

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

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| In the Matter of |) | |
| |) | |
| Petition of USTelecom for Forbearance Pursuant |) | WC Docket No. 18-141 |
| to 47 U.S.C. § 160(c) to Accelerate Investment in |) | |
| Broadband and Next-Generation Networks |) | |

**REPLY COMMENTS OF
USTELECOM – THE BROADBAND ASSOCIATION**

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SUMMARY

The record in this matter demonstrates the enormous change that has transformed telecommunications markets in the 22 years since Congress imposed aggressive unbundling and resale discount requirements on the then-dominant ILECs. Today, these providers hold only 11 percent of the voice services market, and the Commission has declared ILECs to be non-dominant in the provision of core service offerings. Cable operators, wireless carriers, and others have stepped into the breach, bringing about the facilities-based competition that Congress in 1996 sought to encourage. These providers are challenging ILECs across the nation, in residential and business markets alike. Such rivalry, moreover, has promoted a vibrant wholesale market that thrives independent of regulatory mandates, and would continue to flourish if the Commission were to grant USTelecom's forbearance petition.

Given these marketplace developments, the time has come to forbear from unbundling mandates. The Commission and the courts have made clear that unbundling is inappropriate and unnecessary when the retail markets that competitors seek to serve using unbundled elements are competitive. Congress intended the 1996 Act to promote genuine, facilities-based competition, not indefinite access to unbundled network elements and regulated rates. That competition has arrived – ILECs are non-dominant in the provision of business and residential voice, residential broadband, TDM transport, all Ethernet services, and (in the vast majority of the nation) high-capacity loops and business broadband.

Notwithstanding this highly competitive environment, various CLECs claim that they are entitled to indefinite UNE access. Some CLECs contend that they require UNEs as a “stepping stone” to deployment, but they provide no sense of how long they will need them before they are able to succeed in the marketplace without UNEs, as so many other providers have. Indeed, economic analysis of unbundling regimes in various countries has shown that continued UNE access tends to inhibit rather than accelerate CLECs' deployment of their own facilities.

The Petition's opponents resort in many instances to mischaracterizing settled law regarding forbearance and competition. Their claims that the Commission must evaluate hundreds if not thousands of geographic markets individually are incorrect as a matter of law – the Commission has often granted nationwide forbearance, and neither the Commission's *Qwest Phoenix Order* nor any other precedent precludes that approach here. They are also wrong as a matter of economics, because the characteristics of the markets most relevant here are largely constant from one geographic market to another. Further, the Section 251(d) “impairment” test does not govern here, but even if it did, the Commission has rendered numerous nationwide non-impairment determinations. Opponents are wrong, moreover, to suggest that the product market here should be limited to TDM-based, or “POTS,” service. Sound competition policy requires consideration of all reasonably close substitutes in evaluating competition. Here, that principle necessitates consideration of wireless, cable, and other offerings to which consumers have turned in lieu of ILEC-provided, UNE-based offerings. Opponents' proposal that the Commission eschew this well-settled economic precept would undermine, not promote, our shared goal of moving as fast and far as possible to next-generation fiber, IP, and 5G services.

Opponents also misconstrue the law and policy of unbundling. As in other areas, the Commission's analysis must focus on competition and consumers, not on the claimed needs of

specific competitors. CLECs claiming that their specific business models require continued access to UNEs ignore the public interest benefits that forbearance will bring, as described in the Petition.

The Commission also should reject the claims of CLECs who purport to require UNEs for the provision of broadband Internet access, which is an information service. Section 251(c)(3), on its terms, establishes unbundling for the provision of telecommunications services; while CLECs providing telecommunications services using UNEs may also provide information services, the provision of such offerings cannot be the basis for maintaining unbundled access.

Finally, the Commission should grant USTelecom's other forbearance requests. Section 251(c)(4) resale is no longer necessary to protect consumers or the public interest more generally. ILECs will continue to provide services for resale, and will do so subject to Section 251(b)(1)'s reasonableness requirement. USTelecom's request for relief from Section 272(e)(1) and related obligations governing affiliate relations is effectively uncontested, and those who oppose this request base their arguments on long-discredited claims of ILEC market power. Similarly, the record contains nothing to prevent forbearance from item 3 of the Section 271 competitive checklist, which duplicates the protections regarding access to poles, conduit, and right of way under Section 224. Recent Commission findings underscore that ILECs have no advantage with regard to pole access; they should not remain subject to unique obligations in that regard.

For these reasons, the Commission should grant USTelecom's Petition in full.

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REPLY COMMENTS OF USTELECOM – THE BROADBAND ASSOCIATION

USTelecom – The Broadband Association (“USTelecom”) has demonstrated that forbearance from the application of outmoded and harmful regulatory mandates that still govern legacy ILEC services will promote competition and benefit consumers. While some commenters strive to preserve an outdated regulatory regime that serves their own business models but undermines the public interest, their rescue effort is premised on inaccurate factual claims, misplaced legal arguments, and untenable economic theories. In these reply comments, USTelecom describes the key flaws in the opposition to forbearance and urges prompt grant of its Petition.¹

INTRODUCTION

Network unbundling is an extraordinarily intrusive regulatory tool. The benefits of unbundling potentially outweigh its costs only in very limited circumstances, such as where one provider or industry segment wields undeniable market power.² Those circumstances long ago

¹ These reply comments also serve as the opposition to motions for summary denial submitted by several parties on the comment deadline. *See* 47 C.F.R. § 1.56(c); *see also* INCOMPAS Motion for Summary Denial, WC Docket No. 18-141 (filed Aug. 6, 2018) (“INCOMPAS Mot.”); Motion for Partial Summary Denial and Comments of Cox Communications, Inc., WC Docket No. 18-141 (filed Aug. 6, 2018) (“Cox Mot.”).

² *See, e.g.,* Robert W. Crandall & Hal J. Singer, *An Accurate Scorecard of the Telecommunications Act of 1996: Rejoinder to the Phoenix Center Study No. 7*, CRITERION

ceased to apply in local telecommunications markets. Although USTelecom members may once have held commanding network and market positions, fostered by legal bars on competition that gave them substantial scale and scope economies, those strong positions have long since eroded. ILEC market shares have declined precipitously as market entrants using a variety of alternative networks have attracted customers and expanded their footprints. Indeed, only *11 percent* of U.S. households are projected to have an ILEC switched voice line by the end of this year.³

The Commission has acknowledged ILECs' declining dominance. In 1996, when the Telecommunications Act's unbundling provisions became law, incumbent companies provided essentially all residential communications services. In 2016, the Commission declared

ECONOMICS, LLC, 13 (Jan. 5, 2003) (“Mandatory unbundling encouraged CLECs to embrace non-sustainable business plans and reduced incumbent carriers’ and facilities-based entrants’ incentives to invest in new services. The resulting decrease in investment had led to less innovation in new services, fewer productive jobs, lower growth rates, and less choice for consumers of telecommunications services.”), <https://docplayer.net/16034401-An-accurate-scorecard-of-the-telecommunications-act-of-1996-rejoinder-to-the-phoenix-center-study-no-7.html>; Robert W. Crandall *et al.*, *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, BERKELEY ELECTRONIC PRESS, at 8 (2004), <https://www.brookings.edu/articles/do-unbundling-policies-discourage-clec-facilities-based-investment/> (“The CLECs’ open recognition of their incentives to defer costly facilities-based investments should not be surprising. Moreover, we should not be shocked that venture capitalists sometimes discourage CLECs from making on-net investments because up-front capital costs affect the company’s year-end bottom line. But even more convincing than anecdotal evidence is the systematic distortion of CLECs’ investment decisions revealed through econometric analysis.”); Robert W. Crandall, Jeffrey A. Eisenach & Allan T. Ingraham, *The Long-Run Effect of Copper Unbundling and the Implications for Fiber*, at 54 (Apr. 2012), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2018929 (“[C]opper loop unbundling did not accelerate the deployment or increase the penetration of first-generation broadband networks, and ... it had a depressing effect on network investment[.] ... Indeed, there is increasingly compelling evidence, including our findings, that the long-run effect of copper unbundling has been to reduce broadband penetration.”).

³ Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) to Accelerate Investment in Broadband and Next-Generation Networks, WC Docket No. 18-141, at 8 (filed May 4, 2018) (“Pet.”); *see also infra* Section I.

incumbents to be non-dominant in the provision of residential voice services.⁴ And the Commission has never found incumbent companies dominant in the provision of wireline residential broadband service – and could not do so, given ILECs’ roughly 35 percent of subscriptions for this service.

As in residential voice service, the Commission also has declared incumbents to be non-dominant in the provision of voice services to business/enterprise customers.⁵ In the recent *BDS Order*, the agency found that incumbents faced sufficient competition for basic business data services in about “91.1 percent of locations with special access demand” to justify removal of price cap regulation (a regime much less costly to consumer welfare than unbundling) in the vast majority of the country.⁶ In the remaining counties, the Commission imposed detailed price cap rules to protect consumers, strongly undercutting any potential benefits of costly unbundling regulations.⁷ Finally, with regard to high-capacity business services and modern IP-based services, the Commission concluded that sufficient competition existed across the country to

⁴ *Technology Transitions; USTelecom Petition for Declaratory Ruling That Incumbent Local Exchange Carriers Are Non-Dominant in the Provision of Switched Access Services*, Declaratory Ruling, Second Report and Order, and Order on Reconsideration, 31 FCC Rcd 8283, 8289 ¶ 16, 8289-90 ¶ 18 (2016) (“*Technology Transitions Declaratory Ruling*”) (analyzing market shares and intercarrier compensation reforms, and concluding that “incumbent LECs lack market power and therefore are non-dominant in the provision of [switched access]”).

⁵ *Id.* at 8294 ¶ 31.

⁶ *See generally Business Data Services in an Internet Protocol Environment et al.*, Report and Order, 32 FCC Rcd 3459, 3525-26 ¶¶ 141-42 (2017) (“*BDS Order*”), *partially vacated and remanded on other grounds, Citizens Telecomm. Co. of Minn., LLC, v. FCC*, No. 17-2296 (8th Cir. Aug. 28, 2018).

⁷ *See generally BDS Order*, 32 FCC Rcd at 3537-66 ¶¶ 178-266; *Technology Transitions Declaratory Ruling*, 31 FCC Rcd at 8294 ¶ 31.

allow market forces to set prices, subject only to review of Section 208 complaints alleging unreasonable pricing.⁸ No such complaints appear to have been made since that ruling.

None of the Commission's decisions finding ILECs to be non-dominant competitors depended on the presence of unbundled network elements as a source of market discipline. That is, the analyses either assumed that network elements were not a meaningful source of competition,⁹ or ignored them, looked to other sources of competitive discipline, and found that they were sufficient.¹⁰ Given these rulings, and the facts supporting them, unbundling mandates cannot be found to promote the public interest. If competitive conditions do not warrant dominant carrier regulation of incumbent companies, they cannot justify far more intrusive and costly unbundling regulation.

Opponents' efforts to evade the forbearance the law requires fall flat. Ultimately, their arguments boil down to one contention: It would be cheaper for specific companies to continue relying on unbundled network elements ("UNEs") than to compete using inputs secured on the open market – a claim that is irrelevant even if true. Nor do opponents effectively challenge the Petition's other requests, which seek forbearance from Section 251(c)(4) resale mandates, Section 272(e)(1) and related obligations governing providers' relationships with their affiliates (such as 47 C.F.R. § 64.1903),¹¹ and the redundant access obligation in Section 271's checklist

⁸ *BDS Order*, 32 FCC Rcd at 3499-500 ¶¶ 87-89.

⁹ *Id.* at 3520 ¶ 132 n.401.

¹⁰ *Technology Transitions Declaratory Ruling*, 31 FCC Rcd at 8290 ¶ 18; *BDS Order*, 32 FCC Rcd at 3499-500 ¶¶ 87-89.

¹¹ 47 U.S.C. § 272(e)(1); 47 C.F.R. § 64.1903.

item 3.¹² The law is clear: The Commission's concern here must be for competition and the public interest, not the claimed needs of specific competitors.

For the reasons herein and in the Petition, the Commission should grant USTelecom's request.

DISCUSSION

USTelecom has already established a *prima facie* case for forbearance with respect to the statutory provisions and regulations at issue.¹³ Here, USTelecom responds to the key flaws and inaccuracies in the filings of forbearance opponents. As detailed below, opponents have not persuasively rebutted USTelecom's arguments.

I. OPPONENTS FAIL TO REFUTE OVERWHELMING EVIDENCE THAT THE RELEVANT MARKETS ARE COMPETITIVE.

The data and evidence presented in support of USTelecom's Petition show a dramatically changed communications industry. In the 22 years since Congress adopted the rules at issue here, ILECs have experienced a staggering decline in switched access voice subscriptions, from 186 million in 2000 to a projected 35 million this year – an 81 percent decrease, which is all the more remarkable given the 16 percent increase in the U.S. population over that same time period.¹⁴ By year-end, 60 percent of Americans will have abandoned wireline voice service entirely in favor of wireless alternatives, and a majority of the remaining 40 percent will obtain service from a non-ILEC.¹⁵ Notably, the competitors to which residential and business

¹² 47 U.S.C. § 271(c)(2)(B)(iii).

