05-25 and RM-10593 (filed Mar. 17, 2016), https://ecfsapi.fcc.gov/file/60001535923.pdf (AT&T Motion).

[705] AT&T Motion at 2.

[706] *Id*. at 7.

[707] *See*, *e.g.*, Second IRW Paper at 41 (discussing reliance on "FCC-generated fiber and fiber node distance to building resources").

[708] *See* 47 U.S.C. §§ 155(c)(1), (4).

consistency in terminology and cross references across various rules, correct inadvertent failures to make conforming changes when prior rule amendments occurred, and to delete references to rules governing past time periods that no longer are applicable.

VIII. PROCEDURAL MATTERS

A. Paperwork Reduction Act Analysis

297. This document contains new information collection requirements subject to the PRA. It will be submitted to OMB for review under section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new information collection requirements contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002,[709] we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees. We describe impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the Final Regulatory Flexibility Analysis in Appendix C.

B. Congressional Review Act

298. The Commission will send a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act.[710]

C. Final Regulatory Flexibility Analysis

299. As required by the Regulatory Flexibility Act (RFA),[711] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated into the *Further Notice*.[712] The Commission sought written public comment on the possible significant economic impact on small entities regarding the proposals addressed in the *Further Notice*, including comments on the IRFA. Pursuant to the RFA, a Final Regulatory Flexibility Analysis is set forth in Appendix C.

D. Data Quality Act

300. The Commission certifies that it has complied with the Office of Management and Budget Final Information Quality Bulletin for Peer Review, 70 Fed. Reg. 2664 (2005), and the Data Quality Act, Pub. L. No. 106-554 (2001), codified at 44 U.S.C. § 3516 note, with regard to its reliance on influential scientific information in the Report and Order in WC Docket Nos. 16-143, 15-247, 05-25, and RM-10593.[713]

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[709] Public Law 107-198, see 44 U.S.C. § 3506(c)(4).

[710] *See* 5 U.S.C. § 801(a)(1)(A).

[711] *See* 5 U.S.C. § 603.

[712] *Further Notice*, 31 FCC Rcd at 4915, para. 538.

[713] *See* Letter from William Layton, Assistant Division Chief, Pricing Policy Division, Wireline Competition Bureau, FCC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593 (dated Aug. 23, 2016); Letter from William Layton, Assistant Division Chief, Pricing Policy Division, Wireline Competition Bureau, FCC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593 (dated July 25, 2016); Letter from Deena M. Shetler, Associate Bureau Chief, Wireline Competition Bureau, FCC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593 (dated July 8, 2016); Letter from William Layton, Assistant Division Chief, Pricing Policy Division, Wireline Competition Bureau, FCC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593 (dated June 28, 2016).

IX. ORDERING CLAUSES

301. ACCORDINGLY, IT IS ORDERED that, pursuant to sections 1, 2, 4(i)–(j), 10, 201(b), 202(a), 214, 303(r), 403, of the Communications Act of 1934, as amended, and section 706 of the Telecommunications Act of 1996, 47 U.S.C. §§ 151, 152, 154(i)–(j), 160, 201(b), 202(a), 214, 303(r), 403, and 1302, this Report and Order IS ADOPTED.

302. IT IS FURTHER ORDERED that parts 0, 1, 61, 63, and 69 of the Commission's rules ARE AMENDED as set forth in Appendix A, and such rule amendments SHALL BE EFFECTIVE sixty (60) days after publication of the rules amendments in the Federal Register, except to the extent they contain information collections subject to PRA review. The rules that contain information collections subject to PRA review SHALL BECOME EFFECTIVE upon announcement in the Federal Register of OMB approval and an effective date of the rules.

303. IT IS FURTHER ORDERED that pursuant to section 61.45(b)(1)(iv) of the Commission's rules, 47 C.F.R. § 61.45(b)(1)(iv), price cap incumbent LECs must file with the Commission, revised tariffs and tariff review plans implementing the X-factor for end user channel terminations subject to price cap regulation, to become effective on December 1, 2017.

304. IT IS FURTHER ORDERED that pursuant to section 1.115 of the Commission's rules, 47 CFR § 1.115, the CenturyLink and USTelecom Applications for Review ARE DENIED.

305. IT IS FURTHER ORDERED that pursuant to sections 4(i) and 4(j) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), the CenturyLink et al. Motion to Strike IS DENIED.

306. IT IS FURTHER ORDERED that pursuant to sections 4(i) and 4(j) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), the AT&T Motion Seeking Additional Information on Fiber Maps IS DENIED.

307. IT IS FURTHER ORDERED that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

308. IT IS FURTHER ORDERED, that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

309. IT IS FURTHER ORDERED that, with regard to Docket Nos. 16-143, 05-25, and RM-10593, should no petitions for reconsideration, applications for review, or petitions for judicial review be timely filed, these proceedings SHALL BE TERMINATED and the dockets closed.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

FINAL RULES

The Federal Communications Commission amends 47 CFR parts 0, 1, 51, 61, 63 and 69 as follows:

PART 0 – COMMISSION ORGANIZATION

1. The authority citation for part 0 continues to read as follows:

Authority: Secs. 5, 48 Stat. 1068, as amended; 47 U.S.C. 155, unless otherwise noted.

2. Section 0.291 is amended by removing paragraph (h) and reserving for future use.

§ 0.291 Authority delegated.

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(h) [Reserved.]

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PART 1 – PRACTICE AND PROCEDURE

3. The authority citation for part 1 continues to read as follows:

Authority: 15 U.S.C. 79 *et seq.*; 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 227, 303(r), 309, 1403, 1404, 1451, and 1452.

4. Section 1.774 is removed and reserved.

5. Section 1.776 is added to read as follows:

§ 1.776 Pricing flexibility limited grandfathering.

Special access contract-based tariffs that were in effect on or before the effective date of the rules adopted in [[FCC 17-XXX, Effective [INSERT EFFECTIVE DATE FROM PUBLICATION IN FEDERAL REGISTER]]] are grandfathered. Such contract-based tariffs may not be extended, renewed or revised. Upon mutual agreement, parties to a grandfathered contract-based tariff may replace it at any time with a new contract-based tariff negotiated under the rules adopted in [[FCC 17-XXX, Effective [INSERT EFFECTIVE DATE FROM PUBLICATION IN FEDERAL REGISTER]]].

PART 61 – TARIFFS

6. The authority citation for part 61 continues to read as follows:

Authority: Secs. 1, 4(i), 4(j), 201-05 and 403 of the Communications Act of 1934, as amended; 47 U.S.C. 151, 154(i), 154(j), 201-05 and 403, unless otherwise noted.

7. Section 61.45 is amended by revising paragraph (b)(1)(iv) to read as follows:

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(iv) For the special access basket specified in § 61.42(d)(5), the value of X shall be 2.0% effective December 1, 2017, notwithstanding any language in § 61.45(b)(1)(i).

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8. Section 61.55 is amended by revising paragraph (a) to read as follows:

§ 61.55 Contract-based tariffs.

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(a) This section shall apply to price cap local exchange carriers permitted to offer contract-based tariffs under § 1.776 or § 69.805 of this chapter.

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9. Designate §§ 61.201 through 61.203 as subpart K, and add a new subpart K heading to read as follows:

Subpart K – Detariffing of Business Data Services

10. Section 61.201 is added to read as follows:

§ 61.201 Detariffing of price cap local exchange carriers.

(a) Price cap local exchange carriers shall remove from their interstate tariffs:
(1) Any packet-based business data service;
(2) Any circuit-based business data service above the DS3 bandwidth level;
(3) Transport services as defined in § 69.801;
(4) DS1 and DS3 end user channel terminations, and all other tariffed special access services, in any market deemed competitive as defined in § 69.801; and
(5) DS1 and DS3 end user channel terminations, and all other tariffed special access services, in any grandfathered market as defined in § 69.801.

(b) The detariffing must be completed eighteen months after [[FCC 17-xxx, Effective [INSERT EFFECTIVE DATE FROM PUBLICATION IN FEDERAL REGISTER]]], but detariffing can take place at any time before the eighteen months is completed.

11. Section 61.203 is added to read as follows:

§ 61.203 Detariffing of competitive local exchange carriers.

(a) Competitive local exchange carriers shall remove all business data services from their interstate tariffs.

(b) The detariffing must be completed eighteen months after [[FCC 17-xxx, Effective [INSERT EFFECTIVE DATE FROM PUBLICATION IN FEDERAL REGISTER]]].

PART 63 – EXTENSION OF LINES, NEW LINES, AND DISCONTINUANCE, REDUCTION, OUTAGE AND IMPAIRMENT OF SERVICE BY COMMON CARRIERS; AND GRANTS OF RECOGNIZED PRIVATE OPERATING AGENCY STATUS

12. The authority citation for part 63 continues to read as follows:

Authority: Sections 1, 4(i), 4(j), 10, 11, 201-205, 214, 218, 403 and 651 of the Communications Act of 1934, as amended, 47 USC 151, 154(i), 154(j), 160, 201-205, 214, 218, 403, and 571, unless otherwise noted.

13. Section 63.71 is amended by removing and reserving paragraph (d).

§ 63.71 Procedures for discontinuance, reduction or impairment of service by domestic carriers.

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PART 69 – ACCESS CHARGES

14. The authority citation for part 69 continues to read as follows:

Authority: 47 U.S.C. 154, 201, 202, 203, 204, 218, 220, 254, 403.

15. Section 69.701 is amended to read as follows:

§ 69.701 Application of the rules in this subpart.

The rules in this subpart apply to all incumbent LECs subject to price cap regulation, as defined in § 61.3(bb) of this chapter, seeking pricing flexibility on the basis of the development of competition in parts of its service area for switched access services only.

16. Designate §§ 69.801 through 69.805 as subpart I, and add a new subpart I heading to read as follows:

Subpart I – Business Data Services

17. Section 69.801 is added to read as follows:

§ 69.801 Definitions.

(a) *Business data services.* The dedicated point-to-point transmission of data at certain guaranteed speeds and service levels using high-capacity connections.
(b) *Competitive market test*. The competitive market test is defined in § 69.803.
(c) *End user channel termination.* A dedicated channel connecting a local exchange carrier end office and a customer premises, offered for purposes of carrying special access traffic.
(d) *Grandfathered market.* A county that does not satisfy the competitive market test set forth in § 69.803 for which a price cap local exchange carrier obtained Phase II relief pursuant to § 69.711(c).
(e) *Market deemed competitive.* A county that satisfies the competitive market test set forth in § 69.803.
(f) *Market deemed non-competitive*. A county that does not satisfy the competitive market test set forth in § 69.803.

(g) *Non-disclosure agreement*. A non-disclosure agreement is a contract, contractual provision, or tariff provision wherein a party agrees not to disclose certain information shared by the other party.
(h) *Special access data collection.* The special access data collection refers to the data collected from business services providers and purchasers in the Commission's *Business Data Services/Special Access* rulemaking.
(i) *Transport* includes interoffice facilities, channel terminations between the serving wire center and point of presence, and all special access services that are described in § 69.114 other than end user channel terminations.

18. Section 69.803 is added to read as follows:

§ 69.803 Competitive market test.

(a) The competitive market test is used to determine which counties served by a price cap local exchange carrier, as defined in § 61.3(bb) of this chapter, are deemed competitive and therefore warrant relief from price cap regulation and detariffing of DS1 and DS3 end user channel terminations, and certain other business data services, sold by such carriers.
(b) *Initial test*. A county is deemed competitive in the initial competitive market test if:
  (1) Either 50 percent of the locations with business data services demand within the county are within one half mile of a location served by a competitive provider based on data from the special access data collection mandated by [[29 FCC Rcd 10899, DA 14-1327]], or 75 percent of the census blocks within the county are reported to have broadband connection availability by a cable operator based on Form 477 data as of December 2016. Counties deemed competitive by the initial competitive market test are published on the Commission's website at [[insert URL]].
  (2) The DS1 and DS3 end user channel terminations sold by price cap local exchange carriers in counties deemed competitive are no longer subject to price cap regulation and are detariffed according to § 61.201.
(c) *Subsequent tests*. The results of the initial competitive market test will be updated every three years following the effective date of the initial test.
  (1) A county will be deemed competitive in a subsequent competitive market test if 75 percent of the census blocks within the county are reported to have broadband connection availability by a cable operator based on Form 477 data as of the date of the most recent collection.
  (2) No later than three years following the effective date of the previous test, the [[Bureau]] will conclude a subsequent test and will publish a revised list of counties deemed competitive at the conclusion of the test.
  (3) A county deemed competitive in the competitive market test will retain its status in subsequent tests.

19. Section 69.805 is added to read as follows:

§ 69.805 Prohibition on certain non-disclosure agreement conditions.

(a) In markets deemed non-competitive, buyers and sellers of business data services shall not enter into a tariff, contract-based tariff, or commercial agreement, including but not limited to master service agreement, that contains a non-disclosure agreement as defined in § 69.801(g), that restricts or prohibits disclosure of information to the Commission, or requires a prior request or legal compulsion by the Commission to effect such disclosure.
(b) Confidential information subject to a protective order as defined in § 0.461 in effect as of the effective date of a tariff, contract-based tariff, or commercial agreement must be submitted

pursuant to the terms of that protective order or otherwise pursuant to the Commission's rules regarding submission of confidential data in §§ 0.457(d) and 0.459.

20. Section 69.807 is added to read as follows:

§ 69.807 Regulatory relief.

(a) Price cap local exchange carrier transport and end user channel terminations in markets deemed competitive and in grandfathered markets are granted the following regulatory relief:
    (1) Elimination of the rate structure requirements in subpart B of this part;
    (2) Elimination of price cap regulation; and
    (3) Elimination of tariffing requirements as specified in § 61.201 of this chapter.

(b) Price cap local exchange carrier end user channel terminations in markets deemed non-competitive are granted the following regulatory relief:
    (1) Ability to offer volume and term discounts;
    (2) Ability to enter into contract-based tariffs, provided that:
        a. Contract-based tariff services are made generally available to all similarly situated customers;
        b. The price cap local exchange carrier excludes all contract-based tariff offerings from price cap regulation pursuant to § 61.42(f) of this chapter;
    (3) Ability to file tariff revisions on at least one day's notice, notwithstanding the notice requirements for tariff filings specified in § 61.58 of this chapter.

(c) A price cap local exchange carrier in a grandfathered market must retain its business data services rates at levels no higher than those in effect as of the adoption date of [[FCC 17-xxx, Effective [INSERT DATE OF PUBLICATION IN FEDERAL REGISTER]]] pending the detariffing of those services pursuant to § 61.201 of this chapter.

21. Section 69.809 is added to read as follows:

§ 69.809 Low-end adjustment mechanism.

(a) Any price cap local exchange carrier or any affiliate of any price cap local exchange carrier that had obtained Phase II pricing flexibility under §§ 69.709 or 69.711 for any service in any MSA in its service region, or for the non-MSA portion of any study area in its service region, shall be prohibited from making any low-end adjustment pursuant to § 61.45(d)(1)(vii) of this chapter in all or part of its service region.

(b) Any price cap local exchange carrier or any affiliate of any price cap local exchange carrier that exercises the regulatory relief pursuant to § 69.807 in any part of its service region shall be prohibited from making any low-end adjustment pursuant to § 61.45(d)(1)(vii) of this chapter in all or part of its service region.

(c) Any price cap local exchange carrier or any affiliate of any price cap local exchange carrier that exercises the option to use Generally Accepted Accounting Principles rather than the Part 32 Uniform System of Accounts pursuant to § 32.11(g) [[FCC 17-15, Effective January 1, 2018] or [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER; contains an information collection requirement that has not been approved by OMB. The Commission will publish a document in the Federal Register announcing the effective date of this amendment] [whichever date is later]], shall be prohibited from making any low-end adjustment pursuant to § 61.45(d)(1)(vii) of this chapter in all or part of its service region.

APPENDIX B

PRODUCTIVITY-BASED X-FACTOR AND CATCH-UP ADJUSTMENTS FOR PRICE CAP BUSINESS DATA SERVICES

I. INTRODUCTION

1. In the *Business Data Services Further Notice*, the Commission sought comment on, among other matters, whether it should incorporate a productivity-based X-factor into its price cap formula for business data services on a going-forward basis.

2. [1] The Commission also asked whether business data services (BDS) productivity gains had outpaced those in the general economy and, if so, whether it "should adjust baseline price cap levels to capture those gains for ratepayers."[2] The *Further Notice* also invited comment on the methodology and datasets that the Commission might use to calculate an X-factor and catch-up adjustment to price cap indexes.[3] This Appendix provides additional information on that methodology and those datasets, and describes the parties' responses to these portions of the *Further Notice.*

II. PRICE CAP REGULATION

3. The core component of the Commission's price cap system is the price cap index, which is designed to limit the prices that certain incumbent local exchange carriers (incumbent LECs) charge for services.[4] The price cap index historically has had three basic components: (a) a measure of inflation (currently the Gross Domestic Product Price Index (GDP-PI));[5] (b) a productivity factor or "X-factor," that represented the amount by which incumbent LECs could be expected to outperform the general economy;[6] and (c) adjustments to account for "exogenous" cost changes outside the price cap LEC's

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[1] *Business Data Services in an Internet Protocol Environment; Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans; 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*, WC Docket Nos. 05-25, 15-247, and 05-25, RM-10593, Tariff Investigation Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 4723, 4866, para. 364 (2016) (*Tariff Investigation Order* or *Further Notice*) (stating that a "productivity-based X-factor . . . had been a fundamental feature of the Commission's price cap system from the system's inception in 1987 until the adoption of the CALLS plan").

[2] *Id.* at 4876, para. 403. The Commission expressed no intent to capture past profits earned under price caps, and invited comment only on ensuring reasonable price cap rates going forward. *See id.* at 4876, paras. 402-03.

[3] *Id.* at 4867-71, 4876-80, 4966-71, paras. 369-82, 404-15 & Appx. C.