¹³ 47 C.F.R. § 1.54(b)(1); *see generally* Opposition of USTelecom, WC Docket No. 18-141 (filed May 21, 2018).

¹⁴ Pet. at 7-8.

¹⁵ *Id.* at 8-10; Patrick Brogan, *USTelecom Industry Metrics and Trends 2018*, USTELECOM, at 10 (Mar. 1, 2018),

customers alike are flocking are overwhelmingly facilities-based.¹⁶ There are fewer than half as many UNE loops in use today as in 2005, even as the number of non-ILEC connections has grown rapidly.¹⁷ The Commission’s data show that, at year-end 2016, non-ILECs used UNE loops to provision less than four percent of end-user switched access and VoIP lines, and mandatory resale accounted for just three percent.¹⁸ Meanwhile, there is also intense competition in the business data services (“BDS”) marketplace. As of 2013, competitive providers had deployed transport networks in census blocks housing about 99 percent of business establishments, and the vast majority of locations exhibiting demand were within several hundred feet of competitive fiber.¹⁹ Given the level of continued investment and deployment activity since then, those numbers could have only improved.

<https://www.ustelecom.org/sites/default/files/images/USTelecom%20Industry%20Metrics%20and%20Trends%202018.pdf>.

¹⁶ For example, over-the-top (“OTT”) VoIP accounts for only about 7.5 percent of all fixed access lines – and a much smaller percentage of the overall voice market, which is dominated by wireless. FCC, *Voice Telephone Services: Status as of December 31, 2016*, Fig. 3 (Feb. 2018), <https://docs.fcc.gov/public/attachments/DOC-349075A1.pdf>. Even among OTT VoIP lines, many are provisioned over non-ILEC broadband connections furnished by cable providers, facilities-based CLECs, and others. See Andres V. Lerner, *An Economic Analysis of the Impact of Forbearance from 251(c)(3) on Competition and Investments*, ¶ 16 (Aug. 6, 2018) (“Lerner Economic Analysis”) (attached as Exhibit A to Comments of Verizon, WC Docket No. 18-141 (filed Aug. 6, 2018) (“Verizon Comments”)) (addressing non-facilities-based competition from over-the-top VoIP).

¹⁷ Pet. at 15-16.

¹⁸ *Id.* at 16-17.

¹⁹ *Id.* at 13-14. The Eighth Circuit’s recent decision upholding the vast majority of the Commission’s rules governing BDS further strengthens the case for forbearance. *Citizens Telecomm. Co. of Minn., LLC, v. FCC*, No. 17-2296 (8th Cir. Aug. 28, 2018). Opponents of the *BDS Order* – many of whom are also the leading opponents of forbearance here – had challenged the Commission’s analysis of competition. The court expressly upheld the *BDS Order*’s analysis of the market for channel terminations, and expressly declined to address challenges to the Commission’s substantive ruling on the transport market’s competitiveness. The court vacated and remanded the *BDS Order* for insufficient notice only with respect to one issue not relevant

The record evidence contradicts opponents' arguments that the marketplace is non-competitive. First, the evidence contradicts suggestions that cable and wireless providers do not compete significantly with ILECs. As demonstrated by the attached analysis by CMA Strategy Consulting ("CMA") and other analyses already in the record, competition from these other platforms is real and growing.²⁰ CMA finds that cable providers "[b]y all measures" compete to take customers away from ILECs.²¹ Over a five-year period during which cable operators targeted the business services market, they doubled both their share of the market and their revenues, while exerting substantial pricing pressure on competitors.²² Meanwhile, as of the beginning of last year, 99.8 percent of the U.S. population could receive wireless service, and 99.1 percent could receive high-speed LTE wireless service, from at least two wireless providers.²³

Further, assertions that ILECs do not offer substitutes for UNEs at commercial rates are not credible. Indeed, CMA notes that ILECs provide a variety of substitutes for transport between central offices, including DS0s, DS1s, DS3s, and Ethernet transport links, and that dark

here – namely, whether DS1 and DS3 transport offerings should, given well-documented competition, be subject to price caps and tariffing requirements. Notably, the court did not suggest that parties had lacked notice as to the underlying issue of the transport market's competitiveness. Nor could it have: The Commission clearly stated that it would be considering that issue, and indeed conducted the largest data collection in its history precisely to assess competition in the provision of transport and channel termination offerings.

²⁰ Ed Naef & Micah Sachs, CMA Strategy Consulting, *Assessing the Impact of Forbearance from 251(c)(3) on Consumers, Capital Investment, and Jobs – Reply to Comments*, at 11 (Sept. 2018) ("CMA Report"), attached hereto as Exhibit A; *see also* Lerner Economic Analysis ¶ 16 ("ILECs face vigorous competition from cable operators and wireless carriers, as well as other platforms, including over-the-top VoIP.").

²¹ CMA Report at 10.

²² *See generally id.* at 10-12.

²³ Lerner Economic Analysis ¶ 20.

fiber links between central offices may also be available from other providers.²⁴ CMA further states that the use of such alternatives by ILEC competitors far exceeds their use of UNEs, finding that nearly 80 percent of the revenue from leased copper circuits is from special access circuits rather than UNEs.²⁵ These findings reinforce the Commission's own recognition that competitive commercial substitutes for legacy TDM services exist, including those provisioned over next-generation BDS technologies.²⁶

II. GIVEN ROBUST RETAIL COMPETITION, THE TIME HAS COME TO FORBEAR FROM UNBUNDLING MANDATES.

In recent years, and even as USTelecom's Petition has been pending, the Commission has demonstrated a commitment to eliminating outdated regulatory requirements. This proceeding offers the Commission yet another opportunity to update the regulatory regime to fit competitive realities. The elimination of UNEs in particular would signal that the Commission is focused on policies that promote ever-increasing facilities-based competition, rather than looking backward to preserve markets of the past.

A. As the Commission and the Courts Have Made Clear, Unbundling is Inappropriate and Unnecessary When the Relevant Retail Markets Are Competitive.

At the heart of most opponents' arguments is the mistaken premise that intermodal competition is irrelevant, making unbundling necessary even after the retail markets in which competitors seek to provision service have become significantly competitive. But as the D.C.

²⁴ CMA Report at 13; *see also id.* at 13 n.32 (noting illustrative substitutes provided by CenturyLink and Verizon).

²⁵ *Id.* at 12-13.

²⁶ *BDS Order*, 32 FCC Rcd at 3470-76 ¶¶ 22-35; *see also* Lerner Economic Analysis ¶ 24.

Circuit made clear long ago – and as the Commission has explicitly acknowledged²⁷ – the Act was designed to promote “genuine, facilities-based competition.”²⁸

Once effective intermodal competition exists, there is no basis for unbundling. In *USTA I*, the D.C. Circuit considered the Commission’s decision to mandate unbundled access to the high-frequency portion of the loop (also known as “line sharing”) for the provision of xDSL. Parties challenging that result emphasized robust competition in the retail marketplace for broadband internet access, noting that ILECs held only a minority share of the market.²⁹ The court agreed with their assertion that it would be “antithetical” to the Act’s goals to “mandate unbundling in a market that already has intense facilities-based competition.”³⁰ Indeed, it held that evaluating only the marketplace for the platform-specific service the competitor sought to offer (there, xDSL) instead of a marketplace that also included substitute offerings (there, cable broadband) would be “quite unreasonable.”³¹ Several years later, the court emphasized that “[w]here competitors have access to necessary inputs at rates that allow competition not only to survive but to flourish, it is hard to see any need for the Commission to impose the costs of

²⁷ *Unbundled Access to Network Elements*, Order on Remand, 20 FCC Rcd 2533, 2563 ¶ 52 (2005) (“*TRRO*”) (“[A] primary purpose of the Act [is] the promotion of facilities-based competition.”); *see also id.* at 2535 ¶ 2 (citing policy of “encourag[ing] the innovation and investment that come from facilities-based competition”).

²⁸ *United States Telecom Ass’n v. FCC*, 359 F.3d 554, 576 (D.C. Cir. 2004) (“*USTA IP*”).

²⁹ *United States Telecom Ass’n v. FCC*, 290 F.3d 415, 428-29 (D.C. Cir. 2002) (“*USTA P*”).

³⁰ *Id.* at 429 (internal quotations and citation omitted).

³¹ *Id.* As the Commission later recognized, “the Act expresses no preference for the technology that carriers should use to compete with the incumbent LECs.” *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd 16978, 17045 ¶ 97 (2003) (“*TRO*”).

mandatory unbundling.”³² As the Commission has summarized the issue, UNE access is inappropriate “in cases where the requesting carrier seeks to provide service exclusively in a market that is sufficiently competitive without the use of unbundling.”³³

Today, this logic warrants eliminating unbundling across-the-board. ILECs have lost whatever advantage they might have enjoyed in the provision of telecommunications service.³⁴ The Commission already has correctly recognized that ILECs are non-dominant in every key market, including the markets for business and residential voice,³⁵ residential broadband,³⁶ business data services across the vast majority of the country,³⁷ TDM transport,³⁸ Ethernet,³⁹ and

³² *USTA II*, 359 U.S. at 576.

³³ *TRRO*, 20 FCC Rcd at 2552 ¶ 34 (internal citation omitted).

³⁴ *See Pet.* at 7-19.

³⁵ *Technology Transitions Declaratory Ruling*, 31 FCC Rcd at 8289 ¶ 16, 8289-90 ¶ 18.

³⁶ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14583, 14901-902 ¶¶ 91-93 (2005) (“*Wireline Broadband Order*”).

³⁷ *BDS Order*, 32 FCC Rcd 3459 ¶ 1.

³⁸ *Id.* at 3496 ¶ 79 (“[For] TDM transport services ... 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.” (internal citations omitted)); *id.* at 3498 ¶ 82 (“[I]n the face of increased demand for transport services, we observe responsive market conditions that *support the deployment of competitive facilities*[.]” (emphasis added)); *id.* at 3498 ¶ 83 (“In many instances, incumbent LECs are now on similar footing to entrants ... [a]s a result, we find the marketplace for packet-based business data services is competitive.”); *id.* at 3499 ¶ 85 (“[W]e find substantial evidence of competition in TDM-based transport markets[.]”).

³⁹ *Id.* at 3471 ¶ 25 (“Substitution between [DS1/DS3s and Ethernet] ... is generally one directional. New customers ... are choosing to purchase Ethernet services ... and existing customers of TDM-based service are switching to Ethernet.” (internal citations omitted)); *id.* at 3490 ¶ 68 (“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”); *id.* at 3491 ¶ 68 (“The Ethernet bandwidth of incumbent LECs grew by only 5.3 percent in 2013, while the bandwidth of competitive providers grew by 31.6 percent.”); *id.* at 3491 ¶ 70 (“*Decreasing Ethernet Prices*. There is persuasive evidence of recent decreases in the prices for [Ethernet] across all bandwidths.”).

high-capacity loops.⁴⁰ These findings demonstrate that facilities-based competition – coupled with the presence of market-driven wholesale BDS from ILECs, cable, and other providers – is more than sufficient to create a flourishing marketplace. Under well-settled principles, in such an environment, unbundling is unnecessary to ensure competition, undermines the public interest, and is in fact affirmatively *harmful*.

B. Calls for Indefinite Access to UNEs at Regulated Prices Disregard Congressional Intent.

Even though the retail marketplace is highly competitive and ILEC market share has steadily fallen, opponents erroneously presume that CLECs are entitled to indefinite UNE access.⁴¹ Congress, the courts, and the Commission have all made clear, however, that unbundling was meant to be a transitional mechanism. That transition has been underway for decades.

As the Petition explained,⁴² Congress never intended for unbundling mandates to remain in place after facilities-based competition was achieved. Senator John Breaux stated that Section

⁴⁰ *See, e.g., id.* at 3468 ¶ 16 (“[W]e 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.*” (emphasis added)); *id.* at 3499 ¶ 86 (“We intend to apply ex ante rate regulation only where competition is expected to materially fail to ensure just and reasonable rates. ... Based on these principles and our market analysis, we find regulation is unnecessary for ... higher bandwidth (i.e., above DS3) TDM end user channel terminations.”).

⁴¹ *See, e.g.,* INCOMPAS et al. Opp. at 8 (“Forbearance will undermine protection for consumers by reducing competition that is the best method for ensuring continued investment in improved services, service quality, and support.”); Opposition of Access Point Inc. et al., WC Docket No. 18-141, at 25 (filed Aug. 6, 2018) (“Wholesale Voice Line Coalition Opp.”) (arguing for “[r]etaining ... the availability of resale and UNEs” irrespective of “market power”); Comments of the ICG CLEC Coalition, WC Docket No. 18-141, at 5, 16 (filed Aug. 6, 2018) (“ICG CLEC Coalition Comments”) (arguing that forbearance would “put *all* UNE-using CLECs out of business”).

⁴² Pet. at 4-7.