[4] *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*, WC Docket No. 05-25, RM-10593, Report and Order, 27 FCC Rcd 10557, 10562-63, para. 10 (2012) (*Suspension Order*); *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, 6792, para. 47 (1990) (*1990 Price Cap Order*), *aff'd*, *Nat'l Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993); *see* 47 CFR § 61.46.

[5] *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*, WC Docket No. 05-25, RM-10593, Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 16318, 16320, para. 3 (2012) (*Data Collection Order*); *Access Charge Reform at al.*, CC Docket Nos. 96-262, 94-1, 99-249, 96-45, Sixth Report and Order in CC Docket Nos. 96-262 and 94-1, Report and Order in CC Docket No. 99-249, Eleventh Report and Order in CC Docket No. 96-45, 15 FCC Rcd 12962, 13038-39, paras. 183-84 (2000) (*CALLS Order*) (subsequent history omitted); *see* U.S. Dept. of Commerce, Bur. of Economic Analysis, *National Data: NIPA Tables, Table 1.1.4. Price Indexes for Gross Domestic Product* (last revised Aug. 26, 2016), http://www.bea.gov/iTable/index_nipa.cfm.

[6] *Further Notice*, 31 FCC Rcd at 4863, para. 356; *Data Collection Order*, 27 FCC Rcd at 16320, para. 3; *1990 Price Cap Order*, 5 FCC Rcd at 6795-801, paras. 74-119.

control and not otherwise reflected in the price cap index.[7] This paper focuses on the X-factor component.

4. Price cap regulation sets a ceiling on the prices that a firm may charge. One attractive feature of price cap regulation, relative to rate-of-return regulation, is that it improves the firm's incentives to reduce its costs, because the firm is allowed to keep the savings it obtains as profit. A simple example of a price cap is a requirement to hold prices constant. In that circumstance, if the firm reduces its costs and maintains its sales volume, its profits rise by the amount of the cost reductions.

5. Price cap regulation works best when it is based on factors that measure a firm's performance but are largely outside the firm's control. For example, suppose that a regulator adjusts a firm's price cap for the next year based on the firm's profits during the current year. In that case, price cap regulation would function much like (and suffer from essentially the same basic shortcomings as) rate-of-return regulation: the firm would recognize that, were it to earn high profits in the current year by reducing its costs and charging the maximum prices allowed under the current cap, the following year's cap would be lower, and the firm would have to find a way to reduce its costs again just to maintain its profit level. Thus, the firm's incentives to reduce its costs would be dampened.[8]

6. Because changes in economy-wide conditions, such as changes in the rate of inflation, can affect a price capped firm's capacity to recover costs, price caps typically are set using a formula that incorporates a general price index as well as an adjustment factor—sometimes called the "X-factor"—that captures inherent differences between the determinants of economy-wide prices and the determinants of industry-specific (but not firm-specific) prices.[9] Under this formulation, price caps will automatically adjust to the general inflation rate (which captures a range of effects, including economy-wide changes in productivity) while continuing to provide incentives for each regulated firm to outperform the overall economy.

7. From an economic standpoint, the regulation of firms with market power is designed to produce outcomes that resemble the ones that would prevail in effectively competitive markets. In such markets, firms expect over the long run to just recover their opportunity costs, and thus to earn zero economic profits.[10] If the zero-economic-profit condition is maintained across time periods, the growth rate in a firm's prices equals the difference between the growth rates of the firm's input costs and productivity level.[11] This relationship can be expressed as:

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[7] *1990 Price Cap Order*, 5 FCC Rcd at 6792, 6807-10, paras. 48, 166-90. Exogenous costs adjustments allow a carrier to modify its price cap to reflect changes outside its control and include, for example, changes in Universal Service Fund or TRS contribution amounts. The carrier can choose whether it wants to collect such amounts directly from its end users through rate adjustments. *See id.* at 6807, para. 166.

[8] *See, e.g.*, John R. Haring and Evan R. Kwerel, *Competition Policy in the Post-Equal Access Market*, FCC Office of Plans and Policy Working Paper No. 22 (Feb. 11, 1987), https://transition.fcc.gov/Bureaus/OPP/working_papers/oppwp22.pdf; Timothy J. Brennan, *Regulating by Capping Prices*, 1 J. Reg. Econ. 133-47 (1989); and Luis M. B. Cabral and Michael H. Riordan, *Incentives for Cost Reduction under Price Cap Regulation*, 1 J. Reg. Econ. 93-102 (1989).

[9] *See, e.g.*, Ian Bradley and Catherine Price, *The Economic Regulation of Private Industries by Price Constraints*, 37 J. Indus. Econ. 99-106 (1988); Catherine Liston, *Price Cap Versus Rate-of-Return Regulation*, 5 J. Reg. Econ. 25-48 (1993); and Jeffrey I. Bernstein and David E. M. Sappington, *Setting the X-factor in Price Cap Regulation Plans*, 16 J. Reg. Econ. 5-25 (1999).

[10] A firm's *opportunity cost* is the highest profit it could achieve by directing the resources that it uses in current supply toward their most profitable alternative use. A firm earns *zero economic profit* when its profit equals its opportunity cost. Investopedia, *Economic Profit (Or Loss)*, http://www.investopedia.com/terms/e/economicprofit.asp (last visited Mar. 21, 2017).

[11] Here, "productivity" refers to total factor productivity (TFP), heuristically the ratio of outputs to inputs. *See* Robert M. Solow, *Technical Change and the Aggregate Production Function*, 39 Rev. Econ. & Stat. 312-320

(continued….)

$$p = w - t \quad (1)$$

where p, w, and t denote the growth rates of the firm's output prices, input costs, and productivity level, respectively. Equation (1) suggests that a regulator that wants to enforce the zero-economic-profit condition through an adjustable price cap ought to continuously set the cap so that its growth rate over time (denoted by c) equals the difference between the observed growth rates of the firm's input costs and productivity:

$$c = w - t \quad (2)$$

This approach, however, would nullify the firm's incentives to reduce costs and improve efficiency, thereby defeating the purpose of price caps. Under such an approach, if the firm were to reduce its costs, it would gain nothing, as the price cap would require the firm's prices to fall reflecting those lower costs. Similarly, if the firm stopped trying to hold its costs in check, thereby allowing costs to rise, it would lose nothing, as the price cap would loosen, allowing the firm's prices to rise to capture the new higher costs.

8. The staff calculations presented in the *Business Data Services Further Notice* use a formula derived from Equation (2)—the variables of which are based on industry and economy-wide data largely beyond the control of the regulated firm—with the aim of providing cost-reduction incentives that mimic competitive-market outcomes.[12] In particular, the calculations use a measure of the economy-wide rate of inflation based on a national price index (i.e., GDP-PI) adjusted to account for the (historically observed) difference between the growth rates of national prices and estimates of BDS specific input prices less BDS productivity growth.[13] In short, the price cap index is estimated as follows:

$$c = P - \underbrace{\left(\hat{D} + \hat{t}\right)}_{\text{X-factor}} \quad (3)$$

where P is the economy-wide rate of inflation (i.e., GDP-PI), $\hat{D}$ is the projected difference between the economy-wide rate of inflation and the growth rate of industry input prices, and $\hat{t}$ is the projected growth rate of the industry's productivity level.[14] The X-factor, which is the sum of $\hat{D}$ and $\hat{t}$, may be interpreted as a correction term by which the projected growth rate of economy-wide prices (as estimated by the historical change in those prices, *P*) is adjusted to account for historically observed differences between the broader economy and the business data services sector.

9. An X-factor may be calculated by subtracting the historical changes in BDS prices from the historical changes in GDP-PI (thereby obtaining a projection, $\hat{D}$, of what that difference will be in the future), and adding the historical change in BDS industry total factor productivity (TFP) (which provides an estimate of future productivity, $\hat{t}$). Consistent with our decision in the Report and Order, we use the U.S. Department of Commerce Bureau of Economic Analysis' (BEA's) chain-weighted GDP-PI as the measure of economy-wide inflation.[15] The calculation of the X-factor can be expressed by the following formula:

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(1957); and Dale W. Jorgenson and Zvi Griliches, *The Explanation of Productivity Change*, 34 Rev. Econ. Studies 249-283 (1967).

[12] *See Further Notice*, 31 FCC Rcd at 4876-77, paras. 404-05.

[13] *See id.*

[14] *Id.* at 4876, para. 404.

[15] U.S. Dept. of Commerce, Bur. of Economic Analysis, *National Data: GDP & Personal Income*, http://www.bea.gov/iTable/index_nipa.cfm (last visited Mar. 21, 2017); *see CALLS Order*, 15 FCC Rcd at 13039, para. 183 & n.403 (citing J. Steven Landefeld and Robert P. Parker, *BEA's Chain Indexes, Time Series, and Measures of Long-Term Economic Growth*, 77 Surv. Current Bus. 58 (May 1997)).

$$\text{X-factor} = \%\,\Delta\,\text{GDP-PI} - \%\,\Delta\,\text{Industry Input Price Index} + \%\,\Delta\,\text{Industry TFP} \quad (4)$$

where "% Δ GDP-PI – % Δ Industry Input Price Index" corresponds to $\hat{D}$, while "% Δ Industry TFP" corresponds to $\hat{t}$.

10. The X-factor analyses presented by the parties generally follow this approach.[16] Sprint consultants Drs. David E.M. Sappington and William P. Zarakas favor a different approach, but do not reject the approach in Equation (4). They argue that, while, "in practice, it can be difficult to predict accurately the rates at which productivity and input prices will increase in an industry…, it often is less difficult to forecast the extent to which productivity and input prices will increase more rapidly in the industry than in the economy as a whole."[17] They therefore recommend that the X-factor equal the sum of two differences:

$$\text{X-factor} = (\%\,\Delta\,\text{Industry TFP} - \%\,\Delta\,\text{Economy TFP}) + (\%\,\Delta\,\text{Economy Input Price Index} - \%\,\Delta\,\text{Industry Input Price Index}) \quad (5)$$

[18]

11. We agree with Sappington and Zarakas that, for certain variables, industry-level deviations from economy-wide values can exhibit greater stability over time than the actual industry-level values, and hence that projections based on the deviations can be more accurate than projections based on historical values. We believe, however, that this statement is more likely to hold for input prices than for total factor productivity levels. Because the economy-wide input price index is an average that comprises input price indexes from different industries, there is a systematic relationship (which is admittedly prone to time-varying shocks in other sectors) between the economy-wide input price index and the industry-specific input price index. On the other hand, total factor productivity, at both the economy-wide and industry-specific levels, is generally computed as a residual—a ratio of outputs to inputs—and hence is likely to include more unexplained variation at both levels. As a result, any systematic relationship between economy-wide total factor productivity and industry-specific total factor productivity may be more difficult to measure precisely.[19] Thus, while we do use deviations (i.e., by using $\hat{D}$ in Equation (3))—as is consistent with the view of Sappington and Zarakas—to predict the growth rate of industry input prices, we use historical estimates of actual values (by using $\hat{t}$ in Equation (3)) to project the growth

[16] *See* Letter from Kyle J. Fiet, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark E. Meitzen and Philip E. Schoech, Christensen Associates, "Assessment of the FCC's Proposed Options for the Special Access Price Cap X-Factor," at 3-5 (filed June 28, 2016) (AT&T June 28, 2016 Letter); Letter from Russell P. Hanser, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark Schankerman and Pierre Régibeau, Charles River Associates, "Response to the FCC Further Notice: Regulation of DS1 and DS3 Services," at 9-14 (filed Aug. 9, 2016) (CenturyLink Aug. 9, 2016 Letter).

[17] Sprint Comments, Ex. E, Declaration of David E.M. Sappington and William P. Zarakas at 16, para. 31 (Sappington & Zarakas Decl.).

[18] *See* Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 16-17.

[19] Our calculations support this conclusion. In particular, we use U.S. Dept. of Labor, Bur. of Labor Statistics (BLS) estimates of the following four time series, each of which spans the years 1987 through 2014: (1) economy-wide input-price indexes, (2) economy-wide multifactor productivity levels, (3) industry-level input-price indexes, and (4) industry-level multifactor productivity levels. The first two time series cover the private nonfarm business sector (excluding government enterprises) and are drawn from the Private Business and Private Nonfarm Business Multifactor Productivity Tables. The last two time series are drawn from the Nonmanufacturing Sectors and NIPA-level Nonmanufacturing Industries KLEMS Multifactor Productivity Tables, specifically for the broadcasting and telecommunications (NAICS 515, 517) sectors. See BLS, Multifactor Productivity Tables (1987-2014), http://www.bls.gov/mfp/mprdload.htm. Based on these time series, we estimate the correlation coefficient between the economy-wide input-price index and the industry-level input-price index to be about 0.889 and the correlation coefficient between the economy-wide multifactor productivity level and the industry-level multifactor productivity level to be about 0.779. That is, the industry-level input-price index more closely tracks its economy-wide analogue than does the industry-level multifactor productivity level.

rate of industry total factor productivity. In addition, we note that the appropriate choices of economy-wide measures of input prices and total factor productivity are not obvious and, due to the aggregation across industries, are likely to be more difficult to measure precisely than their industry-level counterparts. For this reason, we prefer to avoid using economy-wide measures of input prices and total factor productivity; the only economy-wide measure that is used in our approach is GDP-PI. In short, we prefer the approach that is set forth in Equation (3) and operationalized in Equation (4) to the one that Sappington and Zarakas propose in Equation (5).

12. TFP is the relationship between the output of goods and services to inputs,[20] and is commonly used to measure productivity growth in the economy as a whole.[21] In the past, the Commission has relied on staff studies of the historical TFP growth rate among incumbent LECs in setting a productivity-based X-factor.[22] TFP studies typically measure productivity using the ratio of an index of the outputs of a firm, industry, or group of industries to an index of the inputs used to produce the outputs. Productivity growth is measured by changes in this ratio over time.[23] Multiple outputs, such as DS1s and DS3s, are aggregated into a single index by weighting the sales made of each, for example, by revenue shares.[24] The resulting output index shows changes in the level of output over time (that is, provides the growth rate of the measured output). Multiple inputs, are treated similarly to create a single index for inputs. The growth rate of the aggregate input index depends on the combined growth rates of the individual inputs, such as capital, labor, energy, materials and services, weighted, for example, by input expenditure shares.[25]

13. In the Report and Order, we use TFP analysis to calculate a forward-looking X-factor but conclude that a catch-up adjustment is not warranted. The forward-looking X-factor will ensure that the price cap indices will properly recognize future productivity gains, relative to growth in the general economy.

III. DATA SOURCES

14. In the *Further Notice*, the Commission invited comment on three datasets that could be used in determining a productivity-based X-factor and any catch-up adjustments.[26] We describe those datasets as well as an additional dataset suggested by Sprint.

A. KLEMS (Broadcasting and Telecommunications)

15. Our first set of calculations relies on the U.S. Department of Labor's Bureau of Labor Statistics' (BLS's) Capital, Labor, Energy, Materials, and Services (KLEMS) series that the BLS and the BEA jointly produce.[27] For industry-level measures of input prices and TFP, we rely on BLS's yearly

[20] *Price Cap Performance Review for Local Exchange Carriers*; *Access Charge Reform*, CC Docket Nos. 94-1, 96-262, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, 12 FCC Rcd 16642, 16679, para. 91 (1997) (*1997 Price Cap Review Order*) (subsequent history omitted).

[21] *Price Cap Performance Review for Local Exchange Carriers; Access Charge Reform*, CC Docket Nos. 94-1, 96-262, Further Notice of Proposed Rulemaking, 14 FCC Rcd 19717, 19721, para. 11 (1999) (*1999 Price Cap Review FNPRM*).

[22] *See, e.g.*, *id.* at 19721, para. 10.

[23] *Id.* at 19720-21, para. 9-11.

[24] *Id.* at 19721, para. 12 & n.25 (citing *1997 Price Cap Review Order*, 12 FCC Rcd at 16657).

[25] *Id.* at 19721, para. 13 & n.26 (citing *1997 Price Cap Review Order*, 12 FCC Rcd at 16657-58). Developing expenditure weights is generally more complex than developing revenue weights in an output index, because some inputs (assets) have long lives.

[26] *Further Notice*, 31 FCC Rcd at 4876-80, 4966-71, paras. 404-15 & Appx. C.

[27] U.S. Dept. of Labor, Bur. of Labor Statistics (BLS), *Multifactor Productivity, Nonmanufacturing Sectors and NIPA-level Nonmanufacturing Industries KLEMS Multifactor Productivity Tables by Industry (1987-2014)*,

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KLEMS statistics on Broadcasting and Telecommunications (KLEMS (Broadcasting and Telecommunications)).[28] These are publicly available, annual data on industry-level measures of input prices and TFP for the telecommunications and broadcasting industries. Although these industries provide many products and services in addition to BDS, this is the most granular level of detail for which relevant KLEMS data are available on a regular and consistent basis. Input price indexes are available for each of the five components of KLEMS—capital, labor, energy, non-energy materials, and services purchased from other businesses.[29] The KLEMS (Broadcasting and Telecommunications) data are based on BLS's chain-weighted Tornqvist index for "Price of Combined Inputs."[30]

16. AT&T and CenturyLink et al. recommend using the KLEMS (Broadcasting and Telecommunications) database in our X-factor calculations.[31] Drs. Mark Meitzen and Philip Schoech state, on behalf of AT&T, that this "database is developed using rigorous total factor productivity principles and is a valid source of measuring total factor productivity and input price trends for various industries."[32] Drs. Mark Schankerman and Pierre Régibeau agree, arguing on behalf of CenturyLink, that

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http://www.bls.gov/mfp/mprdload.htm; *see also* BLS, *Industries at a Glance, Broadcasting (except Internet): NAICS 515*, http://www.bls.gov/iag/tgs/iag515 htm (last visited Feb. 23, 2017); BLS, *Industries at a Glance, Telecommunications: NAICS 517*, http://www.bls.gov/iag/tgs/iag517.htm (last visited Mar. 21, 2016); U.S. Dept. of Commerce, Bur. of Economic Analysis (BEA), *Industry Data, GDP-by-industry*, http://www.bea.gov/iTable/index_industry_gdpIndy.cfm (last visited Feb. 23, 2017).

[28] BLS, *Multifactor Productivity, Nonmanufacturing Sectors and NIPA-level Nonmanufacturing Industries KLEMS Multifactor Productivity Tables by Industry (1987-2014)*, http://www.bls.gov/mfp/mprdload.htm (last visited Feb. 23, 2017). Industries in the Broadcasting subsector (NAICS 515) include "establishments that create content or acquire the right to distribute content and subsequently broadcast the content," including "broadcasting studios and facilities for over the air or satellite delivery of radio and television programs of entertainment, news, talk, and the like" as well as "operating studios and facilities for the broadcasting of programs that are typically narrowcast in nature (limited format, such as news, sports, education, and youth-oriented programming) on a subscription or fee basis." BLS, *Industries at a Glance, Broadcasting (except Internet): NAICS 515*, http://www.bls.gov/iag/tgs/iag515.htm (last visited Feb. 23, 2017). NAICS stands for "North American Industry Classification System," which is "the standard Federal statistical agencies use in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy." U.S. Census Bureau, *North American Industry Classification System (NAICS)*, https://www.census.gov/eos/www/naics/ (last visited Feb. 23, 2017). Industries in the Telecommunications subsector (NAICS 517) "provide telecommunications and the services related to that activity (e.g., telephony, including Voice over Internet Protocol (VoIP); cable and satellite television distribution services; Internet access; telecommunications reselling services)" and are "primarily engaged in operating, and/or providing access to facilities for the transmission of voice, data, text, sound, and video," which "may be based on a single technology or a combination of technologies." BLS, *Industries at a Glance, Telecommunications: NAICS 517*, http://www.bls.gov/iag/tgs/iag517.htm (last visited Feb. 23, 2017).

[29] BEA, *Frequently Asked Questions: What is KLEMS?*, http://www.bea.gov/faq/index.cfm?faq_id=192 (last visited Feb. 23, 2017); *see* Erich H. Strassner, Gabriel W. Medeiros, and George M. Smith, *Annual Industry Accounts: Introducing KLEMS Input Estimates for 1997-2003, Survey of Current Business* (Sept. 2005), https://www.bea.gov/scb/pdf/2005/09September/0905_Industry.pdf.

[30] Letter from Kyle J. Fiet, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark E. Meitzen and Philip E. Schoech, Christensen Associates, "Assessment of the FCC's Proposed Options for the Special Access Price Cap X-Factor," at 5 (filed June 28, 2016) (AT&T June 28, 2016 Letter).

[31] AT&T Comments at 57; Letter from Russell P. Hanser, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark Schankerman and Pierre Régibeau, Charles River Associates, "Response to the FCC Further Notice: Regulation of DS1 and DS3 Services," at 4 (filed Aug. 9, 2016) (CenturyLink Aug. 9, 2016 Letter); *see also* Verizon Comments at 15-16 (arguing "the Commission should use [KLEMS (Broadcasting and Telecommunications)] data").

[32] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 5; *see id.* at 8 (stating that "BLS uses methods that are well accepted for productivity measurement").

of the three datasets suggested in the *Further Notice,* KLEMS (Broadcasting and Telecommunications) "is the only one which is both sufficiently reliable and internally consistent."[33] Meitzen and Schoech claim that relying on X-factor calculations based on KLEMS (Broadcasting and Telecommunications) comes "closest to the FCC precedent of basing the X-factor on industry-specific TFP and input prices consistent with the TFP estimates."[34] They state further that telecommunications accounts for roughly 82 percent of the revenue and well over 90 percent of the assets in KLEMS (Broadcasting and Telecommunications) and that "the TFP developed from this combined industry data should most closely track that of its predominant component, the telecommunications industry."[35]

17. Meitzen and Schoech point out that the Commission has in the past used "industry-wide productivity growth" to determine the X-factor for a narrower group of services.[36] They suggest that "[b]ecause of the significance of joint and common costs in the provision of telecommunications services," narrower measures of productivity "for a subset of services generally are not uniquely defined from an economic perspective."[37] They state, however, that "given that BDS is largely provided with legacy technologies and demand growth for services using these technologies is declining relative to the total bundle of services provided by current telecommunications plant, it is likely that telecommunications industry-wide TFP growth represents an upper bound for the TFP growth realized by BDS services."[38] AT&T asserts that this dataset "likely overstates productivity gains for the small subset of TDM-based DSn services" because "[m]ost of the telecommunications productivity gains captured in the BLS measure . . . are likely attributable to productivity gains in other telecommunications services that are the focus of far greater investment and technological dynamism than legacy DSn services, including wireless services, broadband Ethernet services, and cable and wireline Internet access services."[39] Schankerman and Régibeau assert that the Commission's estimates "likely [. . .] overstate very significantly the cost reductions that suppliers of DS1 and DS3 services experienced" because the telecommunications sector is "characterized by very different segments" such as wireless and cable services "facing different cost conditions."[40]

18. Meitzen and Schoech also recommend that we use data from 2005 through 2014 in setting the X-factor because that period appropriately captures recent productivity trends without including "stale data that are likely no longer relevant to forward-looking productivity."[41] Based on this

[33] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4.

[34] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 7.

[35] *Id.* at 5 (citing U.S. Census Bureau, *Quarterly Financial Report (QFR) Manufacturing, Mining, Trade, and Selected Service Industries*, https://www.census.gov/econ/qfr/index html (last visited Feb. 23, 2017); U.S. Census Bureau, *QFR Manufacturing, Mining, Trade, and Selected Service Industries, Financial Data Tables* (Second Quarter 2016), https://www.census.gov/econ/qfr/mmws/current/qfr_tabs_f.xls). We note that Meitzen and Schoech assert that the method used in the *Further Notice* to aggregate the KLEMS (Broadcasting and Telecommunications) "five input price measures is not conventional and is not consistent with the indexing methods used by the BLS." *Id.* at 8. We agree with this criticism and the calculations in the Report and Order incorporate the method Meitzen and Schoech suggest.

[36] *Id.* at 9. We note that the Commission's prior "industry-wide productivity growth" measures were taken from a much more narrowly targeted group of companies than those reflected within the KLEMS (Broadcast and Telecommunications) database. For example, in the *1997 Price Cap Review Order*, the Commission relied on TFP studies that were specific to the telephone industry to calculate the X-factor. *See 1997 Price Cap Review Order*, 12 FCC Rcd at 16652, para. 19.

[37] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 9.

[38] *Id.* at 9.

[39] AT&T Comments at 58.

[40] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 5.

[41] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 9.

period, they calculate a 1.99 percent X-factor,[42] which, as AT&T suggests, would not be sufficiently different from inflation to warrant a rule change.[43]

19. Several commenters criticize KLEMS (Broadcasting and Telecommunications) as a tool for determining an X-factor and catch-up adjustment because that database is not limited to business data services, but rather commingles statistics from the telecommunications and broadcasting industries.[44] Sappington and Zarakas argue that sources including KLEMS (Broadcasting and Telecommunications) could lead to "inappropriate inferences about productivity trends in the telecommunications industry because of distinct and irrelevant productivity trends in the…broadcasting industries."[45] Ad Hoc argues that KLEMS (Broadcasting and Telecommunications) understates business data services productivity growth "by using too broad a segment of industry."[46]

20. Commenters note that the telecommunications subset of the KLEMS (Broadcasting and Telecommunications) database commingles data from the telecommunications sector as a whole, including wired, wireless, satellite, and cable telecommunications.[47] While favoring KLEMS (Broadcasting and Telecommunications), AT&T argues that most of the telecommunication productivity gains are likely attributable to services other than legacy DSn services, including "wireless services, broadband Ethernet services, and cable and wireline Internet access services."[48] Schankerman and Régibeau agree and assert that KLEMS (Broadcasting and Telecommunications) overstates productivity growth in DSn services.[49]

21. Schankerman and Régibeau state that based on 2014 employment and wages data, the broadcasting sector accounts for only about a quarter of the overall KLEMS (Broadcasting and Telecommunications) sector data so any bias should be limited.[50] Schankerman and Régibeau point out that from 2005 to 2014 average annual labor productivity grew faster in broadcasting than in wired telecommunications, and they therefore dispute whether the broadcasting component of KLEMS (Broadcasting and Telecommunications) has lower productivity growth than the wired components of that database.[51] AT&T echoes these statements, adding that "[g]iven that labor productivity is such a large component of TFP, these labor productivity data strongly suggest that wired TFP has lagged combined industry TFP," which in turn suggests that productivity growth in business data services lagged behind the growth in the combined industries; therefore the KLEMS (Broadcasting and Telecommunications)-based X-factor should be lower.[52]

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[42] Letter from Kyle J. Fiet, Counsel for AT&T, to Marlene H. Dortch, WC Docket No. 16-143 et al., Attach., Mark E. Meitzen and Philip E. Schoech, Reply Comments of Mark E. Meitzen, Ph.D., and Philip E. Schoech, Ph.D, Christensen Associates, at 1-2 (filed Aug. 9, 2016) (AT&T Aug. 9, 2016 Letter); *see* AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 8.

[43] AT&T Reply at 76-77; *see* AT&T Comments at 57.

[44] Sprint Comments at 48-49 & Ex. E, Sappington & Zarakas Decl. at 8; *see also* Ad Hoc Comments at 16 (criticizing KLEMS (Broadcasting and Telecommunications) as too broad).

[45] Sprint Comments at 49 & Ex. E, Sappington & Zarakas Decl. at 10, para. 17.

[46] Ad Hoc Comments at 16.

[47] *See* CenturyLink June 28, 2016 Letter, Schankerman & Régibeau Decl. at 5; BLS, *Industries at a Glance, Telecommunications: NAICS 517*, http://www.bls.gov/iag/tgs/iag517 htm (last visited Feb. 23, 2017).

[48] AT&T Comments at 57-58.

[49] CenturyLink June 28, 2016 Letter, Schankerman & Régibeau Decl. at 4-5.

[50] CenturyLink Oct. 6, 2016 Letter, Schankerman & Régibeau Decl. at 10-11.

[51] *Id*. at 10 & Tbl. 1.

[52] Letter from James P. Young, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 5-6 (filed Nov. 10, 2016) (AT&T Nov. 10, 2016 Letter).

22. The Commission's October 7, 2016 fact sheet proposed a 3.0 percent X-factor despite an implied 2.0 percent X-factor based purely on KLEMS (Broadcasting and Telecommunications) data.[53] AT&T asserts that the methodology behind this proposal "apparently relie[d] on the fact that the X-factors the Commission adopted in 1990, 1995, and 1997 were higher than the [X-factors derived from KLEMS (Broadcasting and Telecommunications)] data for the years in which those X-factors applied, and assume[d] that the difference establishes some sort of constant 'FCC additive' that remains today."[54] AT&T contends that "even if it is true that the Commission's higher X-factors in the 1990s were more 'accurate' than [X-factors derived from KLEMS (Broadcasting and Telecommunications)] data from the same period, there is no reason to believe that such a relationship remains constant two decades later" particularly given the "rapid decline" in TDM services since the 1990s.[55] AT&T claims that those X-factors represented not special access but "interstate access services as a whole" which was "dominated by switched access," which experienced "extremely rapid growth" during the relevant periods compared to "special access."[56] AT&T emphasizes that the 1990 and 1995 staff productivity studies upon which the X-factors were based did not include "special access."[57]

23. In contrast, Sprint suggests that an X-factor based solely on KLEMS (Broadcasting and Telecommunications) data would be too low. Sprint points out that in the *1999 Price Cap Performance Review* proceeding, the Commission staff computed X-factors for each of the years 1986 through 1998 using price cap LEC-specific data that were significantly higher than the X-factors that would have been computed using KLEMS (Broadcasting and Telecommunications) data.[58] Sprint maintains that the differences between these X-factors suggest a potential downward bias in X-factor results based on KLEMS (Broadcasting and Telecommunications) data that the Commission must take into account in any analysis that relies on those data to determine an X-factor.[59]

24. Schankerman and Régibeau contend that no adjustment to the KLEMS (Broadcasting and Telecommunications) results is necessary for several reasons.[60] First, they maintain that the "industry has undergone transformative change in the . . . decades" since the *1999 Price Cap Performance Review* proceeding, "with wireless services largely replacing wireline telecommunications, switched access minutes declining with access lines, special access transitioning from TDM to IP packet-based services, and increased competitive entry from CLECS and cable companies."[61] Second, they argue that the X-factors adopted in the 1980s and 1990s were based on Automated Reporting Management Information System (ARMIS) data, embedded with "arbitrary" joint cost allocations, primarily comprised of switch

[53] *See* Chairman Wheeler's Proposal to Promote Fairness, Competition, and Investment in the Business Data Services Market, FCC Fact Sheet, https://www fcc.gov/document/chmn-wheelers-update-business-data-services-rules (Oct. 7, 2016) (FCC Oct. 7, 2016 Fact Sheet).

[54] AT&T Nov. 10, 2016 Letter at 2; Letter from James P. Young, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 16-17 (filed Oct. 25, 2016) (AT&T Oct. 25, 2016 Letter).

[55] AT&T Oct. 25, 2016 Letter at 17.

[56] *Id*. at 17-18.

[57] *Id*. at 18.

[58] Letter from Dr. Chris Frentrup, Senior Economist, Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al. (dated Oct. 20, 2016) (Sprint Oct. 20, 2016 Letter); *see Price Cap Performance Review for Local Exchange Carriers; Access Charge Reform*, CC Docket Nos. 94-1, 96-262, Further Notice of Proposed Rulemaking, 14 FCC Rcd 19717, 19748-83, Appx. B (1999) (*1999 Price Cap Performance Review FNPRM*).

[59] Sprint Oct. 20, 2016 Letter at 2.

[60] CenturyLink Oct. 28, 2016 Letter, Schankerman & Régibeau Decl. at 8-9.

[61] *Id*. at 8.

access which "serves as a poor proxy for productivity growth for BDS services."[62] Third, they point out that the X-factors calculated in the *1999 Price Cap Performance Review* proceeding imply that TFP for broadcasting and non-incumbent LEC telecommunications declined between 25 and 100 percent from 1986 to 1998, a conclusion that in their view "strains credulity."[63] AT&T asserts that the Commission never used the 1999 "staff study as the basis for any actual X-factor" and that there is "no objective basis to believe this staff-level study is more 'accurate'" than KLEMS (Broadcasting and Telecommunications) data.[64]

B. KLEMS (Telecommunications)

25. To address, in part, the overbreadth of KLEMS (Broadcasting and Telecommunications), Sappington and Zarakas rely on a dataset that appears to exclude broadcasting industry data from the KLEMS (Broadcasting and Telecommunications) dataset.[65] We now turn to that dataset.

26. Sappington and Zarakas point out that the Commission previously measured historic productivity and input price growth rates using ARMIS data, but that those data are only available through 2007.[66] As proxies for these "ideal data," Sappington and Zarakas suggest that we rely on a dataset that appears to exclude broadcasting industry data from the KLEMS (Broadcasting and Telecommunications) dataset.[67] They maintain that excluding broadcasting industry data will provide a more suitable measure of historical productivity and input price growth rates for BDS.[68] They note, however, that unlike the KLEMS (Broadcasting and Telecommunications) dataset available through 2014, this more restricted KLEMS (Telecommunications) dataset is available only through 2010.[69]

27. Sappington and Zarakas conclude that the prevailing price cap indexes "should be reduced by at least 25.2 percent at the outset of the new price cap regime."[70] They derive this catch-up adjustment percentage using KLEMS (Telecommunications) data for 1998 to 2010 to calculate a compound annual growth rate in productivity and input prices for the telecommunications industry.[71]

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[62] *Id.*; *see also* AT&T Nov. 10, 2016 Letter at 4 (stating that the staff study in the *1999 Price Cap Performance Review* proceeding was "dominated by switched services" which "cannot reasonably be taken as a useful estimate of *BDS* productivity in the 1990s).

[63] CenturyLink Oct. 28, 2016 Letter, Schankerman & Régibeau Decl. at 8.

[64] AT&T Nov. 10, 2016 Letter at 4.

[65] Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 8, para. 15; *see also* Ad Hoc Reply, Attach., Reply Declaration of Susan M. Gately on Behalf of Ad Hoc Telecommunications Committee at 5 (stating that "**[**i**]**t makes no sense" to use KLEMS (Broadcasting and Telecommunications) data when a dataset with telecommunications alone is available).

[66] Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 7, para. 13.

[67] *Id.* at 7-8, paras. 14-15.

[68] *Id.* at 8-9; *see id.* at 10, para. 17 (stating that excluding broadcast industry data "avoid**[**s**]** drawing inappropriate inferences about productivity trends in the telecommunications industry because of distinct and irrelevant productivity trends in the . . . broadcasting industry").

[69] *Id.* at 8, para. 15; *see also* AT&T Sept. 22, 2016 Letter at 2; AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 8. Sprint asserts that KLEMS data maintained by the European Union (EU) for the U.S. market ((KLEMS) (Telecommunications)) "remove the broadcasting component of the BEA/BLS data without commingling the resulting data with data from other industries." Sprint Comments at 48-49 (citing Sappington & Zarakas Decl. at 8, para. 15). We, however, are unable to determine what methodology the European Union used to translate KLEMS (Broadcasting and Telecommunications) data into KLEMS (Telecommunications) data and whether that data source is indeed restricted to telecommunications data.

[70] Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 3, para. 5.

[71] *Id.* at 11.