251(c)'s mandates were "extraordinary" and meant as "almost a jump-start" for competitors.⁴³ The Commission has underscored that unbundling was "designed to promote *the development* of competitive markets."⁴⁴ The point of the unbundling regime was to "provide incentives for both incumbents and competitors to invest and innovate," an approach that would "allow the Commission and the states to reduce regulation once effective facilities-based competition develops."⁴⁵ The D.C. Circuit, for its part, has stated that unbundling mandates were designed "[t]o enable new firms to *enter* the field despite the advantages of the incumbent local exchange carriers,"⁴⁶ and must be applied sparingly to minimize "disincentives to research and development by both ILECs and CLECs and the tangled management inherent in shared use of a common resource."⁴⁷

Some CLECs today are prolonging what was intended to be a short-term transition to facilities-based competition. Many continue to rely on subsidized network facilities that no-longer-dominant ILECs must provision for them, even though facilities-based competitors have demonstrated the feasibility of competing without UNEs. Such indefinite reliance perverts Congress's more limited vision regarding the role of UNEs.

⁴³ Remarks of Sen. Breaux (La.) on Pub. L. 104-104 (1995), 141 Cong. Rec. 15572 (1995).

⁴⁴ *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Omaha Metropolitan Statistical Area*, Memorandum Opinion and Order, 20 FCC Rcd 19415, 19417 ¶ 3 (2005) (emphasis added); see also *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696, 3704 ¶ 14 (1999) ("*UNE Remand Order*").

⁴⁵ *UNE Remand Order*, 15 FCC Rcd at 3700 ¶ 6; see also *TRRO*, 20 FCC Rcd at ¶ 3 ("[The] unbundling rules are designed to remove unbundling obligations over time as carriers deploy their own networks and downstream local exchange markets exhibit the same robust competition that characterizes the long distance and wireless markets.").

⁴⁶ *USTA II*, 359 F.3d at 561 (emphasis added) (internal citations omitted).

⁴⁷ *USTA I*, 290 F.3d at 429 (citing *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 428 (1999) (Breyer, J., concurring in part and dissenting in part)).

Some opponents claim their costs will increase without UNE availability.⁴⁸ But that does not justify perpetual UNE availability either as a legal matter or a policy matter. Congress created UNEs “to stimulate competition – preferably genuine, facilities-based competition,”⁴⁹ not to ensure availability of wholesale inputs at the lowest possible costs. Nor is the public interest served by *indefinite* use of UNEs as “stepping stone[s]” long after the advent of vigorous facilities-based competition.⁵⁰ Indeed, academic evaluations of unbundling policies worldwide disprove the claim that “[a]ccess-based competition is supposedly the stepping-stone to facilities-based competition,” even in markets without extensive facilities-based competition.⁵¹ Rather, “CLECs generally appear to remain dependent upon unbundled elements and have made little attempt to substitute those assets with their own facilities.”⁵² And the research indicates that “unbundling decreases facilities-based competition in the short term.”⁵³

Likewise, CLECs’ claims that continued access to UNEs is warranted because their businesses have been successful misunderstand the Commission’s precedent, which makes clear that unbundling is not warranted when the “potential revenues from entering a market exceed the

⁴⁸ See, e.g., Declaration of Brian Worthen, CEO, Mammoth Networks, attached to INCOMPAS et al. Opp. as Attach. 3, at 68 ¶ 11 (“Worthen Decl.”).

⁴⁹ *USTA II*, 359 F.3d at 576.

⁵⁰ INCOMPAS et al. Opp. at 42.

⁵¹ See Jerry A. Hausman & J. Gregory Sidak, *Did Mandatory Unbundling Achieve its Purpose? Empirical Evidence from Five Countries*, 1 JOURNAL OF COMPETITION LAW AND ECONOMICS 173, 188 (2005); see also *id.* at 242 (surveying the economic results of unbundling policies in the United States, the United Kingdom, New Zealand, Canada, and Germany, and noting that the stepping-stone hypothesis “fails to be substantiated in any country in our survey”).

⁵² *Id.* at 244.

⁵³ *Id.* at 202-03 (citing Robert W. Crandall, Allan T. Ingraham, & Hal J. Singer, *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, 4 TOPICS IN ECONOMIC ANALYSIS & POLICY 13 (2004)).

costs of entry.”⁵⁴ The revenue analysis must account for “*all* the revenue opportunities that such a competitor can reasonably expect to gain over the facilities, from providing all possible services that an entrant could reasonably expect to sell,”⁵⁵ and the cost evaluation must account for sources of relevant inputs other than UNEs.⁵⁶ Thus, when Mammoth Networks cites its use of a “a single [unbundled] inter-office fiber” link to serve at least 8,165 end users,⁵⁷ and when Sonic similarly states that it “uses just two dark fiber interoffice transport UNEs to transport traffic to and from over 8,500 fiber customers, each of which subscribes to Sonic’s 1 Gbps symmetric broadband and telephone service,”⁵⁸ these examples do not demonstrate a need for continued UNE access. Instead, they show that CLECs are using UNEs in cases where high revenue opportunities would permit CLECs and others to compete without UNEs, through self-provisioning or procurement of similar inputs through commercial channels.

The *BDS Order* correctly found that the market for transport, a class of services which includes interoffice dark fiber, is uniformly competitive.⁵⁹ That holding did not rely on the

⁵⁴ *TRO*, 18 FCC Rcd at 17035 ¶ 84.

⁵⁵ *TRRO*, 20 FCC Rcd at 2547 ¶ 24.

⁵⁶ *USTA I*, 290 F.3d at 419.

⁵⁷ Worthen Decl. ¶ 9. Mammoth apparently uses this single link to serve “a WISP with 411 Mbps of traffic today, which represents approximately 250 to 275 customers; a WISP with 756 Mbps of traffic today, which represents approximately 900-1,200 customers; a college that that serves about 750 students remotely and another 1,500 students during the fall and spring semesters (these numbers do not include faculty and staff); a county employing 280 individuals; two cities employing 241 and 84 individuals, respectively; three schools districts totaling 4,064 students; the three offices of a power company that employs 70 individuals; a startup company that purchases Mammoth wholesale service in building fiber-to-the-home in the community; another wholesale client offering voice to 14 retail business clients; and 12 retail business clients.” *Id.*

⁵⁸ Opposition of Sonic Telecom, LLC, WC Docket No. 18-141, at 4-5 (filed Aug. 6, 2018) (“Sonic Opp.”).

⁵⁹ See *BDS Order*, 32 FCC Rcd at 3499 ¶ 85.

existence of UNEs, and, as noted above, remains valid even as the Commission addresses the Eighth Circuit’s remand regarding how to adjust its regime *to account for* such competition.⁶⁰

The market’s nationwide competitiveness refutes claims that CLECs require access to unbundled dark fiber – in fact, one competitive provider alone reports 11.8 million dark fiber miles (not subject to price regulation), compared to a conservatively estimated 20,000 to 60,000 dark fiber miles among the four largest ILECs combined.⁶¹ Here, CLECs’ use of individual fiber links to serve thousands of customers apiece demonstrates extremely high revenue opportunities, indicating that customers could and would continue to enjoy service following forbearance – whether from intermodal competitors or from CLECs using inputs that were self-provisioned or leased at market rates.

III. CLEC EFFORTS TO REWRITE SETTLED LAW REGARDING FORBEARANCE AND COMPETITION MUST BE REJECTED.

Faced with these unfavorable facts, forbearance opponents rely on novel legal claims that would preclude the Commission from ruling on the merits. As explained below, these legal arguments are unpersuasive.

A. Commission Precedent and Foundational Economic Principles Favor Nationwide Forbearance.

In a transparent attempt to put the brakes on forbearance, many opponents insist that the Commission must conduct individual, market-by-market analyses of competition instead of

⁶⁰ *See supra* n. 19.

⁶¹ Letter to Marlene Dortch, Secretary, FCC, from Jonathan Banks, Senior Vice President, Law & Policy, USTelecom, WC Docket No. 18-141, at 1 (filed Sept. 4, 2018) (citing “Dark Fiber,” <https://www.zayo.com/services/dark-fiber/>, visited Aug. 28, 2018); *see also* CMA Report at 13.

granting relief on a nationwide basis.⁶² But this unrealistic approach is neither necessary nor advisable.

As an initial matter, there is nothing unconventional about granting national forbearance. The Commission has done so repeatedly, on a bipartisan basis, including in connection with a previous USTelecom forbearance petition.⁶³ The Commission has repeatedly premised forbearance on national findings about competition that mirror the evidence presented in the

⁶² See, e.g., INCOMPAS et al. Opp. at 52; Opposition of Granite to USTelecom’s Forbearance Petition, WC Docket No. 18-141, at 13 (filed Aug. 6, 2018) (“Granite Opp.”); Wholesale Voice Line Coalition Opp. at 10; Opposition of Public Knowledge et al., WC Docket No. 18-141, at 5-10 (filed Aug. 6, 2018) (“Public Knowledge et al. Opp.”); Opposition of MetTel, WC Docket No. 18-141, at 1-3 (filed Aug. 6, 2018) (“MetTel Opp.”); Comments of the California Public Utilities Commission, WC Docket No. 18-141, at 7-10 (filed Aug. 6, 2018); ICG CLEC Coalition Comments at 2-3.

⁶³ USTelecom’s Petition provided a representative sampling of previous forbearance decisions granting nationwide relief, see Pet. at 21-22 (citing *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*, Memorandum Opinion and Order, 31 FCC Rcd 6157, 6164 ¶ 9 (2015) (“2015 USTelecom Forbearance Order”) (subsequent history omitted)); *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601, 5807-08 ¶ 439 & n.1306 (2015) (“Title II Order”)), but there are many others as well. See, e.g., *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, 23 FCC Rcd 12260, 12274 ¶ 24 n.93 (2008); *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*, Memorandum Opinion and Order, 22 FCC Rcd 18705, 18716-21 ¶¶ 20-25 (2007) (using a nationwide geographic market for evaluating competition for forbearance); *Wireline Broadband Order*, 20 FCC Rcd at 14901-02 ¶¶ 91-93 (granting forbearance on a nationwide basis); *Petition for Forbearance of the Verizon Telephone Companies Pursuant to 47 U.S.C. § 160(c)*, Memorandum Opinion and Order, 19 FCC Rcd 21496 ¶ 1, 21504 ¶ 12 (2004) (“Section 271 Forbearance Order”) (forbearing from enforcing the requirements of Section 271 “on a national basis”). The Commission also has made nationwide competition findings with deregulatory consequences outside the forbearance context. See, e.g., *Amendment to the Commission’s Rules Concerning Effective Competition*, Report and Order, 30 FCC Rcd 6574, 6582-83 ¶ 11 (2015) (applying a “nationwide rebuttable presumption” that cable operators face effective competition, without conducting market-specific competition analyses).

Petition.⁶⁴ The Commission has also granted national relief even in the absence of competitive findings, where forbearance is appropriate based on other considerations that are “common nationwide.”⁶⁵ Accordingly, the case for nationwide forbearance where there is overwhelming evidence of competitive market conditions – as is the case here – is even more compelling.

Opponents’ efforts to distinguish the extensive precedent supporting nationwide forbearance fail as a matter of both law and economics. For example, there is no basis, in the statute or elsewhere, to the claim that forbearance requests involving the 1996 Act’s “core local competition” provisions and/or legacy, non-broadband services require market-specific analysis or somehow defy analysis at the national level.⁶⁶ The earlier decisions granting national forbearance did not turn on the nature of either the rules or the services at issue. And Granite’s attempt to distinguish the *Title II Order*’s nationwide forbearance grant on the basis that it resulted from “a Commission-initiated process and not the evaluation of a private petition”⁶⁷ is legally bankrupt – the Act makes no such distinction and applies the same standard to all forbearance inquiries.

⁶⁴ See, e.g., *Section 271 Forbearance Order*, 19 FCC Rcd at 21510-11 ¶ 30 (“[T]he BOCs have limited competitive advantages with regard to the broadband elements, given their position with respect to cable modem providers and others in the emerging broadband market. BOCs are not even the largest provider of broadband services to consumers – many more consumers receive broadband through cable modem services.”).

⁶⁵ *Title II Order*, 30 FCC Rcd at 5808 ¶ 439 n.1306 (“reject[ing] the suggestion that more geographically granular data or information or an otherwise more nuanced analysis are needed”); see also *2015 USTelecom Forbearance Order*, 31 FCC Rcd at 6164 ¶ 9 & n.37 (citing numerous examples in which it granted forbearance when the application of requirements other than “marketplace competition” satisfied the Section 10(a) criteria).

⁶⁶ See, e.g., Opposition of U.S. TelePacific Corp. et al., WC Docket No. 18-141, at 12-13 (filed Aug. 6, 2018) (“U.S. TelePacific Corp. et al. Opp.”); Granite Opp. at 13.

⁶⁷ Granite Opp. at 13-14.

Nationwide forbearance also is appropriate as an economic matter, because different areas of the United States exhibit very similar characteristics with respect to the services at issue. As CMA explains, a study of markets served by large cable operators revealed virtually no pricing variability, indicating that evaluation of each discrete geographic market is unwarranted.⁶⁸ With just one exception, these cable operators offer uniform national pricing for both business broadband and business VoIP.⁶⁹ CMA notes that this evidence suggests the market for many next-generation services is national, and that the distinction between local markets and a national one is less relevant for such services than forbearance opponents argue.⁷⁰ Accordingly, a nationwide finding is appropriate.