They use these years because shorter periods, such as 2005 to 2010, might substantially understate productivity gains.[72] They find that the difference between the compound annual growth rates of industry input prices and industry TFP is 2.6 percent for this period, and use this growth rate to calculate the 25.2 percent catch-up adjustment.[73]

28. Sappington and Zarakas conclude that the new price cap regime should employ an X-factor of at least 4.4 percent, as "a conservative estimate of the extent to which the price cap LECs are likely to experience more rapid productivity growth and less rapid input price growth than other firms in the U.S. economy in the near future"[74] This proposed going-forward X-factor reflects the application of equation 5, above, to the KLEMS (Telecommunications) data for the period 1997-2010.[75]

29. Schankerman and Régibeau on behalf of CenturyLink argue that the KLEMS (Telecommunications) approach is inappropriate in part because "data that appears under the 'Telecommunications' heading in the [KLEMS (Telecommunications)] data for the US does not isolate the telecommunications sector."[76] Schankerman and Régibeau are critical of the KLEMS (Telecommunications) TFP measure because it is based on "value-added, not gross output" which needs to rely on "very restrictive assumptions on the shape of the underlying (gross output) production function" to be meaningful.[77] Schankerman and Régibeau assert that "even if these conditions were satisfied, the rate of growth in TFP obtained on a value-added basis will systematically be higher than the true rate of growth in TFP based on gross output."[78] Schankerman and Régibeau also note that KLEMS (Telecommunications) does not include inputs such as capital and labor "which make up most of value-added and more than half of total costs" which leads to inconsistency "between the TFP measure (which is based on value added) and the input price index used."[79] Connect America Cost Model (CACM)

30. *Dataset Discussed in the Further Notice.* The second dataset discussed in the *Further Notice* applies the underlying cost structure for telecommunications supply found in the Connect America Cost Model (CACM) to a range of input price changes. This range is based on: (1) forecasts of price changes made by the Commission's staff in its CACM peer review response, for some inputs; and (2) the similar sources of information as staff used in that response to make forecasts of price changes, but not the actual forecasts, for other inputs.[80] In the 2011 *USF/ICC Transformation Order*, the Commission

[72] *Id.* at 12, para. 23.

[73] *Id.* at 11-12, para. 22.

[74] *Id.* at 3-4, para. 5.

[75] *See* Sprint Aug. 31, 2015 Letter, Frentrup & Sappington Decl. at 8, para. 16; Sprint Oct. 5, 2016 Letter at 3 ("For purposes of comparability with the [Frentrup and Sappington] analysis, I continue to base the one-time price cap adjustment on TFP values for the period 2005-2014; I also continue to base the X-factor calculation on TFP and GDP-PI values for the period 1997-2014."); *see generally* Sprint Comments, Ex. E, Sappington & Zarakas Decl. at 17-18. KLEMS (Telecommunications) data is available only through 2010. *Id.* at 8, para. 15.

[76] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 24, para. 61 (citing Reitze Gouma and Marcel Timmer, Groningen Growth and Development Centre, *EU KLEMS Growth and Productivity Accounts: Description of methodology and country notes for the United States* (2012), http://www.euklems.net/data/nace2/USA_sources_12i.pdf).

[77] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 23, para. 58.

[78] *Id.* at 8, 22-25.

[79] *Id.* at 8.

[80] *See* FCC, *Peer Review of Connect America Phase II Cost Model, FCC Response to Professor Christiaan Hogendorn*, https://apps.fcc.gov/edocs_public/attachmatch/DOC-322385A1.pdf (last visited Feb. 23, 2017) (Staff CACM Peer Review Response). These calculations update similar calculations presented in the *Further Notice*. *See Further Notice*, 31 FCC Rcd at 4878-79, 4968-70, paras. 408-11 & Appx. C at paras. 7-16. For convenience, we

(continued….)

adopted the CACM to provide a forward-looking estimate by census block of the costs of providing a voice and broadband-capable network for use in determining Connect America Fund support for broadband necessary to serve price cap areas.[81] The model assumes that input prices remain fixed, and there are no productivity increases.

31. As part of a response to a peer review of the CACM, the Commission staff sought to determine how changes in input prices and productivity would affect its estimates.[82] As a first step toward that end, the staff obtained cost share data from CostQuest for each of ten basic cost categories used in CACM.[83] Those categories are labor, fiber, poles, conduit, drop, optical net terminal (ONT), fiber pedestals, splitters, electronics, and land/buildings.[84] Table 2 shows those cost shares.

Table 2: Cost Shares for 10 Basic CACM Cost Categories

Cost category	Share
Labor	59.6%
Fiber	2.9%
Poles	1.2%
Conduit	2.2%
Drop	1.4%
ONT	9.1%
Fiber pedestals	2.7%
Splitters[85]	5.7%
Electronics	6.4%
Land/Buildings	8.7%

Source: Connect America Cost Model (version 3.1)

32. As part of its response to this CACM peer review, the staff also estimated how costs in each of these categories and TFP might change over time. The staff assumed that fiber, optical net terminal, fiber pedestal, and splitter costs would decline by five percent annually; that pole costs would increase by two percent annually; that conduit costs would remain constant; and that drop costs would decline by two percent annually; and that electronics costs would decline by between 10 and 30 percent annually.[86] The calculations in the *Further Notice* reflect these assumptions.

33. For estimates of changes in labor costs, real estate costs, and TFP, the CACM peer review response relied on publicly available data. The calculations in the *Further Notice* relied on current information from similar data sources.

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refer to this set of calculations as CACM calculations even though we use results from the staff response to the CACM peer review—rather than the CACM itself—in this rulemaking.

[81] *Connect America Fund et al*., WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17725, para. 156 (2011) (*USF/ICC Transformation Order*).

[82] Staff CACM Peer Review Response at 10.

[83] *Id.* CostQuest developed the CACM. *See USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 168.

[84] *See* Staff CACM Peer Review Response.

[85] Approximately 30 percent of the splitter category is fiber, but the two expenses are not easily separated.

[86] *See* Staff CACM Peer Review Response at 11.

34. *Labor*. The staff obtained changes in labor costs from the BLS's Quarterly Census of Employment and Wages average annual pay data.[87] The staff used those data at three levels of detail: Total (all industries), Telecommunications, and Wired Telecommunications. Table 3 shows the compound annual growth rates for those data:

Table 3: Compound Annual Growth Rates in Labor Costs from 2001-2014

All industries	Telecommunications	Wired Telecommunications
2.72%	2.77%	2.47%

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

35. *Real Estate*. The staff obtained changes in real estate costs from Real Capital Analytics, which provides multiple commercial property price indices. Staff use four commercial property price indexes: National All-Property, Core Commercial, Industrial, and Office.[88] Table 4 shows the compound annual growth rates for those data.

Table 4: Compound Annual Growth Rates in Real Estate Prices from 2000-2015

National All-Property	Core Commercial	Industrial	Office
5.04%	4.54%	3.56%	5.07%

Source: Moody's / Real Capital Analytics

36. *Productivity*. The staff obtained changes in TFP from the Federal Reserve Bank of San Francisco, which provides a real-time, quarterly series on TFP for the U.S. business sector, adjusted for variations in factor utilization.[89] The *Further Notice* used two measures of TFP: Total Factor Productivity and TFP Utilization-Adjustment (TFP-utl), which adjusts TFP for capacity utilization (i.e., for labor effort and the workweek of capital). Table 5 shows the compound annual growth rates for those measures.

Table 5: Compound Annual Growth Rates in Productivity 1997-2015

TFP	TFP-utl
1.00%	1.10%

Source: Federal Reserve Bank of San Francisco

37. Meitzen and Schoech assert that the CACM methods provided in the *Further Notice* are subject to a series of collectively "fatal" shortcomings.[90] They characterize the data used in those calculations as "not representative" of the legacy TDM technologies used to provide BDS.[91] They

[87] As of the adoption of the *Further Notice*, data for 2015 were not yet available. BLS, *Quarterly Census of Employment and Wages*, http://www.bls.gov/cew/ (last visited Mar. 21, 2017).

[88] The base year was 2000. Real Capital Analytics divides commercial property into Industrial, Office, Retail, and Apartment categories. The National All-Property category combines these four categories. Core Commercial combines the Industrial, Office, and Retail categories. *See* Real Capital Analytics, *Commercial Property Price Indices (CPPI™), Moody's/RCA CPPI™*, https://www.rcanalytics.com/ (last visited Mar. 21, 2017).

[89] John G. Fernald, Federal Reserve Bank of San Francisco, A Quarterly, Utilization-Adjusted Series on Total Factor Productivity, Federal Reserve Bank of San Francisco Working Paper 2012-09 (updated Mar. 2014), http://www.frbsf.org/economic-research/indicators-data/total-factor-productivity-tfp/.

[90] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 13.

[91] *Id*. at 10 (stating that BDS guarantees a standard of performance and that BDS' "configurations are generally idiosyncratic to the locations served").

maintain that the *Further Notice* provides no evidence that CACM input prices are similar to BDS input prices.[92] They state that the CACM was designed to estimate the costs of best-efforts, mass-market broadband services and that labor costs category should be a larger share of total costs for BDS than for mass-market broadband services, "because of the customized, customer-specific nature" of BDS.[93] Meitzen and Schoech state that data used in the CACM estimates were derived from disparate sources and "have an indeterminate relationship with actual [BDS input] prices" and are "unverifiable."[94] Meitzen and Schoech point out that KLEMS (Broadcasting and Telecommunications)-based "TFP prices for capital inputs are for the annual user or rental price for capital services" and that "the CACM-based figures appear simply to be estimates of the changes in initial purchase prices for various pieces of new capital equipment."[95] They maintain that the CACM calculations presented in the *Further Notice* combined CACM-based input price trends with a TFP measure derived from the KLEMS (Broadcasting and Telecommunications) database and that "methodologies that use this TFP measure and CACM-based input prices are clearly inferior to the direct use of [KLEMS (Broadcasting and Telecommunications)] information."[96]

38. Schankerman and Régibeau argue that cost simulation models like CACM vary across companies, and choosing one over any others for the purpose of price cap regulation is "difficult to justify."[97] First, they assert that because cost simulation models vary across companies, it is difficult to justify a single model for calculating the price cap. They assert that such models are highly sensitive to model structure and assumptions.[98] They also argue that the CACM peer review cost categories are "not exhaustive."[99] Furthermore, they note that CACM was designed for residential services, not business data services.[100] They state that CACM does not provide its own measure of TFP, and it is a model for estimation, not a record from experience.[101] They oppose including an input price index and productivity measure from different sources arguing that a "properly derived measure" of total factor productivity should correspond to the index of input prices.[102]

39. *Sprint CACM Dataset*. Drs. Chris Frentrup and David E.M. Sappington suggest, on behalf of Sprint, several refinements to the CACM dataset used in the *Further Notice* which they assert is superior to KLEMS (Broadcasting and Telecommunications) for estimating business data services productivity growth relative to productivity growth in the overall economy. They replace the TFP measure used in the *Further Notice* with the TFP measure from KLEMS (Broadcasting and Telecommunications). They recognize that the latter measure is broader than BDS, but state that data

[92] *Id*. at 11; *see also* AT&T Aug. 9, 2016 Letter, Meitzen & Schoech Decl. at 7 (stating that "the input price measures developed for CACM are highly unlikely to reflect the actual technologies being used to provide BDS").

[93] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 11.

[94] *Id*. at 11; *see also id.* at 12 (quoting Staff CACM Peer Review Response at 11) (stating that during the CACM peer review process, the Commission staff recognized that it did not "have good data sources for the history of price changes for the following inputs: fiber, poles, conduit, drop, ONT, fiber pedestal, splitters, and electronics").

[95] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 7.

[96] *Id*. at 8.

[97] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 20.

[98] *Id*.

[99] *Id*.

[100] *Id*.

[101] *Id*.

[102] *Id*. at 21.

specific to BDS are not available.[103] They acknowledge this method differs from the method BLS applied in determining input prices for KLEMS (Broadcasting and Telecommunications). Although the input price changes for residential broadband and voice services developed during the CACM peer review process differ BDS input price changes, Frentrup and Sappington state that the CACM peer review measures reflect changes "for a wireline network rather than for the entire broadcasting and telecommunications industries combined, and so are likely to better reflect BDS input price growth rates than are the corresponding rates calculated using [KLEMS (Broadcasting and Telecommunications)] data."[104] Frentrup and Sappington also modify the CACM dataset used in the *Further Notice* to account for depreciation and the cost of capital, operating expenses attributable to plant investment, and operating expenses that cannot be attributed to specific plant investment.[105]

40. AT&T and CenturyLink assert that the KLEMS (Broadcasting and Telecommunications) dataset is preferable to the CACM dataset because the former provides a consistent methodology.[106] Frentrup and Sappington respond that "[a]lthough the calculations would be consistent, they would pertain to the combined broadcasting and telecommunications industries, not the BDS industry, and in this sense could well be 'consistently incorrect' for the present purpose."[107] In the absence of a "superior alternative that is publicly available," Frentrup and Sappington argue that they were "compelled to use" TFP data from KLEMS (Broadcasting and Telecommunications).[108] Frentrup and Sappington argue that CACM data provide "a viable alternative" that pertain to the wireline telecommunications sector, rather than the combined broadcasting and telecommunications industries.[109]

41. Based on this refined CACM dataset, Frentrup and Sappington recommend a catch-up adjustment of 17.1 percent.[110] Based on data for 1997 through 2014, they propose an X-factor of 3.94 percent. They use this period, rather than 2005 to 2014, because the recession during the latter period decreased productively growth and using that period "may well understate the TFP growth that is likely to prevail during the upcoming phase of price cap regulation."[111]

42. Meitzen and Schoech assert that the Frentrup and Sappington proposal is internally inconsistent. They state that using KLEMS (Broadcasting and Telecommunications)-based TFP data to develop the TFP growth rate, on the one hand, and input price growth estimates and national CACM-based capital input proportions developed by Commission staff during the CACM peer review process to develop the overall input price growth rate, on the other hand, results in a mathematically and economically incorrect mismatch.[112] Meitzen and Schoech argue that the TFP and input price growth

[103] Letter from Jennifer Bagg, Counsel for Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Declaration of Chris Frentrup and David E.M. Sappington at 5 (filed Aug. 31, 2016) (Sprint Aug. 31, 2016 Letter).

[104] *Id*. at 5-6.

[105] *Id*. at 7.

[106] AT&T Comment at 57; CenturyLink et al. Reply at 14; *see* CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 4, para. 6 ("we believe that the approach based on KLEMS data is the only one which is both sufficiently reliable and internally consistent.").

[107] Sprint Aug. 31, 2016 Letter, Frentrup & Sappington Decl. at 6.

[108] *Id*. at 6.

[109] *Id*. at 6.

[110] *Id*. at 8.

[111] *Id*. at 10.

[112] Letter from Christopher T. Shenk, Counsel for AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Supplemental Declaration of Mark E. Meitzen and Philip E. Schoech, Christensen Associates, at 3-7 (filed Sept. 22, 2016) (AT&T Sept. 22, 2016 Letter); *see also* Letter from Keith M. Krom, Counsel for AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Mark Meitzen and Phil Schoech, (continued….)

rates must instead be based on consistent data.[113] Meitzen and Schoech point out that the assumptions reflected in the staff estimates of input price changes in the staff response to the peer review (and on which Frentrup and Sappington rely) were intentionally developed to understate the cost estimates produced by the CACM.[114] Meitzen and Schoech conclude that the input price index developed by Frentrup and Sappington is significantly understated relative to the input price index developed from KLEMS (Broadcasting and Telecommunications) data because their calculation relies on the understated peer review estimates of input price changes.[115] Meitzen and Schoech also point out that during the CACM peer review process, the Commission staff acknowledged that the data on which it relied to estimate the input price changes were limited.[116]

43. Meitzen and Schoech argue that the data sources on which the Commission staff relied in the *Further Notice* (and on which Frentrup and Sappington rely) is incomplete because it reflects wages, but not other types of labor compensation that account for a large fraction of labor costs.[117] Specifically, Meitzen and Schoech assert that from 2001 to 2014 fringe benefits increased much faster than wages.[118] They add that this understatement has a large effect on Frentrup and Sappington's calculations because they assume that capitalized labor costs are almost 60 percent of all capital costs, and higher fractions of operational expenditures.[119]

44. Meitzen and Schoech argue that the proportions that Frentrup and Sappington use to weight different capital costs are the proportions of these costs developed in the staff response to the CACM peer review, and that these do not reflect the proportions of capital inputs actually used by incumbent LECs to supply price-regulated BDS services.[120] Meitzen and Schoech further argue that these capital inputs reflect a national run of a "scorched node proxy model that instantaneously places a new uniform network using the existing wire center locations of the incumbent provider using forward-looking, least-cost technologies."[121] They add that the CACM "links these wire centers to customer locations, assuming all-at-once optimized cable routes and cable sizes along roads now existing."[122] In contrast, Meitzen and Schoech contend that "BDS networks have been built over the past 50 years using the blend of technologies that was available at the time."[123] Meitzen and Schoech further argue that BDS networks, unlike the network represented by the CACM model, neither connect to all residences and businesses, nor provide mass-market, best-efforts broadband service.[124] They add that BDS networks

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Christensen Associates, Christensen Associates: BDS X-Factor Issues (dated Aug. 12, 2016), at 3-7 (filed Aug. 16, 2016) (AT&T Aug. 16, 2016 *Ex Parte*).

[113] AT&T Sept. 22, 2016 Letter, Meitzen & Schoech Decl. at 3-7.

[114] *Id.* at 10.

[115] *Id.* at 10-11.

[116] *Id.* at 9.

[117] *Id.* at 11-12.

[118] *Id.*

[119] *Id.*

[120] *Id.* at 12-14.

[121] *Id.* at 13.