The same conclusion holds in rural and underserved markets. INCOMPAS and other forbearance opponents insist that such markets require their own specific competitive inquiries because unbundling forbearance would leave them completely unserved.⁷¹ As CMA's analysis demonstrates, this concern is greatly overstated. CMA finds that the vast majority of UNEs are purchased in urban and suburban areas rather than the rural areas on which INCOMPAS and its allies focus – 93 percent compared to only 7 percent in rural markets.⁷² This low level of rural UNE use is unsurprising given that small ILECs in rural areas generally are not required to unbundle in the first place by virtue of their rural exemptions.⁷³ USTelecom is sensitive to the

⁶⁸ CMA Report at 14-15.

⁶⁹ *Id.* at 14-18.

⁷⁰ *Id.* at 14-15.

⁷¹ *See, e.g.*, INCOMPAS et al. Opp. at 52-55; Granite Opp. at 34; Opposition of SnowCrest Telephone Inc., WC Docket No. 18-141, at 3-4 (filed Aug. 6, 2018) (“SnowCrest Opp.”).

⁷² CMA Report at 12-13 & Fig. 8.

⁷³ 47 U.S.C. § 251(f)(1).

special circumstances in rural areas, but recognizes that the more efficient and effective method for improving service in such regions is to promote facilities-based deployment by *removing* outdated regulation (and, where appropriate, by providing subsidies to improve the business case for infrastructure investment).

B. There Is No Legal Requirement that the Commission Conduct a More Granular Competitive Analysis.

In light of the consistent precedent endorsing nationwide forbearance, opponents search for some legal authority that would compel the Commission to make an exception in this case and instead require market-specific competitive analyses. But their search comes up empty.

Most notably, these parties mistakenly argue that the *Qwest Phoenix Order*⁷⁴ requires the Commission to conduct a granular geographic market analysis focused on specific market power.⁷⁵ As an initial matter, and as the Eighth Circuit recently underscored, the *Qwest Phoenix Order* does not require the Commission to evaluate competition in the same manner in all contexts – in particular, it is “not bound to apply the traditional market power framework” in a certain matter.⁷⁶ Likewise, the D.C. Circuit has held that the Commission’s analysis of forbearance is not bound by a particular analytical framework.⁷⁷ Section 10 does not impose “a particular mode of market analysis or level of geographic rigor,” but rather “allow[s] the

⁷⁴ *Petition of Qwest Corporation 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 (2010) (“*Qwest Phoenix Order*”).

⁷⁵ *See, e.g.*, Wholesale Voice Line Coalition Opp. at 6-10; INCOMPAS et al. Opp. at 35-37; U.S. TelePacific Corp. et al. Opp. at 8-9; Sonic Opp. at 12-13.

⁷⁶ *Citizens Telecomm.*, slip op. at 22-25.

⁷⁷ *See Earthlink v. FCC*, 462 F.3d 1, 8 (D.C. Cir. 2006); *see also Qwest Phoenix Order*, 25 FCC Rcd at 8633 ¶ 24 (recognizing that the Commission “has discretion in determining the analytical framework it will use in evaluating forbearance petitions”).

forbearance analysis to vary depending on the circumstances” and permits the Commission to “tailor[] the forbearance inquiry to the situation at hand.”⁷⁸ As the Petition noted, ILECs lack dominance – nationwide – in the markets relevant to network unbundling, warranting ubiquitous relief. Also, the Commission’s recently-completed detailed investigation of the BDS marketplace, based on the largest and most granular data collection the agency has ever undertaken, resulted in a carefully calibrated set of new regulations that render continued UNE requirements unnecessary. These facts refute demands for geographic granularity.

Regardless, the *Qwest Phoenix Order* has been superseded by more recent Commission findings and marketplace developments. The analytical framework applied in *Qwest Phoenix* was driven by concerns about duopolistic markets and Commission doubt regarding the substitutability of intermodal alternatives.⁷⁹ In last year’s *BDS Order*, however, the Commission found that, in enterprise markets, “the presence of a nearby competitor is likely to prevent substantial abuse of market power, whether through high prices or lack of innovation.”⁸⁰ It also recognized the undeniable significance of cross-platform competition, observing that “technological changes that have occurred or are likely to occur in the near future,” including upcoming 5G deployments, “make the Commission’s reasoning in the *Qwest Phoenix* decision inapposite.”⁸¹ As detailed in the Petition and herein, intermodal competition – from wireless, cable, and other providers – is also extremely strong in *residential* markets. Thus, the concerns animating the *Qwest Phoenix Order* are inapposite here.

⁷⁸ *Earthlink*, 462 F.3d at 8-9.

⁷⁹ See *Qwest Phoenix Order*, 25 FCC Rcd at 8635-36 ¶ 29.

⁸⁰ *BDS Order*, 32 FCC Rcd at 3514-15 ¶ 120.

⁸¹ *Id.* at 3515 ¶ 122.

Further, the Commission has repudiated several key aspects of the *Qwest Phoenix Order*. For example, in *Qwest Phoenix*, the Commission determined that the record lacked sufficient MSA-specific data regarding dedicated local transport facilities.⁸² In the *BDS Order*, however, the Commission found “strong evidence of substantial competition” in the national transport market, obviating any need for such market-specific evidence.⁸³ Also in *Qwest Phoenix*, the Commission was concerned about reliance by competitors on Qwest’s last-mile facilities;⁸⁴ the *BDS Order* likewise disposes of this issue by finding that most TDM-based channel terminations, and all Ethernet connections, are broadly competitive.⁸⁵

In other respects, market developments have mooted the *Qwest Phoenix Order*’s continued suitability for assessing competitive conditions. While the *Qwest Phoenix Order* relied on distinctions among the markets for “local voice, long distance voice, and data services,”⁸⁶ the record here establishes that the rise of bundled offerings has largely eviscerated such distinctions.⁸⁷ And whereas the *Qwest Phoenix Order* declined to include wireless services in the same product market as fixed wireline service, noting that this was “a complicated issue,”⁸⁸ the record here demonstrates that this is no longer the case: wireless replacement has

⁸² See *Qwest Phoenix Order*, 25 FCC Rcd at 8662 ¶ 76.

⁸³ *BDS Order*, 32 FCC Rcd at 3496-97 ¶ 79.

⁸⁴ *Qwest Phoenix Order*, 25 FCC Rcd at 8658 ¶ 68.

⁸⁵ See *BDS Order*, 32 FCC Rcd at 3526 ¶ 142 (finding that approximately 93 percent of “locations with special access demand” were subject to competition and could thus be deregulated); *id.* at 3526-27 ¶ 143 (emphasizing that this figure was “conservative” because it only captured initial cable deployments in the BDS marketplace).

⁸⁶ *Qwest Phoenix Order*, 25 FCC Rcd at 8656 ¶ 62.

⁸⁷ See, e.g., Pet. at 18, 36; Verizon Comments at 16.

⁸⁸ *Qwest Phoenix Order*, 25 FCC Rcd at 8651 ¶ 55.

occurred in a clear majority of U.S. households, and continues to rise.⁸⁹ Finally, while the Commission in *Qwest Phoenix* found the record regarding competitive wholesale services lacking,⁹⁰ the record in this proceeding establishes that wholesale alternatives are widely available.⁹¹

INCOMPAS' claim that Section 251(d)(2)(B)'s impairment test "requires" the Commission to conduct hundreds or thousands of distinct geographic analyses is doubly wrong.⁹² First, it is the Section 10 forbearance standard, not the impairment test, that governs

⁸⁹ See Pet. at 8-9. In the *Qwest Phoenix Order*, the Commission observed that a majority of households continued to subscribe to both wireline and wireless telephone services, and that the proportion of households subscribing to both services had not substantially changed for the previous three years. See *Qwest Phoenix Order*, 25 FCC Rcd at 8651 ¶ 55 & n.164. Specifically, the Commission cited data from the Centers for Disease Control ("CDC"), which estimated that: (1) 58.2 percent of households subscribed to both wireline and wireless services; and (2) the proportion of households that subscribed only to wireless was 24.5 percent. *Id.* n.164 (citing 2010 CDC Wireless Substitution Report, table 1). By contrast, at the end of 2017 CDC found that: (1) 36.9 percent of households subscribed to both services; (2) the proportion of households subscribing to both services had steadily declined over the past three years (*i.e.*, down from 42.7 percent at the end of 2014); and (3) the proportion of households that subscribed only to wireless continued on an upward trajectory, to 53.9 percent. See CDC, National Center for Health Statistics, *Wireless Substitution: Early Release of the Estimates From the National Health Interview Survey, July-December 2017*, at 5, Table 1 (June 2018), <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201806.pdf>. As noted above, the number of wireless-only households is expected to be over 6 percent higher by the end of 2018. See *supra* at 5 & n.15.

⁹⁰ *Qwest Phoenix Order*, 25 FCC Rcd at 8659-60 ¶ 71.

⁹¹ See, *e.g.*, Verizon Comments at 2-3, 12. As the Commission itself noted in *Qwest Phoenix*, however, "[e]ven in the absence of robust wholesale competition, forbearance relief [from unbundling obligations] might be warranted if, for example, there is sufficient full, facilities-based competition for relevant retail services." *Qwest Phoenix Order*, 25 FCC Rcd at 8671-72 ¶ 94. That is undoubtedly the case here, as facilities-based competition has been irreversibly established on a nationwide basis.

⁹² INCOMPAS et al. Opp. at 36-37 (citing 47 U.S.C. § 251(d)); see also Comments of the Pennsylvania Public Utility Commission, WC Docket No. 18-141, at 3 (filed Aug. 6, 2018) ("Pennsylvania PUC Comments").

here. While USTelecom could have pursued and obtained a finding of nationwide non-impairment under Section 251(d)(2), it was also entitled to seek the removal of unbundling mandates via forbearance and the specific standards and procedures that govern that process.⁹³ Similarly, the *BDS Order* does not tie the Commission’s hands from a process standpoint.⁹⁴ The Commission can forbear from applying the obligations at issue here, even in non-competitive counties, without overriding or disrupting the regulatory treatment of BDS offerings. Second, even if the impairment standard governed here, the Commission has made many national non-impairment findings, related to elements as diverse as OCN-capacity transmission, packet switching, circuit switching, and greenfield FTTH deployments, and the courts have upheld these determinations.⁹⁵ In short, INCOMPAS’s overstated assertion that nationwide forbearance would be a “radical and unwarranted departure” from the Commission precedent is belied by the facts.⁹⁶

C. The Commission’s Economic Analysis Must Consider All Reasonable Substitutes Within the Relevant Product Markets.

The record demonstrates robust facilities-based competition in residential and business markets alike, warranting forbearance from unbundling mandates. Despite this showing, various commenters urge the Commission to assume away the presence of intermodal alternatives such as wireless, VoIP, and packet-switched technologies, all of which customers have adopted in

⁹³ Pet. at 25.

⁹⁴ INCOMPAS et al. Opp. at 57-64.

⁹⁵ *TRO*, 18 FCC Rcd at 17142 ¶ 273, 17168 ¶ 315, 17320 ¶ 537 (finding non-impairment with regard to – respectively – FTTH loops, OCN-capacity transmission, and packet switching), *upheld in relevant part, vacated in other parts and remanded by USTA II*, 359 F.3d 554; *TRRO*, 20 FCC Rcd at 2644 ¶ 204 (circuit switching), *review denied*, *Covad Commc’ns Co. v. FCC*, 450 F.3d 528 (D.C. Cir. 2006).

⁹⁶ INCOMPAS et al. Opp. at 57.

droves.⁹⁷ These pleas are incompatible with well-established principles of competition law and Commission precedent, and the Commission should reject them.

Sound competition policy calls for including all reasonably close substitutes in the product market. As the Commission has stated, “when one product is a reasonable substitute for the other in the eyes of consumers, it is to be included in the relevant product market even though the products themselves are not identical.”⁹⁸ The Commission’s understanding dovetails with the views of the courts and the expert antitrust agencies. In *Brown Shoe Co. v. United States*, the Supreme Court stated that “[t]he outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product and substitutes for it.”⁹⁹ The D.C. Circuit has similarly made plain in the unbundling context that the Commission may not ignore intermodal alternatives in its market analysis.¹⁰⁰ Finally, the DOJ/FTC Horizontal Merger Guidelines explain that “[m]arket definition focuses solely on demand substitution factors, *i.e.*, on customers’ ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such

⁹⁷ See, e.g., Wholesale Voice Line Coalition Opp. at 14-16; Granite Opp. at 16-21; Comments of the Michigan Public Service Commission, WC Docket No. 18-141, at 3-6 (filed Aug. 6, 2018) (“Michigan PSC Comments”).

⁹⁸ *Application of EchoStar Communications Corporation, General Motors Corporation, and Hughes Electronics Corporation (Transferors) and EchoStar Communications Corporation (Transferee)*, Hearing Designation Order, 17 FCC Rcd 20559, 20606 ¶ 106 (2002); see also *BDS Order*, 32 FCC Rcd at 3468 ¶ 18 (“We look to see if services are reasonably substitutable to determine an appropriate product market[.]”).

⁹⁹ 370 U.S. 294, 325 (1962).

¹⁰⁰ See, e.g., *USTA I*, 290 F.3d at 428-29 (holding that intermodal competition from cable providers must be considered before requiring ILECs to unbundle the high-frequency portion of their copper loops to requesting CLECs).

as a reduction in product quality or service.”¹⁰¹ This only makes sense: General Mills might be the only provider of Cheerios, but competition from Kellogg’s, Post, and other manufacturers of substitutable products ensure that General Mills is *not* a monopolist in the provision of breakfast cereal. So too in the case of voice and data telecommunications offerings. Accordingly, in determining whether forbearance is warranted, the Commission must consider *all* services being marketed and purchased as alternatives to ILECs’ offerings.

The market for voice services, properly defined, is not limited to telco-provided POTS or TDM service, any more than the cereal market is limited to Cheerios. Any proper analysis must include intermodal competition from wireless platforms and VoIP as well. When 60 percent of American households will have abandoned wireline voice service entirely in favor of wireless alternatives by the end of this year, there can be no doubt that the two compete in the same product market.¹⁰² And when VoIP connections – three quarters of which are supplied by non-ILECs – outnumber switched connections by a wide margin, claims that the residential market is confined to or dominated by TDM-based POTS service are not credible.¹⁰³

The rapid migration of customers from ILEC services to competitive voice alternatives is occurring in not only the consumer market segment, but the business segment as well.¹⁰⁴ The *BDS Order*’s comprehensive product market analysis eviscerates suggestions that TDM-based

¹⁰¹ U.S. Dep’t of Justice & Fed. Trade Comm’n, *Horizontal Merger Guidelines* § 4, at 7 (Aug. 19, 2010) (“DOJ/FTC Horizontal Merger Guidelines”).

¹⁰² *See supra* at 5 & n.15.

¹⁰³ *See* Lerner Economic Analysis ¶ 22 & Figure 5; Verizon Comments at 17 (*citing 2016 Voice Telephone Services Report* at 3, Fig. 2).

¹⁰⁴ *See* Verizon Comments at 19 (noting that “non-ILECs are even more dominant in providing business VoIP services than consumer VoIP services, accounting for 86 percent of those connections as of the end of 2016”).

services should be treated as a distinct market in this proceeding. There, the Commission correctly concluded that legacy TDM services and packet-based business data services are “broadly interchangeable”¹⁰⁵ and “fall within the same product markets.”¹⁰⁶ The Commission is bound by those findings here.

D. Commenters’ Other Procedural Objections Lack Merit.

Forbearance opponents’ assorted other claims and complaints also fail.¹⁰⁷ For instance, Liberty Cablevision’s odd assertion that USTelecom lacks standing to seek forbearance on behalf of its members and ILECs generally ignores the Commission’s previous rulings to the contrary.¹⁰⁸ The Pennsylvania PUC, meanwhile, calls for an unprecedented referral of USTelecom’s forbearance petition to an administrative law judge, based solely on the utility of that type of procedure in a single (and uncited) state proceeding, without acknowledging that

¹⁰⁵ *BDS Order*, 32 FCC Rcd at 3471 ¶ 24.

¹⁰⁶ *Id.* at 3472 ¶ 26.

¹⁰⁷ USTelecom has already responded to baseless complaints regarding the sufficiency of its Petition, *see* Opposition of USTelecom, WC Docket No. 18-141 (filed May 21, 2018), which some CLEC reiterate here. *See, e.g.*, INCOMPAS Mot. at 1; Granite Opp. at 15; *see also* Cox Mot. at 1 (seeking summary denial only with respect to Section 251(c)(3) unbundling obligations related to 911 and E911 databases, operations support systems, and subloops for multiunit premises wiring). Although Cox argues that the Petition’s evidence and reasoning regarding nationwide intermodal competition does not justify unbundling forbearance as to the elements specified in its filing, the Petition also demonstrated that unbundling in general is burdensome and undermines competition – a rationale that applies to all elements, including those on which Cox focuses, whether or not the presence of competition is relevant.

¹⁰⁸ *Compare* Comments of Liberty Cablevision of Puerto Rico LLC, WC Docket No. 18-141, at 5-8 (filed Aug. 6, 2018) (“Liberty Cablevision Comments”) (arguing that USTelecom “lacks standing to raise the issues addressed in its Petition”), *with* 2015 USTelecom Forbearance Order, 31 FCC Rcd at 6159-60 ¶ 4 & n.7 (finding that USTelecom “is an appropriate entity to submit a petition” on behalf of its members and also noting with approval that USTelecom sought forbearance relief for all ILECs as well).

neither Section 10 nor any other statutory provision authorizes or compels such a hearing.¹⁰⁹ The Commission should reject these fanciful claims.

IV. THE PETITION’S OPPONENTS MISCONSTRUE THE LAW AND POLICY OF UNBUNDLING.

Opponents also misunderstand two decades’ worth of judicial and Commission precedent expressly relating to unbundling. While much of this analysis arose in the context of the impairment test, the principles outlined by the courts and the agency are no less relevant here: In considering competition, the Commission should focus on the needs of competition and consumers, not those of specific competitors, and must limit UNE access to the specific contexts contemplated by Congress.

A. The Commission’s Competitive Analysis of Unbundling Relief Must Focus on Competition and Consumers, Not Specific Competitors.

Contrary to the implications of many commenters,¹¹⁰ the Commission’s role in this proceeding is *not* to preserve the viability of any individual CLEC, specific CLEC business

¹⁰⁹ Pennsylvania PUC Comments at 9 (referencing the PUC’s own procedures for reclassifying one carrier’s wire centers). Nor is there any basis for preserving UNEs in areas affected by natural disasters, as proposed by several parties with regard to Puerto Rico. *See* Comments of WorldNet Telecommunications, Inc., WC Docket No. 18-141, at 2 (filed Aug. 6, 2018); Liberty Cablevision Comments at 19. If anything, the removal of outmoded regulation would expedite the reconstruction of telecommunications infrastructure in such areas, promoting the “physical path diversity” that the Public Safety and Homeland Security Bureau recently recommended in response to the 2017 Atlantic hurricane season. Public Safety and Homeland Security Bureau, *2017 Atlantic Hurricane Season Impact on Communications Report and Recommendations*, Public Safety Docket No. 17-344, at 32 (Aug. 2018).

¹¹⁰ *See, e.g.*, Granite Opp. at 25 (suggesting that forbearance from Section 251(c)(4)’s avoided-cost resale requirement is not appropriate because it “protects competitors”); Comments of the Michigan Internet and Telecommunications Alliance, WC Docket No. 18-141, at 5 (filed Aug. 6, 2018) (arguing that following forbearance from enforcement of UNE obligations, “a significant amount of [signatory member] CLECs’ customers would have to return to the ILECs, due to the inability of the CLECs to continue to provide access to the network”) (“Michigan Internet & Telecom Alliance Comments”); Opening Comments of Raw Bandwidth Telecom Inc. et al., WC Docket No. 18-141, at 15 (filed Aug. 6, 2018) (“Raw Bandwidth Comments”) (“If dark fiber

model, or particular category of competitors. Rather, the Commission must consider the impact of its decisions on consumers, and on competition and deployment more broadly. As the Commission stated just last year, its “statutory duty is to protect efficient competition, not competitors.”¹¹¹

Various CLECs ask the Commission to shirk that duty, suggesting that its analysis should turn on whether their business models will remain viable. But the focus on consumers and competition – and not individual competitors – is a bedrock principle rooted in antitrust law and enshrined in decades of Supreme Court and other judicial precedent, as the D.C. Circuit reminded the Commission when it last admonished the agency for neglecting it: “the goal of antitrust law ... is to promote consumer welfare by protecting competition, not by protecting individual competitors.”¹¹²

unbundled dedicated transport UNE availability were removed, we’d very likely have to exit every one of [our] COs as there are no cost-effective transport options” otherwise available.); SnowCrest Opp. at 3 (“[Moving] existing UNE services over to commercial analogs ... is also likely to cause our company to close.”).

¹¹¹ *BDS Order*, 32 FCC Rcd at 3583 ¶ 290 (quoting *Bell Atlantic Mobile Systems, Inc. and NYNEX Mobile Communications Company*, Memorandum Opinion and Order, 12 FCC Rcd 22280, 22288 ¶ 16 (1997)); see also, e.g., *Access Charge Reform*, First Report and Order, 12 FCC Rcd 15982, 16060 ¶ 180 (1997) (“[O]ur rules should promote competition, not protect certain competitors.”).

¹¹² *Comcast Cable Communs. v. FCC*, 717 F.3d 982, 992 (D.C. Cir. 2013). The court’s opinion in that case offers a helpful snapshot of just how foundational the concept is in American jurisprudence. See *id.* (citing *NYNEX Corp. v. Discon, Inc.*, 525 U.S. 128, 135 (1998) (Sherman Act plaintiff “must allege and prove harm, not just to a single competitor, but to the competitive process, *i.e.*, to competition itself”); *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 458 (1993) (“The purpose of the [Sherman] Act is not to protect businesses from the working of the market; it is to protect the public from the failure of the market.”); *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 488 (1977) (“The antitrust laws ... were enacted for the protection of *competition*, not *competitors*.”) (internal quotation marks omitted); see also Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 755c, at 6 (“[E]ven competitively harmless vertical integration can injure rivals or vertically related firms, but such injuries are not the concern of the antitrust laws.”)).

The Commission properly applied this principle last year in the *BDS Order*, when it declined to extend its interim wholesale access rule for UNE-P replacement services.¹¹³ There, the Commission specifically rejected the very argument that some of the same CLECs advance here for retaining unbundling rules, making clear that it would not take action simply to “ensure that the specific wholesale inputs on which [CLECs] depend are available” on terms that CLECs want.¹¹⁴ Here, as in the BDS context, “neither Granite nor any other party has linked the challenges of serving some individual customer locations to competitive or customer impact.”¹¹⁵ Here, as there, claims that a specific CLEC’s costs would rise absent UNE access do not demonstrate that *customers* will lack competitive alternatives, and fail to consider the deployment-promoting effects of lifting outdated unbundling mandates. And here, as there, the Commission should decline to preserve a regime that will “further distort the market, raise costs associated with the transition to IP, [and] deter facilities investment.”¹¹⁶

B. That UNEs May Be Cheaper Than Alternative Inputs Is Not a Proper Basis for Indefinite Unbundling.

Some opponents concede the existence of competition¹¹⁷ but nevertheless argue there are no alternatives available at rates comparable to regulated *UNE* prices. This framing, however,

¹¹³ *BDS Order*, 32 FCC Rcd at 3581-85 ¶¶ 288-93.

¹¹⁴ *Id.* at 3582-83 ¶ 290.

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *See, e.g.*, Declaration of John Hoehne, COO, Access One, Inc., attached to INCOMPAS et al. Opp. as Attach. 3, at 5 ¶ 10 (admitting the ability of cable internet services to participate in the market, and attempting to counter this fact by alleging uncited and unsubstantiated quality-of-service and cost concerns); Wholesale Voice Line Coalition Opp. at 16 (arguing that VoIP and wireless voice offerings are not substitutes as justification for the idea that only UNEs – and not other technologies – count as “competition”); Michigan Internet & Telecom Alliance Comments

ignores the well-settled principle that, irrespective of relative costs, facilities should not be unbundled in competitive retail markets.¹¹⁸ In the absence of market power, UNE price regulation cannot be sustained; UNEs were meant to enable competition, *not* to provide competitors guaranteed profit margins via regulation. If a provider would be forced to discontinue service following the shift from UNE pricing to commercial pricing even as other providers thrive,¹¹⁹ this does not prove that UNEs are necessary to preserve competition, but rather speaks to that carrier's inefficiency. As the Commission has explained, there is no basis for supporting an inefficient provider's business model. Unbundling mandates can only survive if a "reasonably efficient competitor" could not survive without them.¹²⁰ In today's marketplace, reasonably efficient competitors are thriving without resort to UNEs. The public interest is not served by extending unbundling merely to prop up less efficient providers.

at 4 ("Obviously, competition has increased since the promulgation of the Telecommunications Act of 1996.").

¹¹⁸ *USTA I*, 290 F.3d at 422 (declaring it unlawful to mandate unbundling in "markets where there is no reasonable basis for thinking that competition is suffering"); *see also USTA II*, 359 F.3d at 574 ("In *USTA I* we expressed skepticism regarding whether there could be impairment in markets where the element in question – though not literally ubiquitous – is significantly deployed on a competitive basis."); *id.* at 575 (noting that the Commission must determine whether "competition is possible" without unbundling); *see also TRRO*, 20 FCC Rcd at 2645 ¶ 207 ("D.C. Circuit precedent instructs us to infer the absence of impairment [and therefore not unbundle] where the element in question – though not literally ubiquitous – is significantly deployed on a competitive basis.")).

¹¹⁹ *Cf.* Declaration of R. Matthew Kohly, Director, Socket Telecom, LLC, attached to INCOMPAS et al. Opp. as Attach. 15, ¶¶ 52-56.

¹²⁰ *TRRO*, 20 FCC Rcd at 2547-49 ¶¶ 24-28.