[122] *Id.*

[123] *Id.*

[124] *Id.*

provide "specially engineered and designed circuits individually built to serve the idiosyncratic and highly variable BDS demand that has existed and evolved at each particular location."[125]

45. Meitzen and Schoech argue that Frentrup and Sappington's estimates of the economic user cost for the various capital inputs incorrectly ignore the cost-of-removal and salvage value, changes in finance costs or taxes, and technological or price changes for newer, substitutable inputs.[126] Meitzen and Schoech conclude that Frentrup and Sappington's input price index does not accurately measure capital input price changes because of these errors.[127]

46. Meitzen and Schoech argue that Frentrup and Sappington assume, without justification that labor accounts for an "overwhelming []" fraction of operating expenses.[128] At the same time, Meitzen and Schoech assert that energy, materials and services account for none of Frentrup and Sappington's operating expenses, even though energy, materials and services account for 45 percent of the total KLEMS (Broadcasting and Telecommunications) expense.[129] Based on Frentrup and Sappington's assumptions, Meitzen and Schoech claim that "labor not only accounts for 59.6% of total capital costs, but also 99% of non-plant-based [operating expense] costs, and very significant portions of plant-specific and plant-non-specific [operating expense] costs."[130]

47. Meitzen and Schoech contend that the Frentrup and Sappington argument for using the 1997 to 2014 data period rather than 2005 to 2014 (i.e., that the shorter period of data are too affected by the recession) to estimate the X-factor is incorrect.[131] Meitzen and Schoech argue the recession period, 2007 to 2009, only accounts for one-third of the shorter period.[132] Meitzen and Schoech further argue that "only if the recession reduced telecommunications TFP growth by more than it did national TFP growth would the recession have an effect on the X factor. But it did not."[133] Moreover, Meitzen and Schoech assert that the data Frentrup and Sappington actually use are "from inconsistent time periods and none is tethered to 1997 to 2014."[134]

48. In response to criticism from Meitzen and Schoech that Sprint's CACM cost estimates are too forward-looking,[135] Frentrup argues that "it is reasonable for a regulatory agency to reflect the cost changes that an efficient supplier is likely to experience during the upcoming period of price cap regulation."[136] Frentrup adjusted Sprint's CACM analysis in response to Meitzen and Schoech empirical critiques and finds that the net effect would be an increase in the productivity factor from 3.94 to 4.31 percent, and an increase in the catch-up adjustment from 17.12 to 20.50 percent.[137]

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[125] *Id.*

[126] *Id.* at 15-17.

[127] *Id.* at 15-17.

[128] *Id.* at 17-18.

[129] *Id.* at 17-18.

[130] *Id.*

[131] *Id.* at 19.

[132] AT&T Sept. 22, 2016 Letter, Meitzen & Schoech Decl. at 17-18.

[133] *Id.*

[134] *Id.* at 19-20.

[135] *Id.* at 3.

[136] Letter from Dr. Chris Frentrup, Senior Economist, Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., at 3 (filed Oct. 5, 2016) (Sprint Oct. 5, 2016 Letter).

[137] Sprint Oct. 5, 2016 Letter at 3-6 & Tbls. 1-2.

49. Meitzen and Schoech respond that while "the X factor should be forward-looking," it should also "reflect the level of productivity growth that firms actually providing BDS may be expected to achieve," which is "best determined by looking to recent history of what productivity levels BDS producers have actually been able to achieve" as opposed to CACM "hypothetical" productivity.[138] They contend that Sprint's revised CACM approach is still "fundamentally flawed" because "the estimates of TFP that one obtains depend crucially on the index of input prices used;" different input price indexes lead to different estimates of TFP.[139] Schankerman and Régibeau characterize Sprint's CACM proposal as combining an input price index derived from CACM, with some modifications, and a TFP index derived from KLEMS (Broadcasting and Telecommunications) in order to narrowly focus the dataset on BDS productivity as opposed to the broader dataset.[140] Schankerman and Régibeau assert, however, that "it is a basic and well-established principle in productivity measurement that the index of TFP and the index of input prices – which are key elements to determine reset and X-factor – must be derived from a unified framework."[141] They purport to show that if "one properly adjust the TFP index to maintain consistency between the input price and productivity indexes, there is no change to the X-factor."[142] Meitzen and Schoech agree with the Schankerman and Régibeau critiques, asserting that combining CACM-based input prices with KLEMS (Broadcasting and Telecommunications)-based TFP "violates the economic principle of duality."[143]

C. TDS Metrocom Data Combined with Connect America Cost Model

50. Our final dataset discussed in the *Further Notice* combines data from TDS Metrocom's (TDS's) incumbent LEC operations with data from our CACM calculations, as described above. In an *ex parte* filing, TDS divided its incumbent LEC's costs into four categories: labor, real estate, switching, and transmission.[144] We used these categories as an alternative set of input categories. While the labor and real estate categories correspond to categories in the staff's response to the CACM peer review, we mapped the remaining eight CACM categories to the TDS categories for switching and transmission. Specifically, staff combined the CACM fiber, poles, conduit, drop, ONT, and fiber pedestals categories into switching, and combined the CACM splitters and electronics categories into transmission.[145] The category shares in our third set of calculations reflect TDS's cost shares. Staff's calculations otherwise mirror those in the CACM peer review approach discussed above, using the same high and low estimates for changes in costs and productivity.

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[138] Letter from Keith M. Krom, Executive Director - Senior Legal Counsel, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Second Supplemental Declaration of Mark E. Meitzen, Ph.D. and Philip E. Schoech, Ph.D., Christensen Associates, at 4-5 (dated Oct. 18, 2016) (filed Oct. 20, 2016) (AT&T Oct. 20, 2016 Letter).

[139] Letter from Russell P. Hanser & Brian W. Murray, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Prof. Mark Schankerman and Dr. Pierre Régibeau, Charles River Associates, Second Supplemental Declaration, at 3-6 (filed Oct. 28, 2016) (CenturyLink Oct. 28, 2016 Letter).

[140] Letter from Russell P. Hanser & Brian W. Murray, Counsel to CenturyLink, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach., Prof. Mark Schankerman and Dr. Pierre Régibeau, Charles River Associates, Supplemental Declaration: Comments on Frentrup-Sappington Report, at 3 (filed Oct. 6, 2016) (CenturyLink Oct. 6, 2016 Letter); CenturyLink Oct. 28, 2016 Letter, Schankerman & Régibeau Decl. at 5-7.

[141] CenturyLink Oct. 28, 2016 Letter, Schankerman & Régibeau Decl. at 6.

[142] *Id*. at 4.

[143] AT&T Oct. 20, 2016 Letter, Meitzen & Schoech Decl. at 2-3

[144] *See* Letter from Steve Pitterle, Manager – Carrier Relations, TDS Telecommunications Corporation, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 16-143 et al., Attach. at 1 (filed Sept. 24, 2015) (TDS Sept. 24, 2015 Letter).

[145] *Further Notice*, 31 FCC Rcd at 4879, para. 411 & Tbl. 9.

51. Meitzen and Schoech reject the combination of the CACM dataset with data from TDS. They state that both methods suffer from the "same infirmities," and there is "no proof" in the record that the data from TDS, which is "a largely rural non-price cap LEC," improves the CACM dataset as a tool for measuring BDS productivity growth.[146] AT&T argues that the TDS data is of little value because they are "proprietary, unvalidated data from a single competitor that is seeking regulation."[147] Schankerman and Régibeau assert that all the "critical drawbacks and limitations" of CACM – based on a modeling structure not subject to empirical validation – apply to CACM combined with TDS data as well as the "mismatch between cost categories in the CACM and TDS."[148]

[146] AT&T June 28, 2016 Letter, Meitzen & Schoech Decl. at 13; AT&T Comments at 61.

[147] AT&T Comments at 61.

[148] CenturyLink Aug. 9, 2016 Letter, Schankerman & Régibeau Decl. at 20, para. 53.

ATTACHMENT

Table: Indices for Calculating the X-factors Based on KLEMS (Broadcasting and Telecommunications) Data

Year	GDP price index	Industry price index	Industry productivity
1987	59.9	68.8	72.5
1988	62.0	71.4	75.7
1989	64.4	73.8	77.1
1990	66.8	76.6	78.6
1991	69.1	77.4	78.4
1992	70.6	79.1	79.7
1993	72.3	81.8	81.5
1994	73.9	84.6	83.7
1995	75.4	84.3	81.3
1996	76.8	86.1	82.4
1997	78.1	80.3	75.8
1998	78.9	79.6	75.4
1999	80.1	77.4	74.2
2000	81.9	76.2	72.8
2001	83.8	73.5	70.8
2002	85.0	74.5	71.7
2003	86.7	78.7	75.5
2004	89.1	85.2	81.9
2005	92.0	91.1	90.2
2006	94.8	93.9	94.0
2007	97.3	100.0	99.0
2008	99.2	103.1	101.6
2009	100.0	100.0	100.0
2010	101.2	99.7	100.1
2011	103.3	98.5	99.2
2012	105.2	99.0	99.1
2013	106.9	102.5	102.3
2014	108.8	104.0	104.1

Sources: GDP-PI comes from the Bureau of Economic Analysis. *See* U.S. Dept. of Commerce, Bur. of Economic Analysis, *National Data: GDP & Personal Income*, http://www.bea.gov/iTable/index_nipa.cfm (last visited Mar. 21, 2016). Industry Input Price Index and Industry TFP comes from the Bureau of Labor Statistics. *See* U.S. Dept. of Labor, Bur. of Labor Statistics, *Multifactor Productivity, Nonmanufacturing Sector and NIPA-level Manufacturing Industries KLEMS Multifactor Productivity Tables by Industry*, http://www.bls.gov/mfp/mprdload.htm (last visited Mar. 21, 2016).

APPENDIX C

FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA)[149], *an Initial* Regulatory Flexibility Analysis (IRFA) was incorporated into the Further Notice of Proposed Rulemaking (*Further Notice*) for the business data services (BDS) proceeding.[150] The Commission sought written public comment on the proposals in the *Further Notice*, including comment on the IRFA. The Commission received no comments on the IRFA. Because the Commission amends its rules in this Report and Order, the Commission has included this Final Regulatory Flexibility Analysis (FRFA). This present FRFA conforms to the RFA.[151]

D. Need for, and Objectives of, the Rules

2. In the *Further Notice*, the Commission proposed to replace the existing business data services regulatory structure with a new technology-neutral framework and sought comprehensive comments on the proposed new framework.[152] This Order, therefore, provides a new framework for business data services that minimizes unnecessary government intervention and allows market forces to continue working to spur entry, innovation and competition.[153]

3. Based on the *2015 Collection*, the Commission makes findings as to the relevant market for analysis, trends in competition, and the presence of market power. Significantly, the Commission finds competition in the provision of the following business data services to be sufficiently widespread that pricing regulation would be counterproductive: packet-based business data services, optical transmission services with bandwidths in excess of a DS3, and TDM transport services. The Commission, therefore, declines to adopt, and where applicable ends, ex ante pricing regulation for such services. With respect to the provision of TDM end user channel terminations, the Commission adopts the following competitive market test. For a particular county if: 50 percent of the buildings in that county are within a half mile of a location served by a competitive provider based on the *2015 Collection* or 75 percent of the census blocks in a county have a cable provider present based on Form 477 data, the Commission finds that ex ante pricing regulation of that county would be counterproductive. The services relieved of ex ante pricing regulation will be subject to permissive detariffing for a period of 18 months at which time they will be subject to mandatory detariffing.

4. For counties that do not meet the competitive market test, the Commission will retain price cap regulation for incumbent LEC provision of DS1 and DS3 end user channel terminations and apply the principles of Phase I pricing flexibility to these counties, which will permit the carriers to offer volume and term discounts, as well as contract tariffs. These services will also be subject to a productivity-based X factor of 2.0 percent and restrictions on the incumbent LEC's use of non-disclosure agreements.

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[149] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 847 (1996).

[150] *Business Data Services in an Internet Protocol Environment; Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans; 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*, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593, Tariff Investigation Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 4723, 4972-99, Appx. D. (2016) (*Tariff Investigation Order* or *Further Notice*).

[151] *See* 5 U.S.C. § 604.

[152] *See Further Notice*, 31 FCC Rcd at 4727-28, para. 11.

[153] *See Further Notice*.

E. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

5. The Commission did not receive comments specifically addressing the rules and policies proposed in the IRFA.

F. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

6. The Chief Counsel did not file any comments in response to this proceeding.

G. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

7. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[154] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[155] In addition, the term "small business" has the same meaning as the term "small-business concern" under the Small Business Act.[156] A small-business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[157]

1. Total Small Entities

8. Our proposed action, if implemented, may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.[158] First, as of 2013, the SBA estimates there are an estimated 28.8 million small businesses nationwide—comprising some 99.9% of all businesses.[159] In addition, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[160] Nationwide, as of 2007, there were approximately 1,621,315 small organizations.[161] Finally, the term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[162] Census Bureau data for 2012 indicate that there were 90,056 local governmental jurisdictions in the United States.[163] We estimate that, of this total, as many as 89,195

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[154] *See* 5 U.S.C. § 603(b)(3).

[155] *See* 5 U.S.C. § 601(6).

[156] *See* 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[157] *See* 15 U.S.C. § 632.

[158] *See* 5 U.S.C. §§ 601(3)-(6).

[159] *See* Small Bus. Admin., Office of Advocacy, *Frequently Asked Questions about Small Business* 1 (2016), https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf.

[160] 5 U.S.C. § 601(4).

[161] Indep. Sector, The New Nonprofit Almanac and Desk Reference (2010).

[162] 5 U.S.C. § 601(5).

[163] *See* U.S. Census Bureau, American Fact Finder, Local Governments by Type and State: 2012, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=COG_2012_ORG02.US01&prodType=table (last visited Oct. 19, 2016).

entities may qualify as "small governmental jurisdictions."[164] Thus, we estimate that most governmental jurisdictions are small.

2. Wireline Providers

9. *Incumbent Local Exchange Carriers* (*Incumbent LECs*). Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent LEC services. The closest applicable size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[165] According to Commission data,[166] 1,307 carriers reported that they were incumbent LEC providers.[167] Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.[168] Consequently, the Commission estimates that most providers of incumbent LEC service are small businesses that may be affected by rules adopted pursuant to the Order.

10. We have included small incumbent LECs in this present RFA analysis. As noted above, a "small business" under the RFA is one that, *inter alia*, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees), and "is not dominant in its field of operation."[169] The SBA's Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not "national" in scope.[170] We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

11. *Competitive Local Exchange Carriers (Competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers*. Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate NAICS Code category is Wired Telecommunications Carriers, as defined in paragraph 6 of this FRFA. Under that size standard, such a business is small if it has 1,500 or fewer employees.[171] U.S. Census data for 2012 indicate that 3,117 firms operated during that year. Of that number, 3,083 operated

[164] The 2012 Census data for small governmental organizations are not presented based on the size of the population in each organization. As stated above, there were 90,056 local governmental organizations in 2012. As a basis for estimating how many of these 90,056 local organizations were small, in 2012 we note that there were a total of 861 cities and towns (incorporated places and minor civil divisions) with populations greater than or equal to 50,000. *See* U.S. Census Bureau, American Fact Finder, Subcounty General-Purpose Governments by Population-Size Group and State: 2012, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=COG_2012_ORG07.US01&prodType=table (last visited Oct. 19, 2016). If we subtract the 861 cities and towns that exceed the 50,000 population threshold, we conclude that approximately 89,195 are small.

[165] 13 CFR § 121.201, NAICS code 517110.

[166] Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *Trends in Telephone Service*, tbl. 5.3 (Sept. 2010) (*Trends in Telephone Service*).

[167] *See Trends in Telephone Service* at tbl. 5.3.

[168] *See id*.

[169] 5 U.S.C. § 601(3).

[170] Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, Federal Communications Commission (filed May 27, 1999). The Small Business Act contains a definition of "small business concern," which the RFA incorporates into its own definition of "small business." 15 U.S.C. § 632(a); 5 U.S.C. § 601(3). SBA regulations interpret "small business concern" to include the concept of dominance on a national basis. 13 CFR § 121.102(b).

[171] 13 CFR § 121.201, NAICS code 517110.

with fewer than 1,000 employees.[172] Based on this data, the Commission concludes that the majority of Competitive LECS, CAPs, Shared-Tenant Service Providers, and Other Local Service Providers, are small entities. According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services.[173] Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees and 186 have more than 1,500 employees.[174] In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees.[175] Also, 72 carriers have reported that they are Other Local Service Providers.[176] Of this total, seventy have 1,500 or fewer employees.[177] Consequently, based on internally researched FCC data, the Commission estimates that most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and other local service providers are small entities that may be affected by rules adopted pursuant to the Order.

12. *Interexchange Carriers.* Neither the Commission nor the SBA has developed a definition specifically for providers of interexchange services. The closest NAICS Code category is Wired Telecommunications Carriers as defined in this FRFA. The applicable size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.[178] U.S. Census data for 2012 indicates that 3,117 firms operated during that year. Of that number, 3,083 operated with fewer than 1,000 employees.[179] According to internally developed Commission data,[180] 359 carriers have reported that their primary telecommunications service activity was the provision of interexchange service. Of this total, an estimated 317 have 1,500 or fewer employees. Consequently, the Commission estimates that the majority of interexchange carriers are small entities that may be affected by rules adopted pursuant to the Order.

13. *Operator Service Providers* (*OSPs*). Neither the Commission nor the SBA has developed a small business size standard specifically for operator service providers. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[181] According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services. Of these, an estimated 31 have 1,500 or fewer employees and two have more than 1,500 employees.[182] Consequently, the Commission estimates that the majority of OSPs are small entities that may be affected by rules adopted pursuant to the Order.

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[172] U.S. Census Bureau, 2012 Economic Census, Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States, NAICS code 517110 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[173] *See Trends in Telephone Service* at tbl. 5.3.

[174] *See id.*

[175] *See id*.

[176] *See id*.

[177] *See id*.

[178] 13 CFR § 121.201, NAICS code 517110.

[179] U.S. Census Bureau, 2012 Economic Census, Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States, NAICS code 517110 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[180] *Trends in Telephone Service* at tbl. 5.3.