C. The Commission Should Reject Calls for Unbundling for the Provision of Broadband Internet Access Service.

Claims that unbundling is necessary to promote competition for the provision of broadband internet access service are red herrings,¹²¹ given that Section 251(c)(3) on its face only allows unbundling for the provision of *telecommunications services* and *not* for the provision of information services alone.¹²² Broadband internet access service is an integrated information service.¹²³ Even if the Act permitted unbundling for the provision of broadband internet access, it would not be permissible in light of the market’s competitiveness today.¹²⁴

¹²¹ See, e.g., INCOMPAS et al. Opp. at 3-4, 7-8 (describing CLECs’ use of UNEs “to improve their broadband offerings,” emphasizing the number of “wireline broadband provider[s]” in given markets, and claiming certain providers, absent “UNE transport or loops ... may have to cease providing broadband”); Public Knowledge et al. Opp. at 18 (“Sometimes a CLEC that relies on UNEs to provide broadband service is the only competition an ILEC faces.”); Sonic Opp. at 3 (“Sonic typically offers up to 50/15 Mbps using VDSL2 over a single loop or up to 100/30 Mbps over a bonded pair of loops.”); see also Raw Bandwidth Comments at 15 (“[Raw Bandwidth] primarily provides broadband access services to its parent company RBC to use in the provision of retail Internet access service to both residential and business customers within our service area”).

¹²² *TRO*, 18 FCC Rcd at 17072 ¶ 144 (“[A] requesting carrier *must use a network element to provide a qualifying service in order to obtain unbundled access to that network element*. Section 251(c)(3) requires that incumbent LECs must provide UNEs to requesting carriers ‘for the provision of a telecommunications service’ ... a reasonable interpretation of the Act, and an examination of its purposes, leads us to the conclusion that, when a UNE can be used to provide multiple services, Congress did not intend to require that UNEs be used exclusively to provide qualifying telecommunications services.” (emphasis added)); *TRRO*, 20 FCC Rcd at 2551 ¶ 31 (“In its review of the [*TRO*], the D.C. Circuit noted that, in a prior decision, it had endorsed the general approach of making UNES available only for the provision of ... telecommunications services[.]”); see also *USTA II*, 359 F.3d at 591 (“The Commission assumes, *as we believe it must*, that the reference to ‘services’ in § 251(d)(2) is meant to refer to the ‘telecommunications services’ covered by § 251(c)(3).”) (emphasis added).

¹²³ *Restoring Internet Freedom*, Declaratory Ruling, Report and Order, and Order, 33 FCC Rcd 311, 320-48 ¶¶ 26-57 (2018).

¹²⁴ See, e.g., *id.* at 363 ¶ 87 (describing how “competitive pressures [in the BIAS market] ... support internet openness”); *id.* at 382 ¶ 123 (“*Fixed ISPs Often Face Material Competitive Constraints*. ... [A]nalysis of broadband deployment data ... indicates fixed [BIAS] providers frequently face competitive pressures that mitigate their ability to exert market power.”); *id.* at

Here, as elsewhere, ILECs face stiff competition from cable, wireless, and other rivals, rendering unbundling for the provision of broadband internet access inappropriate and harmful.

V. THE COMMISSION SHOULD GRANT THE PETITION’S OTHER REQUESTS.

A. Indefinite Mandated Resale Pricing at Government-Prescribed Discounts Disregards Both Congressional Intent and Sound Policy.

There is no merit to the notion that discounted resale pricing under Section 251(c)(4) should be maintained on an ongoing basis, given that ILECs now hold a small minority share of the voice market.¹²⁵ As a preliminary matter, Section 251(b)(1) establishes a regulatory backstop to ensure incumbent carriers do not “impose unreasonable or discriminatory conditions or limitations on ... resale.” The distinction between Section 251(b)(1)’s emphasis on reasonableness and Section 251(c)(4)’s mandate as to resale at “wholesale rates”¹²⁶ underscores

382 ¶ 124 (“*ISP Competition in Supplying Internet Access to Households*. [For] fixed Internet access ... competition ... appears to be widespread[.]”); *id.* at 413 ¶ 170 n.628 (“[T]he voluminous record submitted in this proceeding persuades us that the interconnection market is competitive.”); *see also, e.g., Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2018 Broadband Deployment Report, 33 FCC Rcd 1660, 1681 ¶ 50 (2018) (noting with respect to “the deployment of fixed terrestrial broadband at speeds of 25 Mbps/3 Mbps” that “[a]s of year-end 2016, 92.3 percent of the overall population had such access, up from 89.6 percent in 2015 and 81.2 percent in 2012” – a gain of 11.1 percentage points in just four years).

¹²⁵ *See, e.g., MetTel Opp.* at 7 (claiming “there is no question that the avoided-cost resale requirement remains necessary to promote competition and ensure reasonable rates for traditional TDM service”); *Wholesale Voice Line Coalition Opp.* at 22 (claiming “the loss of resale will have a material adverse impact on businesses whose only means of access to competitive POTS service is via resale”); *Granite Opp.* at 25 (arguing that “[a]voided-cost resale is necessary to ensure reasonable prices and promote competition”); *INCOMPAS et al. Opp.* at 37 (claiming “Access to ... Discounted Resale Is Vital to Promoting Innovation and Deployment of Fiber Networks by Competitive and Incumbent Providers”).

¹²⁶ *Compare* 47 U.S.C. § 251(b)(1) (“Each local carrier has the ... duty not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of its telecommunications services.”), *with id.* § 251(c)(4) (“In addition to the duties contained in subsection (b), each incumbent local exchange carrier has the ... duty ... to offer for resale at

Congress's view that non-dominant providers could be expected and required to permit resale of their offerings on reasonable terms without being subjected to *ex ante* rate requirements of the type imposed via Section 251(c)(3).¹²⁷

Moreover, in the competitive marketplace, providers of all types will continue to face incentives to provide wholesale service on commercial terms, even absent unbundling mandates. ILECs continue to offer UNE-P replacement offerings more than 13 years after the *TRRO* eliminated unbundled local circuit switching. Wireless providers, similarly, continue to offer their services for resale more than 22 years after the Commission eliminated the wireless resale rule. In the *BDS Order*, the Commission properly rejected claims that "wholesale voice arrangements will not occur absent regulatory action."¹²⁸ So too here. Revenue from a resold line is better than no revenue. For this basic reason, wholesale offerings will remain available, on commercial terms, following forbearance.

Thus, parties suggesting that the elimination of Section 251(c)(4)'s resale requirement would also eliminate the prospect of resale at reasonable terms¹²⁹ misread the statute. ILECs will continue to offer commercial wholesale service, and will remain subject to Section 251(b)(1)'s reasonableness mandates. The only question is whether there remains any basis for treating ILECs differently from all other market participants. Given the Commission's recognition that

wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers.").

¹²⁷ Sections 201 and 202, of course, provide still further protection with regard to resold services. 47 U.S.C. §§ 201, 202.

¹²⁸ *BDS Order*, 32 FCC Rcd at 3583-84 ¶ 291.

¹²⁹ *Cf. Granite Opp.* at 25.

resale does not promote facilities-based competition,¹³⁰ there is not. The primary reason certain carriers argue for a continued wholesale access requirement is to provide them leverage in negotiating wholesale commercial agreements.¹³¹ The market demonstrates, however, that negotiated wholesale arrangements are feasible and functioning well without any resort to 251(c)(4).¹³² As one filer concedes, reliance on Section 251(c)(4) wholesale “is not a major strategy for CLECs anymore.”¹³³ And as the Commission explained in 2015 in rejecting similar claims by Granite as to the necessity of maintaining a related statutory backstop,¹³⁴ forbearance from a specific resale-related proviso does not strip parties of the “backstop [that is] the ability to bring a complaint under sections 201 and/or 202 ... a remedy that will remain available[.]”¹³⁵ For this reason, the Commission has rightfully been “skeptical” of claims that price increases would be likely in the absence of Section 251(c)(4) resale.¹³⁶

¹³⁰ See, e.g., *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, Order on Reconsideration and Second Further Notice of Proposed Rulemaking, 25 FCC Rcd 4181, 4199 ¶ 35 (2010) (describing how “resale ... would not serve our goals of promoting facilities-based competition”); cf. *Petitions for Rule Making Concerning Proposed Changes to the Commission’s Cellular Resale Policies*, Report and Order, 7 FCC Rcd 4006, 4007 ¶ 7 (1992) (“terminating the resale requirement” after two competitors were present “would promote ... competition, expedite expansion ... and spur [] deployment”).

¹³¹ Cf., e.g., Granite Opp. at 26 (“While the prices contained in Granite’s commercial wholesale agreements with ILECs are not set directly by application of avoided-cost rate regulation, the existence of the option of avoided-cost resale effectively limits the ability of any particular ILEC to demand higher rates under commercial wholesale agreements.”).

¹³² See, e.g., *supra* at 22.

¹³³ ICG CLEC Coalition Comments at 14. To this end, it is noteworthy that not one of INCOMPAS’s member-declarants even attempts to quantify Section 251(c)(4)’s role in the market. Cf. INCOMPAS et al. Opp., Attach. 3 through 16.

¹³⁴ See generally *2015 USTelecom Forbearance Order*, 31 FCC Rcd at 6174-78 ¶¶ 30-36.

¹³⁵ *Id.* at 6175 ¶ 31.

¹³⁶ *Id.* at 6176 ¶ 33.

B. USTelecom’s Remaining Forbearance Requests Are Effectively Uncontested.

Finally, very few commenters even discuss, let alone challenge, USTelecom’s requests for forbearance from (i) application of Section 272(e)(1) and related obligations relating to providers’ relationships with their affiliates (such as 47 C.F.R. § 64.1903),¹³⁷ and (ii) the redundant access obligation in Section 271’s checklist item 3.¹³⁸ INCOMPAS’s and Public Knowledge’s opposition to forbearance in connection with Section 272(e)(1) relies on their discredited views concerning current marketplace competition.¹³⁹ Once the outdated notion that RBOCs and ILECs still possess market power is rejected, the premise for these affiliate-relations rules evaporates. Also, the record – much of which concerns developments since the Commission last addressed this issue in 2015 – also supplies the supporting data that the Commission previously deemed lacking, enabling it to now grant the forbearance relief.¹⁴⁰

Similarly, the current record contains nothing that would preclude forbearance in connection with Section 271 checklist item 3. Even one forbearance skeptic concedes that this requirement is “obsolete and no longer meaningful.”¹⁴¹ Contrary to Public Knowledge’s claim that “nothing has occurred” since the Commission declined to forbear on this issue,¹⁴² the Commission recently found that ILEC pole ownership and thus ILEC “bargaining power vis-à-

¹³⁷ 47 U.S.C. § 272(e)(1); 47 C.F.R. § 64.1903.

¹³⁸ 47 U.S.C. § 271(c)(2)(B)(iii).

¹³⁹ INCOMPAS et al. Opp. at 75-77; Public Knowledge et al. Opp. at 24-28; *see also* Raw Bandwidth Comments at 30.

¹⁴⁰ *2015 USTelecom Forbearance Order*, 31 FCC Rcd at 6179-80 ¶ 40; *see generally* Pet. at 7-19 (presenting data regarding ILEC switched voice line loss, declines in UNE usage, and other issues from between 2015 and 2018).

¹⁴¹ Comments of CALTEL, WC Docket No. 18-141, at 39 (filed Aug. 6, 2018) (“CALTEL Comments”).

¹⁴² Public Knowledge et al. Opp. at 11; *see also* Michigan PSC Comments at 8.

vis utilities” have both declined¹⁴³ – just as USTelecom argued in support of its forbearance request.¹⁴⁴ On the basis of these “changed circumstances,” the Commission properly modified its rules to reflect that ILECs and other marketplace participants are “similarly situated” and that ILECs presumptively should not be subject to unique burdens.¹⁴⁵ For the same reasons, the Commission should relieve ILECs of the special burdens imposed by checklist item 3, rather than perpetuate asymmetric obligations among competitors.

¹⁴³ *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Third Report and Order and Declaratory Ruling, FCC 18-111, WC Docket No. 17-84, at ¶¶ 125-26 (rel. Aug. 3, 2018) (“*Wireline Deployment and OTMR Order*”). In this respect, Public Knowledge’s observation regarding the RBOCs’ increased use of enforcement remedies to secure pole access, *see* Public Knowledge et al. Opp. at 11-12, merely underscores their marketplace disadvantage and does not, as Public Knowledge appears to think, argue for the retention of additional enforcement remedies to be used *solely against RBOCs*.

¹⁴⁴ Pet. at 40-41.

¹⁴⁵ *Wireline Deployment and OTMR Order* ¶ 126. In light of the Commission’s findings, CALTEL’s inability to “fathom” the pole ownership data underlying USTelecom’s request, as well as its demand for more information on the subject, are beside the point. CALTEL Comments at 39-41.

CONCLUSION

For the reasons discussed above and in USTelecom’s Petition, the Commission should grant the requested forbearance relief.

Respectfully submitted,

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EXHIBIT A

Assessing the Impact of Forbearance from 251(c)(3) on Consumers, Capital Investment, and Jobs – Reply to Comments

September 2018

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REPORT DRAFT

Ed Naef is a Partner at CMA Strategy Consulting, and Micah Sachs is a Principal at CMA Strategy Consulting. Funding for this study was provided by USTelecom.