[181] 13 CFR § 121.201, NAICS code 517110.

[182] *Trends in Telephone Service* at tbl. 5.3.

14. *Prepaid Calling Card Providers*. Neither the Commission nor the SBA has developed a small business definition specifically for prepaid calling card providers. The most appropriate NAICS code-based category for defining prepaid calling card providers is Telecommunications Resellers. This industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households. Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure. Mobile virtual networks operators (MVNOs) are included in this industry.[183] Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.[184] U.S. Census data for 2012 show that 1,341 firms provided resale services during that year. Of that number, 1,341 operated with fewer than 1,000 employees.[185] Thus, under this category and the associated small business size standard, the majority of these prepaid calling card providers can be considered small entities. According to Commission data, 193 carriers have reported that they are engaged in the provision of prepaid calling cards.[186] All 193 have 1,500 or fewer employees.[187] Consequently, the Commission estimates that the majority of prepaid calling card providers are small entities that may be affected by rules adopted pursuant to the Order.

15. *Local Resellers.* The SBA has developed a small business size standard for the category of Telecommunications Resellers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[188] Census data for 2012 show that 1,341 firms provided resale services during that year. Of that number, 1,341 operated with fewer than 1,000 employees.[189] Under this category and the associated small business size standard, the majority of these local resellers can be considered small entities. According to Commission data, 213 carriers have reported that they are engaged in the provision of local resale services.[190] Of these, an estimated 211 have 1,500 or fewer employees.[191] Consequently, the Commission estimates that the majority of local resellers are small entities that may be affected by rules adopted pursuant to the Order.

16. *Toll Resellers.* The Commission has not developed a definition for Toll Resellers. The closest NAICS Code Category is Telecommunications Resellers, and the SBA has developed a small business size standard for the category of Telecommunications Resellers.[1] Under that size standard, such a business is small if it has 1,500 or fewer employees.[192] Census data for 2012 show that 1,341 firms provided resale services during that year. Of that number, 1,341 operated with fewer than 1,000

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[183] U.S. Census Bureau, 2012 NAICS Definition, 517911 Telecommunications Resellers, http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517911&search=2012%20NAICS%20Search (last visited Oct. 25, 2016).

[184] *See* 13 CFR § 121.201, NAICS code 517911.

[185] U.S. Census Bureau, 2012 Economic Census, Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States, NAICS code 517911 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[186] *See Trends in Telephone Service* at tbl. 5.3.

[187] *See id*.

[188] *See* 13 CFR § 121.201, NAICS code 517911.

[189] U.S. Census Bureau, 2012 Economic Census, "Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States," NAICS code 517911 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[190] *See Trends in Telephone Service* at tbl. 5.3.

[191] *See id*.

[192] *See* 13 CFR § 121.201, NAICS code 517911.

employees.[193] Thus, under this category and the associated small business size standard, the majority of these resellers can be considered small entities. According to Commission data, 881 carriers have reported that they are engaged in the provision of toll resale services.[194] Of these, an estimated 857 have 1,500 or fewer employees.[195] Consequently, the Commission estimates that the majority of toll resellers are small entities that may be affected by rules adopted pursuant to the Order.

17. *Other Toll Carriers*. Neither the Commission nor the SBA has developed a definition for small businesses specifically applicable to Other Toll Carriers. This category includes toll carriers that do not fall within the categories of interexchange carriers, operator service providers, prepaid calling card providers, satellite service carriers, or toll resellers. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers as defined in paragraph 6 of this FRFA. Under that size standard, such a business is small if it has 1,500 or fewer employees.[196] Census data for 2012 shows that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees.[197] Thus, under this category and the associated small business size standard, the majority of Other Toll Carriers can be considered small. According to internally developed Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage.[198] Of these, an estimated 279 have 1,500 or fewer employees.[199] Consequently, the Commission estimates that most Other Toll Carriers are small entities that may be affected by the rules and policies adopted pursuant to the Order.

18. *800 and 800-Like Service Subscribers*.[200] Neither the Commission nor the SBA has developed a small business size standard specifically for 800 and 800-like service (toll free) subscribers. The appropriate size standard under SBA rules is for the category Telecommunications Resellers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[201] The most reliable source of information regarding the number of these service subscribers appears to be data the Commission collects on the 800, 888, 877, and 866 numbers in use.[202] According to our data, as of September 2009, the number of 800 numbers assigned was 7,860,000; the number of 888 numbers assigned was 5,588,687; the number of 877 numbers assigned was 4,721,866; and the number of 866 numbers assigned was 7,867,736.[203] We do not have data specifying the number of these subscribers that are not independently owned and operated or have more than 1,500 employees, and thus are unable at this time to estimate with greater precision the number of toll free subscribers that would qualify as small businesses under the SBA

[193] U.S. Census Bureau, 2012 Economic Census, "Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States," NAICS code 517911 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[194] *See Trends in Telephone Service* at tbl. 5.3.

[195] *See id*.

[196] *See* 13 CFR § 121.201, NAICS code 517110.

[197] U.S. Census Bureau, 2012 Economic Census, "Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States," NAICS code 517110 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[198] *See Trends in Telephone Service* at tbl. 5.3.

[199] *See id*.

[200] We include all toll-free number subscribers in this category, including those for 888 numbers.

[201] *See* 13 CFR § 121.201, NAICS code 517911.

[202] *See Trends in Telephone Service* at tbls. 18.7-18.10.

[203] *See id*.

size standard. Consequently, we estimate that there are 7,860,000 or fewer small entity 800 subscribers; 5,588,687 or fewer small entity 888 subscribers; 4,721,866 or fewer small entity 877 subscribers; and 7,867,736 or fewer small entity 866 subscribers.

3. Wireless Providers – Fixed and Mobile

19. The rules adopted in the Report and Order may affect wireless providers. As a general matter, the number of winning bidders that claim to qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments and transfers or reportable eligibility events, unjust enrichment issues are implicated.

20. *Wireless Telecommunications Carriers (except Satellite*). This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services.[204] The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.[205] For this industry, Census data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees.[206] Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities. Similarly, according to internally developed Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) services.[207] Of this total, an estimated 261 have 1,500 or fewer employees.[208] Thus, using available data, we estimate that the majority of wireless firms can be considered small.

21. *Wireless Communications Services*. This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined "small business" for the wireless communications services (WCS) auction as an entity with average gross revenues of $40 million for each of the three preceding years, and a "very small business" as an entity with average gross revenues of $15 million for each of the three preceding years.[209] The SBA has approved these definitions.[210]

22. *218-219 MHz Service.* The first auction of 218-219 MHz spectrum resulted in 170 entities winning licenses for 594 Metropolitan Statistical Area (MSA) licenses. Of the 594 licenses, 557

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[204] U.S. Census Bureau, 2012 NAICS Definition, 517210 Wireless Telecommunications Carriers (except Satellite), http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2012%20NAICS%20Search (last visited Oct. 25, 2016).

[205] 13 CFR § 121.201, NAICS code 517210 (2012 NAICS). The now-superseded, pre-2007 CFR citations were 13 CFR § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[206] U.S. Census Bureau, 2012 Economic Census, Information: Subject Series - Estab & Firm Size: Employment Size of Firms for the United States, NAICS code 517210 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[207] *Trends in Telephone Service* at tbl. 5.3.

[208] *Id.*

[209] *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, GN Docket No. 96-228, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

[210] *See* Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, Federal Communications Commission (filed Dec. 2, 1998) (*Alvarez Letter 1998*).

were won by entities qualifying as a small business. For that auction, the small business size standard was an entity that, together with its affiliates, has no more than a $6 million net worth and, after federal income taxes (excluding any carry over losses), has no more than $2 million in annual profits each year for the previous two years.[211] In the *218-219 MHz Report and Order and Memorandum Opinion and Order*, we established a small business size standard for a "small business" as an entity that, together with its affiliates and persons or entities that hold interests in such an entity and their affiliates, has average annual gross revenues not to exceed $15 million for the preceding three years.[212] A "very small business" is defined as an entity that, together with its affiliates and persons or entities that hold interests in such an entity and its affiliates, has average annual gross revenues not to exceed $3 million for the preceding three years.[213] These size standards will be used in future auctions of 218-219 MHz spectrum.

23. *2.3 GHz Wireless Communications Services*. This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined "small business" for the wireless communications services ("WCS") auction as an entity with average gross revenues of $40 million for each of the three preceding years, and a "very small business" as an entity with average gross revenues of $15 million for each of the three preceding years.[214] The SBA has approved these definitions.[215] The Commission auctioned geographic area licenses in the WCS service. In the auction, which was conducted in 1997, there were seven bidders that won 31 licenses that qualified as very small business entities, and one bidder that won one license that qualified as a small business entity.

24. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile.[216] An auction for one license in the 1670–1675 MHz band was conducted in 2003. One license was awarded. The winning bidder was not a small entity.

25. *Wireless Telephony*. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. As noted, the SBA has developed a small business size standard for Wireless Telecommunications Carriers (except Satellite).[217] Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.[218] According to Commission data, 413 carriers reported that they were engaged in wireless telephony.[219] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[220] Therefore, a little less than one third of these entities can be considered small.

26. *Broadband Personal Communications Service.* The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a "small business" for

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[211] *See generally Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, PP Docket No. 93-253, Fourth Report and Order, 9 FCC Rcd 2330 (1994).

[212] *See generally Amendment of Part 95 of the Commission's Rules to Provide Regulatory Flexibility in the 218-219 MHz Service*, WT Docket No. 98-169, Report and Order and Memorandum Opinion and Order, 15 FCC Rcd 1497 (1999) (*218-219 MHz Report and Order and Memorandum Opinion and Order*).

[213] *See id*.

[214] *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, GN Docket No. 96-228, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

[215] *See Alvarez Letter 1998*.

[216] 47 CFR § 2.106; *see generally* 47 CFR §§ 27.1-27.70.

[217] 13 CFR § 121.201, NAICS code 517210.

[218] *Id*.

[219] *Trends in Telephone Service* at tbl. 5.3.

[220] *Id.*

C- and F-Block licenses as an entity that has average gross revenues of $40 million or less in the three previous calendar years.[221] For F-Block licenses, an additional small business size standard for "very small business" was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than $15 million for the preceding three calendar years.[222] These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.[223] No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small business status won approximately 40 percent of the 1,479 licenses in the first auction for the D, E, and F Blocks.[224] On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.[225] Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

27. On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.[226] Subsequent events concerning Auction 35, including judicial and agency determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses.[227] On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.[228] Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.[229] On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.[230] Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.[231]

28. *Specialized Mobile Radio Licenses.* The Commission awards "small entity" bidding credits in auctions for Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands to firms that had revenues of no more than $15 million in each of the three previous calendar

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[221] *See Amendment of Parts 20 and 24 of the Commission's Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap; Amendment of the Commission's Cellular/PCS Cross-Ownership Rule*; WT Docket No. 96-59, GN Docket No. 90-314, Report and Order, 11 FCC Rcd 7824, 7850-52, paras. 57-60 (1996) (*PCS Report and Order*); *see also* 47 CFR § 24.720(b).

[222] *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

[223] *See Alvarez Letter 1998*.

[224] *See Broadband PCS, D, E and F Block Auction Closes*, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

[225] *See C, D, E, and F Block Broadband PCS Auction Closes*, Public Notice, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. *Amendment of the Commission's Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees*, WT Docket No. 97-82, Fourth Report and Order, 13 FCC Rcd 15743, 15768, para. 46 (1998).

[226] *See C and F Block Broadband PCS Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 2339 (2001).

[227] *See Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58*, Public Notice, 20 FCC Rcd 3703 (2005).

[228] *See Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71*, Public Notice, 22 FCC Rcd 9247 (2007).

[229] *Id*.

[230] *See Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78*, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

[231] *Id.*

years.[232] The Commission awards "very small entity" bidding credits to firms that had revenues of no more than $3 million in each of the three previous calendar years.[233] The SBA has approved these small business size standards for the 900 MHz Service.[234] The Commission has held auctions for geographic area licenses in the 800 MHz and 900 MHz bands. The 900 MHz SMR auction began on December 5, 1995, and closed on April 15, 1996. Sixty bidders claiming that they qualified as small businesses under the $15 million size standard won 263 geographic area licenses in the 900 MHz SMR band. The 800 MHz SMR auction for the upper 200 channels began on October 28, 1997, and was completed on December 8, 1997. Ten bidders claiming that they qualified as small businesses under the $15 million size standard won 38 geographic area licenses for the upper 200 channels in the 800 MHz SMR band.[235] A second auction for the 800 MHz band was held on January 10, 2002 and closed on January 17, 2002 and included 23 BEA licenses. One bidder claiming small business status won five licenses.[236]

29. The auction of the 1,053 800 MHz SMR geographic area licenses for the General Category channels began on August 16, 2000, and was completed on September 1, 2000. Eleven bidders won 108 geographic area licenses for the General Category channels in the 800 MHz SMR band and qualified as small businesses under the $15 million size standard.[237] In an auction completed on December 5, 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were awarded.[238] Of the 22 winning bidders, 19 claimed small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed status as small businesses.

30. In addition, there are numerous incumbent site-by-site SMR licenses and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR service pursuant to extended implementation authorizations, nor how many of these providers have annual revenues of no more than $15 million. One firm has over $15 million in revenues. In addition, we do not know how many of these firms have 1,500 or fewer employees, which is the SBA-determined size standard.[239] We assume, for purposes of this analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

31. *Lower 700 MHz Band Licenses*. The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.[240] The Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40

[232] 47 CFR § 90.814(b)(1).

[233] *Id*.

[234] *See* Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission (filed Aug. 10, 1999) (*Alvarez Letter 1999*).

[235] *See Correction to Public Notice DA 96-586 "FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas,"* Public Notice, 18 FCC Rcd 18367 (WTB 1996).

[236] *See Multi-Radio Service Auction Closes*, Public Notice, 17 FCC Rcd 1446 (WTB 2002).

[237] *See 800 MHz Specialized Mobile Radio (SMR) Service General Category (851–854 MHz) and Upper Band (861–865 MHz) Auction Closes; Winning Bidders Announced*, Public Notice, 15 FCC Rcd 17162 (2000).

[238] *See 800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 1736 (2000).

[239] *See generally* 13 CFR § 121.201, NAICS code 517210.

[240] *See Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59)*, GN Docket No. 01-74, Report and Order, 17 FCC Rcd 1022 (2002) (*Channels 52–59 Report and Order*).

million for the preceding three years.[241] A "very small business" is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[242] Additionally, the lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—"entrepreneur"—which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $3 million for the preceding three years.[243] The SBA approved these small size standards.[244] An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) commenced on August 27, 2002, and closed on September 18, 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business or entrepreneur status and won a total of 329 licenses.[245] A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses: 5 EAG licenses and 476 Cellular Market Area licenses.[246] Seventeen winning bidders claimed small or very small business status and won 60 licenses, and nine winning bidders claimed entrepreneur status and won 154 licenses.[247] On July 26, 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band (Auction No. 60). There were three winning bidders for five licenses. All three winning bidders claimed small business status.

32. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.[248] An auction of 700 MHz licenses commenced January 24, 2008 and closed on March 18, 2008, which included, 176 Economic Area licenses in the A Block, 734 Cellular Market Area licenses in the B Block, and 176 EA licenses in the E Block.[249] Twenty winning bidders, claiming small business status (those with attributable average annual gross revenues that exceed $15 million and do not exceed $40 million for the preceding three years) won 49 licenses. Thirty three winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years) won 325 licenses.

33. *Upper 700 MHz Band Licenses*. In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.[250] On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were

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[241] *See id.* at 1087-88, para. 172.

[242] *See id*.

[243] *See id.* at 1088, para. 173.

[244] *See Alvarez Letter 1999*.

[245] *See Lower 700 MHz Band Auction Closes*, Public Notice, 17 FCC Rcd 17272 (WTB 2002).

[246] *See id.*

[247] *See id.*

[248] *Service Rules for the 698–746, 747–762 and 777–792 MHz Band; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review—Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010; Declaratory Ruling on Reporting Requirement under Commission's Part 1 Anti-Collusion Rule*, WT Docket Nos. 07-166, 06-169, 06-150, 03-264, 96-86, PS Docket No. 06-229, CC Docket No. 94-102, Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007) (*700 MHz Second Report and Order*).

[249] *See Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

[250] *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

available for licensing: 12 Regional Economic Area Grouping licenses in the C Block, and one nationwide license in the D Block.[251] The auction concluded on March 18, 2008, with 3 winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years) and winning five licenses.

34. *700 MHz Guard Band Licensees*. In 2000, in the 700 MHz Guard Band Order, the Commission adopted size standards for "small businesses" and "very small businesses" for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[252] A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years.[253] Additionally, a very small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[254] SBA approval of these definitions is not required.[255] An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.[256] Of the 104 licenses auctioned, 96 licenses were sold to nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses commenced on February 13, 2001, and closed on February 21, 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.[257]

35. *Cellular Radiotelephone Service.* Auction 77 was held to resolve one group of mutually exclusive applications for Cellular Radiotelephone Service licenses for unserved areas in New Mexico.[258] Bidding credits for designated entities were not available in Auction 77.[259] In 2008, the Commission completed the closed auction of one unserved service area in the Cellular Radiotelephone Service, designated as Auction 77. Auction 77 concluded with one provisionally winning bid for the unserved area totaling $25,002.[260]

36. *Private Land Mobile Radio ("PLMR").* PLMR systems serve an essential role in a range of industrial, business, land transportation, and public safety activities. These radios are used by companies of all sizes operating in all U.S. business categories, and are often used in support of the licensee's primary (non-telecommunications) business operations. For the purpose of determining whether a licensee of a PLMR system is a small business as defined by the SBA, we use the broad census

[251] *See Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

[252] *See Service Rules for the 746–764 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, WT Docket No. 99-168, Second Report and Order, 15 FCC Rcd 5299 (2000) (*746–764 MHz Band Second Report and Order*).

[253] *See id.* at 5343, para. 108.

[254] *See id.*

[255] *See id.* at 5343, para. 108 n.246 (for the 746–764 MHz and 776–794 MHz bands, the Commission is exempt from 15 U.S.C. § 632, which requires Federal agencies to obtain SBA approval before adopting small business size standards).

[256] *See 700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 15 FCC Rcd 18026 (WTB 2000).

[257] *See 700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 16 FCC Rcd 4590 (WTB 2001).

[258] *See Closed Auction of Licenses for Cellular Unserved Service Area Scheduled for June 17, 2008, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 77*, Public Notice, 23 FCC Rcd 6670 (WTB 2008).

[259] *Id*. at 6685.

[260] *See Auction of Cellular Unserved Service Area License Closes, Winning Bidder Announced for Auction 77, Down Payment due July 2, 2008, Final Payment due July 17, 2008*, Public Notice, 23 FCC Rcd 9501 (WTB 2008).

category, Wireless Telecommunications Carriers (except Satellite). This definition provides that a small entity is any such entity employing no more than 1,500 persons.[261] The Commission does not require PLMR licensees to disclose information about number of employees, so the Commission does not have information that could be used to determine how many PLMR licensees constitute small entities under this definition. We note that PLMR licensees generally use the licensed facilities in support of other business activities, and therefore, it would also be helpful to assess PLMR licensees under the standards applied to the particular industry subsector to which the licensee belongs.[262]

37. As of March 2010, there were 424,162 PLMR licensees operating 921,909 transmitters in the PLMR bands below 512 MHz. We note that any entity engaged in a commercial activity is eligible to hold a PLMR license, and that any revised rules in this context could therefore potentially impact small entities covering a great variety of industries.

38. *Rural Radiotelephone Service.* The Commission has not adopted a size standard for small businesses specific to the Rural Radiotelephone Service.[263] A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (BETRS).[264] In the present context, we will use the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite), i.e., an entity employing no more than 1,500 persons.[265] There are approximately 1,000 licensees in the Rural Radiotelephone Service, and the Commission estimates that there are 1,000 or fewer small entity licensees in the Rural Radiotelephone Service that may be affected by the rules and policies proposed herein.

39. *Air-Ground Radiotelephone Service*. The Commission has previously used the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite), i.e., an entity employing no more than 1,500 persons.[266] There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and under that definition, we estimate that almost all of them qualify as small entities under the SBA definition. For purposes of assigning Air-Ground Radiotelephone Service licenses through competitive bidding, the Commission has defined "small business" as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $40 million.[267] A "very small business" is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $15 million.[268] These definitions were approved by the SBA.[269] In May 2006, the Commission completed an auction of nationwide commercial Air-Ground Radiotelephone Service licenses in the 800 MHz band (Auction No. 65). On June 2, 2006, the auction closed with two winning

[261] *See* 13 CFR § 121.201, NAICS code 517210.

[262] *See generally* 13 CFR § 121.201.

[263] The service is defined in 47 CFR § 22.99.

[264] BETRS is defined in 47 CFR §§ 22.757 and 22.759.

[265] 13 CFR § 121.201, NAICS code 517210.

[266] 13 CFR § 121.201, NAICS code 517210.

[267] *Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, Amendment of Parts 1 and 22 of the Commission's Rules to Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service*, WT Docket Nos. 03-103, 05-42, Order on Reconsideration and Report and Order, 20 FCC Rcd 19663, paras. 28-42 (2005).

[268] *Id.*

[269] *See* Letter from Hector V. Barreto, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, Federal Communications Commission (filed Sept. 19, 2005).

bidders winning two Air-Ground Radiotelephone Services licenses. Neither of the winning bidders claimed small business status.

40. *Aviation and Marine Radio Services.* Small businesses in the aviation and marine radio services use a very high frequency (VHF) marine or aircraft radio and, as appropriate, an emergency position-indicating radio beacon (and/or radar) or an emergency locator transmitter. The Commission has not developed a small business size standard specifically applicable to these small businesses. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except Satellite), which is 1,500 or fewer employees.[270] Census data for 2012, which are the most recent Census data available, show that there were 967 firms that operated that year.[271] Of those 967, 955 had fewer than 1,000 employees, and 12 firms had more than 1,000 employees. Most applicants for recreational licenses are individuals. Approximately 581,000 ship station licensees and 131,000 aircraft station licensees operate domestically and are not subject to the radio carriage requirements of any statute or treaty. For purposes of our evaluations in this analysis, we estimate that there are up to approximately 712,000 licensees that are small businesses (or individuals) under the SBA standard. In addition, between December 3, 1998 and December 14, 1998, the Commission held an auction of 42 VHF Public Coast licenses in the 157.1875-157.4500 MHz (ship transmit) and 161.775-162.0125 MHz (coast transmit) bands. For purposes of the auction, the Commission defined a "small" business as an entity that, together with controlling interests and affiliates, has average gross revenues for the preceding three years not to exceed $15 million dollars.[272] In addition, a "very small" business is one that, together with controlling interests and affiliates, has average gross revenues for the preceding three years not to exceed $3 million dollars.[273] There are approximately 10,672 licensees in the Marine Coast Service, and the Commission estimates that almost all of them qualify as "small" businesses under the above special small business size standards and may be affected by rules adopted pursuant to the Order.

41. *Advanced Wireless Services (AWS) (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3)).* For the AWS-1 bands,[274] the Commission has defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding $15 million. For AWS-2 and AWS-3, although we do not know for certain which entities are likely to apply for these frequencies, we note that the AWS-1 bands are comparable to those used for cellular service and personal communications service. The Commission has not yet adopted size standards for the AWS-2 or AWS-3 bands but proposes to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1 service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.[275]

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[270] *See* 13 CFR § 121.201, NAICS code 517210.

[271] U.S. Bureau, 2012 Economic Census, Information: Subject Series - Estab and Firm Size: Employment Size of Firms for the United States, NAICS code 517210 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[272] *See generally Amendment of the Commission's Rules Concerning Maritime Communications*, PR Docket No. 92-257, Third Report and Order and Memorandum Opinion and Order, 13 FCC Rcd 19853, 19884–88, paras. 64–73 (1998).

[273] *See id*.

[274] The service is defined in section 90.1301 *et seq*. of the Commission's Rules, 47 CFR § 90.1301 *et seq*.

[275] *See Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Report and Order, 18 FCC Rcd 25162, Appx. B (2003), *modified by Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Order on Reconsideration, 20 FCC Rcd 14058, Appx.

(continued….)

42. *3650–3700 MHz band*. In March 2005, the Commission released a *Report and Order and Memorandum Opinion and Order* that provides for nationwide, non-exclusive licensing of terrestrial operations, utilizing contention-based technologies, in the 3650 MHz band (i.e., 3650–3700 MHz). As of April 2010, more than 1270 licenses have been granted and more than 7433 sites have been registered. The Commission has not developed a definition of small entities applicable to 3650–3700 MHz band nationwide, non-exclusive licensees. However, we estimate that the majority of these licensees are Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

43. *Fixed Microwave Services.* Microwave services include common carrier,[276] private-operational fixed,[277] and broadcast auxiliary radio services.[278] They also include the Local Multipoint Distribution Service (LMDS),[279] the Digital Electronic Message Service (DEMS),[280] and the 24 GHz Service,[281] where licensees can choose between common carrier and non-common carrier status.[282] At present, there are approximately 36,708 common carrier fixed licensees and 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. There are approximately 135 LMDS licensees, three DEMS licensees, and three 24 GHz licensees. The Commission has not yet defined a small business with respect to microwave services. For purposes of the FRFA, we will use the SBA's definition applicable to Wireless Telecommunications Carriers (except satellite)—i.e., an entity with no more than 1,500 persons.[283] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[284] The Commission does not have data specifying the number of these licensees that have more than 1,500 employees, and thus is unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are up to 36,708 common carrier fixed licensees and up to 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies adopted herein. We note, however, that the common carrier microwave fixed licensee category includes some large entities.

44. *Offshore Radiotelephone Service.* This service operates on several UHF television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the

(Continued from previous page)
C (2005); *Service Rules for Advanced Wireless Services in the 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz Bands; Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket Nos. 04-356, 02-353, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, Appx. B (2005); *Service Rules for Advanced Wireless Services in the 2155–2175 MHz Band*, WT Docket No. 07-195, Notice of Proposed Rulemaking, 22 FCC Rcd 17035, Appx. (2007).

[276] *See* 47 CFR Part 101, Subparts C and I.

[277] *See* 47 CFR Part 101, Subparts C and H.

[278] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 CFR Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[279] *See* 47 CFR Part 101, Subpart L.

[280] *See* 47 CFR Part 101, Subpart G.

[281] *See id.*

[282] *See* 47 CFR §§ 101.533, 101.1017.

[283] 13 CFR § 121.201, NAICS code 517210.

[284] 13 CFR § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 CFR citations were 13 CFR § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

Gulf of Mexico.[285] There are presently approximately 55 licensees in this service. The Commission is unable to estimate at this time the number of licensees that would qualify as small under the SBA's small business size standard for the category of Wireless Telecommunications Carriers (except Satellite). Under that SBA small business size standard, a business is small if it has 1,500 or fewer employees.[286] Census data for 2012, which are the most recent Census data available, show that there were 967 firms that operated that year.[287] Of those 967, 955 had fewer than 1,000 employees, and 12 firms had more than 1,000 employees. Thus, under this category and the associated small business size standard, the majority of firms can be considered small.

45. *39 GHz Service.* The Commission created a special small business size standard for 39 GHz licenses – an entity that has average gross revenues of $40 million or less in the three previous calendar years.[288] An additional size standard for "very small business" is: an entity that, together with affiliates, has average gross revenues of not more than $15 million for the preceding three calendar years.[289] The SBA has approved these small business size standards.[290] The auction of the 2,173 39 GHz licenses began on April 12, 2000 and closed on May 8, 2000. The 18 bidders who claimed small business status won 849 licenses. Consequently, the Commission estimates that 18 or fewer 39 GHz licensees are small entities that may be affected by rules adopted pursuant to the Order.

46. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems, and "wireless cable," transmit video programming to subscribers and provide two-way high speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).[291] In connection with the 1996 BRS auction, the Commission established a small business size standard as an entity that had annual average gross revenues of no more than $40 million in the previous three calendar years.[292] The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.[293]

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[285] This service is governed by Subpart I of Part 22 of the Commission's Rules. *See* 47 CFR §§ 22.1001-22.1037.

[286] *Id*.

[287] U.S. Bureau, 2012 Economic Census, "Information: Subject Series - Estab and Firm Size: Employment Size of Firms for the United States," NAICS code 517210 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table (rel. Jan. 8, 2016).

[288] *See Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands*, ET Docket No. 95-183, PP Docket No. 93-253, Report and Order, 12 FCC Rcd 18600, 18661–6463, paras. 149–51 (1997).

[289] *See id.*

[290] *See* Letter to Kathleen O'Brien Ham, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC, from Aida Alvarez, Administrator, SBA (Feb. 4, 1998).

[291] *Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, MM Docket No. 94-131, PP Docket No. 93-253, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

[292] 47 CFR § 21.961(b)(1).

[293] 47 U.S.C. § 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j). For these pre-auction licenses, the applicable standard is SBA's small business size standard of 1500 or fewer employees.

After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission's rules.

47. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.[294] The Commission offered three levels of bidding credits: (i) a bidder with attributed average annual gross revenues that exceed $15 million and do not exceed $40 million for the preceding three years (small business) received a 15 percent discount on its winning bid; (ii) a bidder with attributed average annual gross revenues that exceed $3 million and do not exceed $15 million for the preceding three years (very small business) received a 25 percent discount on its winning bid; and (iii) a bidder with attributed average annual gross revenues that do not exceed $3 million for the preceding three years (entrepreneur) received a 35 percent discount on its winning bid.[295] Auction 86 concluded in 2009 with the sale of 61 licenses.[296] Of the ten winning bidders, two bidders that claimed small business status won 4 licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

48. In addition, the SBA's Cable Television Distribution Services small business size standard is applicable to EBS. There are presently 2,436 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.[297] Thus, we estimate that at least 2,336 licensees are small businesses. Since 2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[298] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. To gauge small business prevalence for these cable services we must, however, use the most current census data that are based on the previous category of Cable and Other Program Distribution and its associated size standard; that size standard was: all such firms having $13.5 million or less in annual receipts.[299] According to Census Bureau data for 2007, there were a total of 996 firms in this category that operated for the entire year.[300] Of this total, 948 firms had annual receipts of under $10 million, and 48 firms had receipts of $10 million or more but less than $25 million.[301] Thus, the majority of these firms can be considered small.

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[294] Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86, AU Docket No. 09-56, *Public Notice*, 24 FCC Rcd 8277 (2009).

[295] *Id.* at 8296, para. 73.

[296] Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period, *Public Notice*, 24 FCC Rcd 13572 (2009).

[297] The term "small entity" within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. §§ 601(4)-(6). We do not collect annual revenue data on EBS licensees.

[298] U.S. Census Bureau, 2012 NAICS Definitions, 517110 Wired Telecommunications Carriers (partial definition), http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517110&search=2012.

[299] 13 CFR § 121.201, NAICS code 517110.

[300] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Receipts by Enterprise Employment Size for the United States: 2007, NAICS code 517510 (rel. Nov. 19, 2010).

[301] *Id*.

49. *Narrowband Personal Communications Services*. In 1994, the Commission conducted an auction for Narrowband PCS licenses. A second auction was also conducted later in 1994. For purposes of the first two Narrowband PCS auctions, "small businesses" were entities with average gross revenues for the prior three calendar years of $40 million or less.[302] Through these auctions, the Commission awarded a total of 41 licenses, 11 of which were obtained by four small businesses.[303] To ensure meaningful participation by small business entities in future auctions, the Commission adopted a two-tiered small business size standard in the *Narrowband PCS Second Report and Order*.[304] A "small business" is an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $40 million.[305] A "very small business" is an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $15 million.[306] The SBA has approved these small business size standards.[307] A third auction was conducted in 2001. Here, five bidders won 317 (Metropolitan Trading Areas and nationwide) licenses.[308] Three of these claimed status as a small or very small entity and won 311 licenses.

50. *Paging (Private and Common Carrier)*. In the *Paging Third Report and Order*, we developed a small business size standard for "small businesses" and "very small businesses" for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[309] A "small business" is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $15 million for the preceding three years. Additionally, a "very small business" is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $3 million for the preceding three years. The SBA has approved these small business size standards.[310] According to Commission data, 291 carriers have reported that they are engaged in Paging or Messaging Service.[311] Of these, an estimated 289 have 1,500 or fewer employees, and two have more than 1,500 employees.[312] Consequently, the Commission estimates that the majority

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[302] *Implementation of Section 309(j) of the Communications Act – Competitive Bidding Narrowband PCS*, PP Docket No. 93-253, GEN Docket No. 90-314, ET Docket No. 92-100, Third Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, 10 FCC Rcd 175, 196, para. 46 (1994).

[303] *See Announcing the High Bidders in the Auction of Ten Nationwide Narrowband PCS Licenses, Winning Bids Total $617,006,674*, Public Notice, PNWL 94-004 (rel. Aug. 2, 1994); *Announcing the High Bidders in the Auction of 30 Regional Narrowband PCS Licenses; Winning Bids Total $490,901,787*, Public Notice, PNWL 94-27 (rel. Nov. 9, 1994).

[304] *Amendment of the Commission's Rules to Establish New Personal Communications Services, Narrowband PCS*, GEN Docket No. 90-314, ET Docket No. 92-100, PP Docket No. 93-253, Narrowband PCS, Second Report and Order and Second Further Notice of Proposed Rule Making, 15 FCC Rcd 10456, 10476, para. 40 (2000) (*Narrowband PCS Second Report and Order*).

[305] *Id.*

[306] *Id.*

[307] *See* Letter to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, Federal Communications Commission, from A. Aida Alvarez, Administrator, SBA (Dec. 2, 1998) (*Alvarez Letter 1998*).

[308] *See Narrowband PCS Auction Closes*, Public Notice, 16 FCC Rcd 18663 (WTB 2001).

[309] *See Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems*, WT Docket No. 96-18, PR Docket No. 93-253, Memorandum Opinion and Order on Reconsideration and Third Report and Order, 14 FCC Rcd 10030, 10085–88, paras. 98–107 (1999) (*Paging Third Report and Order*).

[310] *See Alvarez Letter 1998*.

[311] *See Trends in Telephone Service* at tbl. 5.3.

[312] *See id*.

of paging providers are small entities that may be affected by our action. An auction of Metropolitan Economic Area licenses commenced on February 24, 2000, and closed on March 2, 2000. Of the 2,499 licenses auctioned, 985 were sold. Fifty-seven companies claiming small business status won 440 licenses.[313] A subsequent auction of MEA and Economic Area ("EA") licenses was held in the year 2001. Of the 15,514 licenses auctioned, 5,323 were sold.[314] One hundred thirty-two companies claiming small business status purchased 3,724 licenses. A third auction, consisting of 8,874 licenses in each of 175 EAs and 1,328 licenses in all but three of the 51 MEAs, was held in 2003. Seventy-seven bidders claiming small or very small business status won 2,093 licenses.[315] A fourth auction, consisting of 9,603 lower and upper paging band licenses was held in the year 2010. Twenty-nine bidders claiming small or very small business status won 3,016 licenses.[316]

51. *220 MHz Radio Service – Phase I Licensees.* The 220 MHz service has both Phase I and Phase II licenses. Phase I licensing was conducted by lotteries in 1992 and 1993. There are approximately 1,515 such non-nationwide licensees and four nationwide licensees currently authorized to operate in the 220 MHz band. The Commission has not developed a small business size standard for small entities specifically applicable to such incumbent 220 MHz Phase I licensees. To estimate the number of such licensees that are small businesses, we apply the small business size standard under the SBA rules applicable to Wireless Telecommunications Carriers (except Satellite). Under this category, the SBA deems a wireless business to be small if it has 1,500 or fewer employees.[317] The Commission estimates that nearly all such licensees are small businesses under the SBA's small business size standard that may be affected by rules adopted pursuant to the Order.