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1) Introduction and Summary

In May 2018, Economists Incorporated and CMA prepared a study quantifying the likely benefits from granting ILECs forbearance from Section 251(c)(3) of the Telecommunications Act of 1996 (“1996 Act”), which imposes requirements on ILECs to offer third-party service providers access to their unbundled network elements (“UNEs”) at a regulated price. Titled “Assessing the Impact of Forbearance from 251(c)3 on Consumers, Capital Investment, and Jobs,”¹ this study evaluated the potential impact of forbearance from 251(c)(3) obligations on the migration to next-generation voice and data services, and quantified the migration’s impact on jobs, GDP growth and consumer surplus. This report was submitted into the record as part of USTelecom’s petition to grant forbearance from 251(c)(3) regulation.

The following set of comments are intended to respond to analyses of subsequent commenters in this proceeding and provide additional insight supporting both explicit and implicit assumptions underpinning the report.

2) Asset-Light Service Providers Are Not a Major Source of Competition for ILECs.

Despite anecdotal reports from commenters that asset-light service providers that use UNEs provide needed competition to ILECs², asset-light service providers are not a significant source of competition in ILEC areas. In territories served by the four largest ILECs (AT&T, Verizon, CenturyLink and Frontier), cable companies provide facilities-based competition to 93% of homes. Outside of areas served by both the ILEC and cable, asset-light service providers cover only 7.2% of homes.

To determine the overlap between ILECs, cable providers and asset-light service providers, CMA used the latest Form 477 data to assign broadband providers to census blocks. We limited our analysis to the footprints of the four largest ILECs (AT&T, Verizon, CenturyLink and Frontier Communications), which were also the four ILECs submitting data for our original report, and

¹ Hal Singer, Kevin Caves, Ed Naef, Micah Sachs, “Assessing the Impact of Forbearance from 251(c)(3) on Consumers, Capital Investment, and Jobs,” (May 2018) (Appendix B to Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) to Accelerate Investment in Broadband and Next-Generation Networks, WC 18-141, (posted May 4, 2018)).

² David E.M. Sappington’s *Premature, Ubiquitous Forbearance Will Harm Consumers*, attached to *The Opposition of Incompas, FISPA, Midwest Association of Competitive Communications, and The Northwest Telecommunications Association*, WC Docket No. 18-141 (filed Aug. 6, 2018) (13).

which cover 83% of U.S. homes³. In our analysis, we looked at housing unit counts from the US Census⁴, which is a reasonable proxy for business locations.

While Form 477 data does not differentiate operators by type, CMA used a series of business rules to define operators by the following categories: ILEC, cable operator, asset-light service provider, facilities-based CLEC and muni/coop. The four top ILECs were easily identifiable by their holding company name⁵. Broadband providers were considered cable operators if they served 80% or more of their footprint with cable technology. CMA identified municipally owned networks and co-ops by the holding company names, which are usually self-explanatory⁶. The remaining names were overwhelmingly CLECs. To differentiate between facilities-based CLECs and asset-light service providers, CMA assumed that any remaining broadband provider that served 90% or more of its footprint with fiber technology was a facilities-based CLEC. The

³ We also limited our analysis to the top 200 providers by homes passed to make the list of 1,260 providers more manageable. The cut-off point in terms of homes passed was ~21,000. In addition, we added any providers that filed an opposition comment to WC 18-141 but didn't meet the criteria to be in the top 200 providers. Excluding the long tail of 1,050 providers eliminated providers covering 2.9% (two thirds of this 2.9% overlaps within cable co footprints) of the four ILECs' footprint. The smallest provider included was IdeaTek Systems Inc., covering 2,025 homes.

⁴ United States Census Bureau (2015). Retrieved from https://www.census.gov/research/data/planning_database/2015/.

⁵ We also identified any other ILECs whose footprints overlap with AT&T, Verizon, CenturyLink and Frontier, as operators provide data on their full footprint as part of Form 477, not just their incumbent territories.

⁶ We also consulted a list from the Community Broadband Networks Initiative of the Institute for Local Self-Reliance to identify any municipal networks or co-ops that were not obvious. "Municipal FTTH Networks," <https://muninetworks.org/content/municipal-ftth-networks>. Accessed Aug. 28, 2018.

remaining providers were assumed to be asset-light service providers⁷. The full list of each provider by category is included in Appendix A.

As can be seen in the figure below, cable operators provide competition in the vast majority of ILECs' footprints. Within cable overlap areas, facilities-based CLECs cover 12.0% of homes and asset-light service providers cover 17.6%. Outside of cable overlap areas, asset-light service providers do little to add to overall competition, as they cover only 7.2% of the roughly eight million homes not served by cable.

⁷ We felt the 90% bar was sufficiently high to include only those providers who rely almost exclusively on fiber and do not rely on UNEs (or Special Access) in any meaningful way. Checking the top names under each category, this segmentation makes sense (e.g., the largest asset-light service providers based on Form 477 footprint are Global Capacity (now GTT), Level 3 and Earthlink; the largest facilities-based CLECs are Lighttower (now Crown Castle), Crown Castle and Unite Private Networks). A handful of providers (6) did not easily fit into either facilities-based CLECs or asset-light service providers due to a preponderance of both fiber and copper in their footprint so we looked at each one and made judgment calls on what category they should be included in. The largest one of these judgment calls was Harbor Communications, covering 623,058 housing units, or 0.56% of total housing units in the area under study. We excluded only one provider (Monmouth Internet Corporation) from the analysis because they appear to over-report their fiber footprint (more than three million homes passed), and including them as a facilities-based CLEC or an asset-light service provider would have skewed the results. Form 477 is not the perfect mechanism for measuring the footprints of providers of business data services, as the Form 477 reporting requirement only applies to facilities-based broadband providers. So, some asset-light service providers who have not built any network (e.g., Granite Telecommunications) seem not to report any data to the FCC while some facilities-based providers who mostly provide services other than broadband (e.g., Zayo, Cogent) seem to under-report their census blocks covered. There is also likely some over-reporting from some providers (e.g., Monmouth). Imperfect as it seems to be, we feel that analyzing Form 477 data in aggregate provides a decent proxy for the extent of each type of providers' coverage and also allows us to respond directly to the analytical framework used by several critics of the study.

Figure 1: Asset-Light Service Provider Coverage within Verizon, AT&T, CenturyLink, and Frontier Service Areas

| | % of Subtotal | Housing Units Covered |
|---------------------------------------|----------------------|------------------------------|
| W/in CBs Served by Cable Co | | 104,210,152 |
| Cable Co | 100.0% | 104,210,152 |
| ILEC | 99.9% | 104,087,641 |
| Facilities-Based CLEC | 12.0% | 12,469,967 |
| Asset-Light Service Provider | 17.6% | 18,320,274 |
| Muni/Coop | 0.9% | 916,403 |
| Outside CBs Served by Cable Co | | 7,897,940 |
| Cable Co | 0.0% | 0 |
| ILEC | 99.6% | 7,868,409 |
| Facilities-Based CLEC | 4.1% | 324,529 |
| Asset-Light Service Provider | 7.2% | 565,824 |
| Muni/Coop | 1.1% | 84,259 |
| Total Big Four ILEC Footprint | | 112,108,092 |
| Cable Co | 93.0% | 104,210,152 |
| ILEC | 99.9% | 111,956,050 |
| Facilities-Based CLEC | 11.4% | 12,794,496 |
| Asset-Light Service Provider | 16.8% | 18,886,098 |
| Muni/Coop | 0.9% | 1,000,662 |

3) **UNEs and Asset-Light Service Providers Largely Serve Urban and Suburban Areas, not Rural Areas.**

Several commentators have argued that UNEs bring coverage and competition to underserved rural areas.⁸ The great majority of UNEs, however, are purchased in urban and suburban areas.

UNE prices are set by state utility regulatory bodies, and most states segment the state into different density zones, to better reflect the higher costs associated with serving homes and businesses in lower-density areas. Most states have three density zones, either implicitly or

⁸ *The Opposition of Incompas, FISPA, Midwest Association of Competitive Communications, and The Northwest Telecommunications Association*, WC Docket No. 18-141 (filed Aug. 6, 2018), argues that “competitive providers use UNEs in many underserved rural and urban areas that have no other competitive alternative” (39). The *Electronic Frontier Foundation’s Comments Regarding USTelecom Petition for Forbearance*, WC Docket No. 18-141 (filed Aug. 6, 2018), asserts that freeing the ILECs “from access requirements will not promote investment in or the deployment of advanced network infrastructure in currently underserved and unserved areas” (14).

explicitly associated with urban, suburban and rural areas⁹. UNE data provided by two of the four largest ILECs show that 91.8% of UNEs are provisioned in the urban and suburban areas and only 7.0% are in rural areas.¹⁰

Figure 2: Confidential ILEC UNE Data, by UNE Rate Zone

| UNE Rate Zone | Description | % of Sampled UNEs |
|----------------------|--------------------|--------------------------|
| 1 | Urban | 58.6% |
| 2 | Suburban | 33.1% |
| 3 | Rural | 6.3% |
| 4 | Sparse | 0.7% |
| 0 | State-wide | 1.3% |

Looking at asset-light service providers’ overall footprints, their coverage of rural areas is limited. Within the top four ILECs’ footprint, asset-light service providers only cover 6% (939,000) of rural homes and businesses, which is far less than cable operators (65%), and barely more than facilities-based CLECs (5%, 835,000). The vast majority (95%) of asset-light service providers’ footprint is in urban and suburban areas.

Figure 3: National Coverage within Verizon, AT&T, CenturyLink, and Frontier Service Areas, by Morphology (Housing Units and Businesses shown in 000s)¹¹

| | Total HU's | Asset-Light | | Cable Co | | Facilities-based CLEC | | Muni/Coop | |
|--------------|-------------------|--------------------|--------------------|-----------------|--------------------|------------------------------|--------------------|------------------|--------------------|
| | | HU's | % of Morph. | HU's | % of Morph. | HU's | % of Morph. | HU's | % of Morph. |
| Urban | 31,051 | 7,791 | 25% | 30,748 | 99% | 4,895 | 16% | 103 | 0% |
| Suburban | 64,343 | 10,156 | 16% | 62,662 | 97% | 7,064 | 11% | 721 | 1% |
| Rural | 16,714 | 939 | 6% | 10,800 | 65% | 835 | 5% | 177 | 1% |
| Total | 112,108 | 18,886 | 17% | 104,210 | 93% | 12,794 | 11% | 1,001 | 1% |

⁹ In some instances, CLECs may negotiate for a contract with a statewide rate for each element instead of zone density dependent rates. These elements are most closely aligned with the pricing of suburban zones and only make up 1.3% of UNEs.

¹⁰ USTelecom – The Broadband Association, Confidential Document, WC 18-141 (filed June 5, 2018). Only two of the four ILECs provided density zone data.

¹¹ FCC Form 477 Data, December 2016 Status V1. Analysis by CMA Strategy Consulting. Percentages based on 112,108,092 housing units located within Verizon, AT&T, CenturyLink, and Frontier service areas. Morphology is based on the census tract level. Urban areas are those with greater than 2,213 housing units per square mile, suburban areas are those between 102 and 2,213 housing units per square mile, and rural areas are those with less than 102 housing units per square mile. Cut-off density points drawn from Jed Kolko, “How Suburban Are Big American Cities?”, May 21, 2015, <https://fivethirtyeight.com/features/how-suburban-are-big-american-cities/>, accessed Aug. 30, 2018. HU = Housing Units.

4) Service Providers Who Leverage UNEs Have Not Invested Significantly in the Construction of Facilities-Based Networks.

Many commentators argue that asset-light service providers use UNEs as “stepping stones”¹² to facilities-based networks and that they provide more fiber in their footprints than other operator types¹³. However, support for these claims is largely focused on three providers (Mammoth, Socket, and Sonic) and does not look at the entire national market. Nationwide, asset-light service providers have not built out much fiber relative to other provider types¹⁴.

Asset-light service providers do not rank among any of the top 10 providers in the U.S. in terms of fiber-lit buildings¹⁵, and no more than three of the next 12 largest providers are asset-light service providers either¹⁶.

Figure 4: 2017 U.S. Vertical Systems Group Fiber Lit Buildings Leaderboard

| Provider | Rank | Provider Type |
|--------------------|------|-----------------------|
| AT&T | 1 | ILEC |
| Verizon | 2 | ILEC |
| Charter | 3 | Cable Co |
| CenturyLink | 4 | ILEC |
| Comcast | 5 | Cable Co |
| Cox | 6 | Cable Co |
| Crown Castle Fiber | 7 | Facilities-Based CLEC |
| Zayo | 8 | Facilities-Based CLEC |
| Frontier | 9 | ILEC |
| Altice USA | 10 | Cable Co |

¹² Sappington (15). The *Declaration of William P. Zarakas*, attached to *The Opposition of Incompas, FISPA, Midwest Association of Competitive Communications, and The Northwest Telecommunications Association*, WC Docket No. 18-141 (filed Aug. 6, 2018), asserts that Asset-Light Service Providers use UNEs as a stepping stone to build out their own fiber networks; however, it bases the claim almost entirely on the evaluation of Sonic. Incompas (42).