52. *220 MHz Radio Service – Phase II Licensees.* The 220 MHz service has both Phase I and Phase II licenses. The Phase II 220 MHz service is subject to spectrum auctions. In the *220 MHz Third Report and Order*, we adopted a small business size standard for "small" and "very small" businesses for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[318] This small business size standard indicates that a "small business" is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $15 million for the preceding three years.[319] A "very small business" is an entity that, together with its affiliates and controlling principals, has average gross revenues that do not exceed $3 million for the preceding three years.[320] The SBA has approved these small business size standards.[321] Auctions of Phase II licenses

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[313] *See id.*

[314] *See Lower and Upper Paging Band Auction Closes*, Public Notice, 16 FCC Rcd 21821 (WTB 2001).

[315] *See Lower and Upper Paging Bands Auction Closes*, Public Notice, 18 FCC Rcd 11154 (Wireless Tel. Bur. WTB 2003). The current number of small or very small business entities that hold wireless licenses may differ significantly from the number of such entities that won in spectrum auctions due to assignments and transfers of licenses in the secondary market over time. In addition, some of the same small business entities may have won licenses in more than one auction.

[316] *See Auction of Lower and Upper Paging Bands Licenses Closes*, Public Notice, 25 FCC Rcd 18164 (WTB 2010).

[317] *See* 13 CFR § 121.201, NAICS code 517210.

[318] *See Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service*, PR Docket No. 89-552, GN Docket No. 93-252, PP Docket No. 93-253, Third Report and Order and Fifth Notice of Proposed Rulemaking, 12 FCC Rcd 10943, 11068-70, paras. 291-95 (1997) (*220 MHz Third Report and Order*).

[319] *See id*. at 11068–69, para. 291.

[320] *See id*. at 11068–70, paras. 291–95.

[321] *See* Letter to D. Daniel Phythyon, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, from Aida Alvarez, Administrator, SBA (Jan. 6, 1998) (*Alvarez to Phythyon Letter 1998*).

commenced on September 15, 1998, and closed on October 22, 1998.[322] In the first auction, 908 licenses were auctioned in three different-sized geographic areas: three nationwide licenses, 30 Regional Economic Area Group (EAG) Licenses, and 875 Economic Area (EA) Licenses. Of the 908 licenses auctioned, 693 were sold. Thirty-nine small businesses won licenses in the first 220 MHz auction. The second auction included 225 licenses: 216 EA licenses and 9 EAG licenses. Fourteen companies claiming small business status won 158 licenses.[323]

4. Satellite Service Providers

53. *Satellite Telecommunications Providers.* Two economic census categories address the satellite industry. The first category has a small business size standard of $32.5 million or less in average annual receipts, under SBA rules.[324] The second has a size standard of $30 million or less in annual receipts.[325]

54. The first category comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[326] The category has a small business size standard of $32.5 million or less in average annual receipts, under SBA rules.[327] For this category, Census Bureau data for 2012 show that there were a total of 333 firms that operated for the entire year.[328] Of this total, 299 firms had annual receipts of less than $25 million.[1329] For this category, Census Bureau data for 2007 show that there were a total of 570 firms that operated for the entire year.[330] Of this total, 530 firms had annual receipts of under $30 million, and 40 firms had receipts of over $30 million.[331] Consequently, we estimate that the majority of Satellite Telecommunications firms are small entities that might be affected by rules adopted pursuant to the Order.

55. The second category of Other Telecommunications comprises, *inter alia*, "establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems."[332] For this category, Census Bureau data for 2007 show that

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[322] *See Phase II 220 MHz Service Auction Closes*, Public Notice, 14 FCC Rcd 605 (WTB 1998).

[323] *See Phase II 220 MHz Service Spectrum Auction Closes*, Public Notice, 14 FCC Rcd 11218 (WTB 1999).

[324] 13 CFR § 121.201, NAICS Code 517410.

[325] 13 CFR § 121.201, NAICS Code 517919.

[326] U.S. Census Bureau, 2012 NAICS Definitions, 517410 Satellite Telecommunications, http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517410&search=2012.

[327] 13 C.F.R. § 121.201, NAICS code 517410.

[328] U.S. Census Bureau, 2012 Economic Census, Information: Subject Series - Estab & Firm Size: Receipts Size of Firms for the United States, NAICS code 517410 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table (rel. Jan. 8, 2016)

[329] *See Id.*

[330] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, "Establishment and Firm Size," NAICS code 517410 (rel. Nov. 19, 2010).

[331] *Id*.

[332] U.S. Census Bureau, 2012 NAICS Definitions, 517919 All Other Telecommunications, http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2012.

there were a total of 1,274 firms that operated for the entire year.[333] Of this total, 1,252 had annual receipts below $25 million per year.[334] Consequently, we estimate that the majority of All Other Telecommunications firms are small entities that might be affected by our action.

5. Cable Service Providers

56. The description above of wireline providers should encompass cable service providers that also provide business data services. Out of an abundance of caution, we describe cable service providers below as well as other types of firms that may provide broadband services, including MDS providers and utilities, among others.

57. *Cable Companies and Systems (Rate Regulation).* The Commission has developed its own small business size standards for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers nationwide.[335] Industry data indicate that there are currently 4,600 active cable systems in the United States.[336] Of this total, all but nine cable operators nationwide are small under the 400,000-subscriber size standard.[337] In addition, under the Commission's rate regulation rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[338] Current Commission records show 4,600 cable systems nationwide.[339] Of this total, 3,900 cable systems have fewer than 15,000 subscribers, and 700 systems have 15,000 or more subscribers, based on the same records.[340] Thus, under this standard as well, we estimate that most cable systems are small entities.

58. *Cable System Operators*. The Communications Act of 1934, as amended, also contains a size standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1 percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[341] There are approximately 52,403,705 cable video subscribers in the United States today.[342] Accordingly, an operator serving fewer than 524,037 subscribers shall be deemed a small operator if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed $250 million in the aggregate.[343] Based on available data, we find that all but nine incumbent cable operators are small entities under this size standard.[344] We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose

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[333] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, "Establishment and Firm Size," NAICS code 517410 (rel. Nov. 19, 2010).

[334] *Id*.

[335] 47 CFR § 76.901(e)

[336] August 5, 2015 report from the Media Bureau based on its research in COALS. See www fcc.gov/coals.

[337] See SNL KAGAN at https://www.snl.com/InteractiveX/TopCableMSOs.aspx?period=2015Q3&sortcol=subscribersbasic&sortorder=desc

[338] 47 CFR § 76.901(c).

[339] *See supra* n. 194.

[340] *Id*.

[341] 47 U.S.C. § 543(m)(2); *see* 47 CFR § 76.901(f) & nn.1-3.

[342] See SNL KAGAN at www.snl.com/interactivex/MultichannelIndustryBenchmarks.aspx.

[343] 47 CFR § 76.901(f).

[344] *See* NCTA, Industry Data, Top 25 Multichannel Video Service Customers (2012), http://www ncta.com/industry-data.

gross annual revenues exceed $250 million.[345] Although it seems certain that some of these cable system operators are affiliated with entities whose gross annual revenues exceed $250 million, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

59. The open video system (OVS) framework was established in 1996, and is one of four statutorily recognized options for the provision of video programming services by local exchange carriers.[346] The OVS framework provides opportunities for the distribution of video programming other than through cable systems. Because OVS operators provide subscription services,[347] OVS falls within the SBA small business size standard covering cable services, which is "Wired Telecommunications Carriers."[348] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. According to Census Bureau data for 2007, there were a total of 955 firms in this previous category that operated for the entire year.[349] Of this total, 939 firms had employment of 999 or fewer employees, and 16 firms had employment of 1,000 employees or more.[350] Thus, under this second size standard, most cable systems are small and may be affected by rules adopted pursuant to the Order. In addition, we note that the Commission has certified some OVS operators, with some now providing service.[351] Broadband service providers (BSPs) are currently the only significant holders of OVS certifications or local OVS franchises.[352] The Commission does not have financial or employment information regarding the entities authorized to provide OVS, some of which may not yet be operational. Thus, again, at least some of the OVS operators may qualify as small entities.

6. Electric Power Generators, Transmitters, and Distributors

60. *Electric Power Generators, Transmitters, and Distributors.* The Census Bureau defines an industry group comprised of "establishments, primarily engaged in generating, transmitting, and/or distributing electric power. Establishments in this industry group may perform one or more of the following activities: (1) operate generation facilities that produce electric energy; (2) operate transmission systems that convey the electricity from the generation facility to the distribution system; and (3) operate distribution systems that convey electric power received from the generation facility or the transmission system to the final consumer."[353] The SBA has developed a small business size standard for firms in this category: "A firm is small if, including its affiliates, it is primarily engaged in the

[345] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to § 76.901(f) of the Commission's rules. *See* 47 CFR § 76.909(b).

[346] 47 U.S.C. § 571(a)(3)-(4). *See Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 06-189, Thirteenth Annual Report, 24 FCC Rcd 542, 606-07, para. 135 (2009) (*Thirteenth Annual Cable Competition Report*).

[347] *See* 47 U.S.C. § 573.

[348] U.S. Census Bureau, 2007 NAICS Definitions, 517110 Wired Telecommunications Carriers,http://www.census.gov/naics/2007/def/ND517110.HTM#N517110.

[349] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, Employment Size of Firms for the United States: 2007, NAICS code 5171102 (issued Nov. 2010).

[350] *See id*.

[351] A list of OVS certifications may be found at http://www.fcc.gov/mb/ovs/csovscer html; https://www.fcc.gov/general/current-filings-certification-open-video-systems.

[352] *See Thirteenth Annual Cable Competition Report*, 24 FCC Rcd at 606-07, para. 135. BSPs are newer firms that are building state-of-the-art, facilities-based networks to provide video, voice, and data services over a single network.

[353] U.S. Census Bureau, 2002 NAICS Definitions, 2211 Electric Power Generation, Transmission and Distribution, http://www.census.gov/epcd/naics02/def/NDEF221.HTM (last visited Oct. 21, 2009).

generation, transmission, and/or distribution of electric energy for sale and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours."[354] Census Bureau data for 2007 show that there were 1,174 firms that operated for the entire year in this category.[355] Of these firms, 50 had 1,000 employees or more, and 1,124 had fewer than 1,000 employees.[356] Based on this data, a majority of these firms can be considered small.

H. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

61. *Recordkeeping and Reporting*. The rule revisions adopted in the Order include changes that will necessitate affected carriers to make various revisions to business data service tariffs and Tariff Review Plans. For example, packet-based BDS, transport services, and counties that are deemed competitive for end user channel terminations will be relieved of price cap regulation and will be subject to permissive detariffing for a period of 18 months at which time they will be subject to mandatory detariffing.

62. In addition, the Commission amends the price cap rules to allow all price cap LECs in non-competitive counties to lower their rates through contract tariffs and volume and term discounts in a manner consistent with the Commission's current Phase I pricing flexibility rules. These incumbent LECs will be required to maintain generally available tariffed price cap regulated rates available to all subscribers. For the small number of counties that had received Phase II pricing flexibility that are now treated as non-competitive, those price cap carriers will be permitted to retain Phase II relief for those counties but will be required to offer generally available rates for those services as long as those services remain under tariff.

63. The Commission also incorporates a productivity-based X factor of 2.0 percent for DS1 and DS3 end user channel terminations subject to price cap regulation on a going-forward basis. Affected LECs will be required to revise their rates and tariff review plans, including adjustments to price cap indices, for business data services in filings with the Commission to reflect the new X-factor. These revisions are required of all affected carriers, regardless of entity size. The adopted rule revisions will facilitate Commission and public access to the most accurate and up-to-date tariffs as well as lower rates paid by the public for the affected services.

I. Steps Taken to Minimize the Significant Economic Impact on Small Entities and Significant Alternatives Considered

64. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include (among others) the following four alternatives: (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[357]

65. *Competitive Market Test*. The Commission proposed to replace the existing regulatory framework for granting regulatory relief to incumbent LECs in price cap areas with a multi-dimensional

[354] 13 CFR § 121.201, NAICS codes 221111, 221112, 221113, 221119, 221121, 221122, n.1.

[355] *See* U.S. Census Bureau, American FactFinder, Utilities: Subject Series - Establishment and Firm Size: Summary Statistics by Revenue Size of Firms for the United States: 2007, NAICS code 221122, http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_22SSSZ5&prodType=table (last visited Feb. 18, 2016).

[356] *See id*.

[357] 5 U.S.C. § 603(c).

competitive market test to identify specific markets as competitive or non-competitive, thereby dictating the level of applicable regulation for both circuit-based and packet-based business data services.[358] The Commission also sought comment on the separate but related issue of whether in non-competitive markets, heightened regulation, including possible restrictions on rates, terms and conditions, should apply to just the market leader or additional providers, which could have potentially included a substantial number of small businesses.[359]

66. In the Order, the Commission explains why it adopts a test that departs from the proposals in the *Further Notice.* Rather than intrusive pricing regulation, it takes a dynamic and forward-looking approach to evaluating the benefits and costs of regulation. It identifies specific markets as competitive or non-competitive and applies regulation only where competition is expected to materially fail to ensure just and reasonable rates. The result is a simple, sustainable framework that is far less complicated than the market test proposal originally contemplated. The Commission adopts a structure that eliminates unnecessary pricing regulation for a significant portion of the business data services provided by price cap incumbent LECs to allow competition to promote increased efficiencies, investment, and growth in new technologies and services to benefit consumers and business. Additionally, the Commission declines to impose rate regulation on other business data services providers besides the market leader. In particular, unnecessary regulation exacts administrative compliance costs on carriers that reduce capital available for building new networks and infrastructure, inhibiting competitive entry and deployment.

67. *Packet-based Services.* The Commission declines to re-impose any form of price cap or benchmark regulation on packet-based business data services. The market analysis does not show compelling evidence of market power in incumbent LEC provision of packet-based business data services, particularly for higher bandwidth services. Moreover, even if the record demonstrated insufficiently robust competition, proposals to apply price cap regulation to packet-based services were complex and not easily administrable and did not reflect the fact that costs to serve individual customers vary.

68. *Anchor or Benchmark Pricing*. The Commission minimizes the economic impact of its rules on small entities first by declining to impose anchor or benchmark pricing regulation on incumbent LEC packet-based business data services. This eliminates the proposed requirement to calculate anchor or benchmark prices for a wide range of packet-based business data services, and to post publicly generally applicable rates, terms and conditions. Because our market analysis shows that packet-based business data services are subject to competition, anchor or benchmark pricing would be unnecessary and could actually inhibit investment in this dynamic market.

69. *X-factor.* Incumbent LECs that file tariffs under the price cap ratemaking methodology are required to file revised annual access charge tariffs every year, which become effective on July 1. The annual filings include submission of tariff review plans that are used to support revisions to the rates, including revisions that pertain to the X-factor. To ease the burden on the industry, and because base period demand and the value of GDP-PI reflected in the price cap indices typically are not updated during a tariff year, the Commission permits incumbent LECs to use, in their filings implementing the 2.0 percent X-factor, the same base period demand and value of GDP-PI as in the July 1, 2017 annual filing.

70. *Price Cap Regulation.* The Commission applies price cap regulation in the form of Phase I pricing flexibility to DS1 and DS3 end user channel termination services provided by incumbent LECs in counties that we have determined are non-competitive. Requiring Phase I pricing will enable incumbent LECs, including those that may be small entities, to respond to any competition that develops in these markets through contract tariffs and volume and term discounts. In addition, incumbent LECs, including any small entities that previously received Phase II pricing flexibility in counties we now deem

[358] *Further Notice*, 31 FCC Rcd at 4837, para. 259.

[359] *Further Notice*, 31 FCC Rcd at 4848-49, paras. 308-11.

non-competitive will be permitted to retain Phase II relief for end user channel terminations and other special access services, rather than having to incur significant costs of trying to recreate price caps.

71. *Periodic Data Collection.* Related to the competitive market test proposal, the Commission also proposed a future periodic data collection to allow for market test updates for determining competitive and non-competitive areas. The periodic collection could have resulted in a significant reporting burden on small entities. Instead, the Commission adopts a process for updating the competitive market test every three years using the data from Form 477 that is already routinely filed by providers and thus entails no additional burden.

72. *Wholesale Pricing*. The Commission also minimized the impact of its rules on small entities by declining to adopt rules proposed by certain parties that would have required business data services providers to comply with detailed requirements regarding the pricing of their wholesale business data services.

73. *Forbearance*. To help level the playing field and promote regulatory parity for all business data services providers, the Commission extends the forbearance from section 203 of the Communications Act of 1934, as amended. This expands forbearance previously accorded certain price cap LECs to all price cap LECs, including those that may be small entities, in the provision of any packet-based business data service or circuit-based business data service above the DS3 bandwidth level. This action is also taken to promote competition and broadband deployment. To level the playing field among price cap LECs providing packet-based and optical transmission business data services, the Commission conforms the forbearance provided Verizon and its successors in interest to that provided other price cap carriers.

74. *Detariffing.* To minimize economic impact, the Commission provides a transition period to provide price cap incumbent LECs, including those that may be small entities, with sufficient time to adapt their business data services operations to a detariffing system. The Commission does not intend its actions to disturb existing contractual or other long-term arrangements, which must continue to be adhered to for the length of the contract, and the Commission adopted a grandfathering rules for such contracts.

J. Report to Congress

The Commission will send a copy of the Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[360] In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Order and FRFA (or summaries thereof) will also be published in the Federal Register.[361]

[360] *See* 5 U.S.C. § 801(a)(1)(A).

[361] *See* 5 U.S.C. § 604(b).