¹³ Zarakas (3-4).

¹⁴ Jerry A. Hausman and J. Gregory Sidak looked at five markets that had initiated unbundling (U.S., United Kingdom, New Zealand, Canada and Germany) and found no evidence that unbundling regulations accelerated facilities-based investment by competitive providers due to UNEs providing a “stepping stone” to building out a network. Hausman & Sidak, “Did Mandatory Unbundling Achieve Its Purpose? Empirical Evidence from Five Countries,” *Journal of Competition Law and Economics* 1(1), 2005 (241).

¹⁵ The top 10 all have 10,000 or more lit buildings. Vertical Systems Group 2017 U.S. Fiber Lit Buildings Leaderboard, Available at <https://www.verticalsystems.com/2018/04/26/2017-fiber-lit-leaderboard/>. Accessed Aug. 30, 2018.

¹⁶ The next 12, which Vertical System Groups calls the “Challenger Tier,” have between 2,000 and 9,999 lit buildings. They are Cincinnati Bell, Cleareon, Cogent, Consolidated Communications, FiberLight, FirstLight, IFN, Logix Fiber Networks, Lumos Networks, Unite Private Networks, Uniti Fiber and Windstream. Only Logix, Lumos and Windstream could plausibly be considered asset-light service providers. Ibid.

Looking at Form 477 data, asset-light service provider fiber coverage is limited. They cover 6% of the combined territories of AT&T, Verizon, CenturyLink and Frontier with fiber, which puts them behind ILECs (24%) and facilities-based CLECs (11%) in terms of fiber buildout.¹⁷ If one excludes Level 3 and XO Communications from the asset-light service provider category due to their acquisition by ILECs, the asset-light service provider fiber footprint shrinks to 5%, or 5.4 million housing units.

Figure 5: National Fiber Coverage within Verizon, AT&T, CenturyLink, and Frontier Service Areas

| | Fiber Coverage | Housing Units Covered w/ Fiber |
|------------------------------|-----------------------|---------------------------------------|
| ILEC | 24% | 26,834,919 |
| Cable Co | 6% | 6,634,402 |
| Facilities-Based CLEC | 11% | 12,009,150 |
| Asset-Light Service Provider | 6% | 7,272,699 |
| Other | 1% | 789,369 |
| Total | 39% | 43,235,508 |

Facilities-based CLECs provide a contrast in terms of fiber coverage and strategy, demonstrating that UNEs are not a necessary precursor to building out extensive fiber networks. With almost no usage of UNEs, facilities-based CLECs have built out nearly twice as much fiber as asset-light service providers. Facilities-based CLECs have pursued a number of financing and deployment strategies that have not required UNEs.

For facilities-based CLECs focusing on the enterprise and wholesale markets, the typical expansion strategy has been to sign up a large anchor customer like a group of cell towers¹⁸, a school district¹⁹ or a hospital chain²⁰, and build a fiber network to the anchor that also passes other potential retail or wholesale customers. The business case for signing up anchor customers is often contingent upon increasing lease-up on the new section of network they’ve

¹⁷ FCC Form 477 Data, December 2016 Status V1. Analysis by CMA Strategy Consulting. Percentages based on 112,108,092 housing units located within Verizon, AT&T, CenturyLink, and Frontier service areas.

¹⁸ See “Zayo Leverages Growing Fiber-to-the-Tower Footprint,” Aug. 18, 2015, <https://www.zayo.com/news/zayo-leverages-growing-fiber-to-the-tower-footprint-2/>, accessed Aug. 30, 2018.

¹⁹ See Sean Buckley, “Fatbeam wins 11 new E-Rate contracts, builds 200 fiber miles to address wireless backhaul needs,” Aug. 12, 2016, <https://www.fiercetelecom.com/telecom/fatbeam-wins-11-new-e-rate-contracts-builds-200-fiber-miles-to-address-wireless-backhaul>, accessed Aug. 30, 2018.

²⁰ See “Lumos Networks Launches 110-Mile Metro Ethernet Fiber Network in Richmond, Virginia,” Oct. 31, 2013, <https://www.lumosnetworks.com/newsroom/press-releases/20131031/lumos-networks-launches-110-mile-metro-ethernet-fiber-network-0>, accessed Aug. 30, 2018.

built, and providers will often accept lower returns on the anchor customer to provide funding for new market entry²¹.

Residentially focused facilities-based CLECs have used other models. One model that has gained traction in recent years is Google Fiber's approach of negotiating access to municipal infrastructure²² with a local municipality and signing up neighborhoods to target network build-out to areas where penetration will likely be higher and quicker²³.

5) As UNEs Have Declined, Cable Has Grown, with Minimal Impact on Market Prices.

Much of the advocacy for retaining current UNE regulations rests on the claim that cable providers do not provide a sufficient level of competition to ILECs in the business market.²⁴ Particularly, claims have been made that relying on duopolistic competition is not sufficient to create consumer choice and price competition.²⁵ By all measures, however, cable providers have competed to win business away from ILECs and CLECs. Cable providers have more than doubled their share of the US business telecom services market over the last five years. Even as UNEs have declined, prices in the business telecoms market have remained flat in real terms.

Cable operators have aggressively targeted the business services market as a key growth engine, given their already dominant share of the residential video and broadband markets.²⁶ Through widespread marketing and competitive pricing and packages, they more than doubled their revenues and share of the business services market from 2011 to 2016. During that five-

²¹ See Joan Engebretson, "CFO: Anchor Tenant Fiber Builds Yield Strong Growth for Uniti Group", May 23, 2018, <https://www.telecompetitor.com/cfo-anchor-tenant-fiber-builds-yield-strong-growth-for-uniti-group/>, accessed Aug. 30, 2018.

²² See Brian Fung, "Here's why big cities aren't getting Google Fiber anytime soon," Feb. 20, 2014, https://www.washingtonpost.com/news/the-switch/wp/2014/02/20/heres-why-big-cities-arent-getting-google-fiber-anytime-soon/?noredirect=on&utm_term=.d4a257f4e092, accessed Aug. 31, 2018.

²³ See Sarah Kessler, "Google Fiberhoods: Better than Tupperware Parties," Aug. 1, 2012, <https://www.fastcompany.com/1844287/google-fiberhoods-better-tupperware-parties>, accessed Aug. 31, 2018.

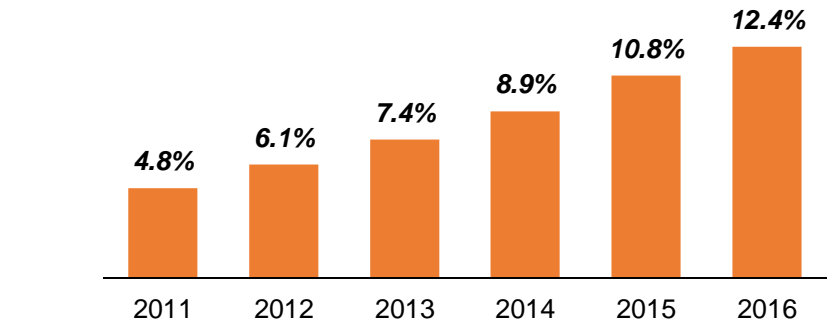
²⁴ Sappington argues that "Reliance on Duopoly Competition is Inappropriate" (9). Electronic Frontier argues that "Congress wrote the 1996 Telecommunications Act with the express goal of injecting competition and that work remains incomplete" (7).

²⁵ Sappington claims that "increased industry concentration leads to substantial price increases whenever there are fewer than five competitors" (10)

²⁶ Brian Roberts in Comcast's 2017 4Q Earnings Release stated that: "[Comcast is] still in the early stages of bringing our superior products to the large addressable markets in mid-sized and enterprise customers," and Michael Cavanagh stated: "all business services segments -- small, medium-sized, and now enterprise -- are focused on connectivity, and have substantial room for future growth," available at <https://www.cmcsa.com/static-files/80bfd80b-e421-43d8-b28b-1be5f1b871d8>. Thomas Rutledge in Charter's Q2 2018 Earnings Call commented the following on Charter's SMB segment: "we're growing very rapidly and creating increases in market share, which we expect to continue," available at <https://seekingalpha.com/article/4192593-charter-communications-chtr-q2-2018-results-earnings-call-transcript?part=single>.

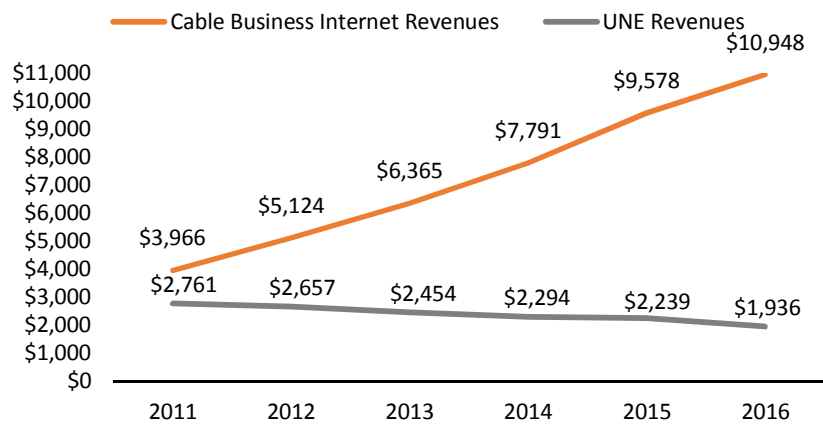
year period, their revenues grew from \$4.0B to \$10.9B, and their share increased from 4.8% to 12.4%.

Figure 6: Cable Business Services Market Share, 2011-2016²⁷



The fortunes of cable stand in contrast to the fortunes of UNE-based services, which have been declining almost as fast as cable services have grown.

Figure 7: Cable Business Services Revenues vs. Estimated UNE Revenues, '000s, 2011-2016²⁸

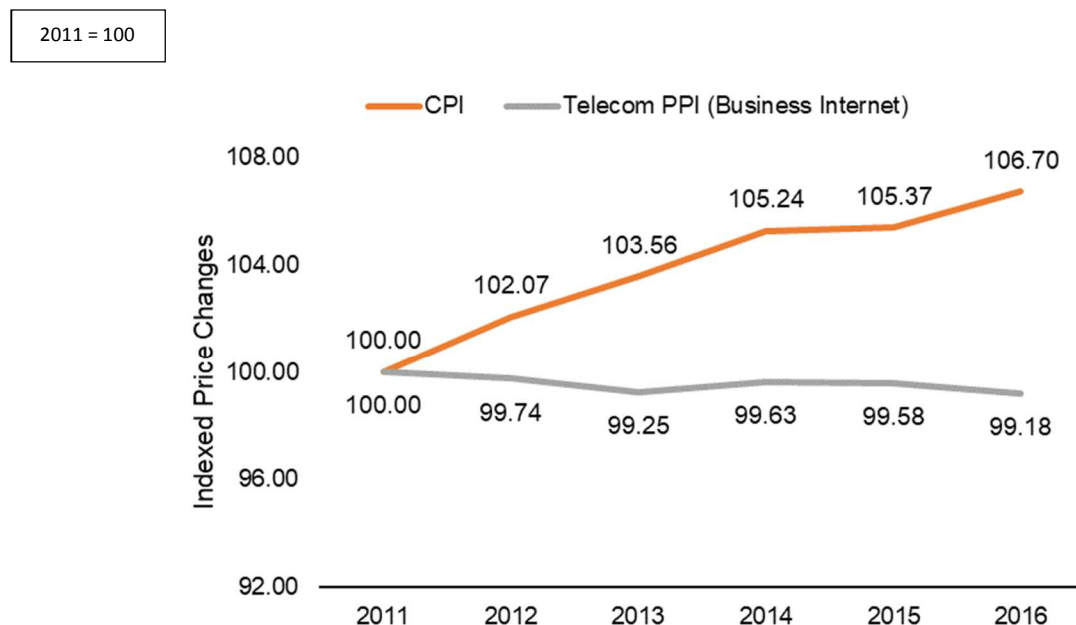


²⁷ Using the revenues of AT&T (wireline business segment revenue), Verizon (global enterprise wireline revenue, global wholesale wireline revenue, SMB wireline revenue), CenturyLink (business segment revenue), Level3 (North America enterprise revenue), TW Telecom Enterprise Revenues included in 2011-2013 figures], Windstream (Enterprise Segment Services Revenues), Comcast (business services revenue), TWC (business services revenue), Frontier (business customers' revenue), Charter (total commercial revenue), and Zayo (Cloud and Connectivity Revenues and Enterprise Networks US Revenues). Available at <https://www.sec.gov>

²⁸ Because CMA does not have access to historical UNE ARPU, UNE revenues for 2011 to 2015 were estimated assuming CMA's estimated 2016 annual ARPU of \$912 (\$1.936 billion/2.123 million lines) has been unchanged since 2011. We then multiplied the assumed ARPU by FCC's reported UNE counts for 2011 to 2015. Data on UNE counts from Nationwide Subscriptions documents on "Voice Telephone Services Report," <https://www.fcc.gov/voice-telephone-services-report>, and Local Telephone Competition Reports at <https://www.fcc.gov/general/local-telephone-competition-reports>.

During this period, business internet prices have slightly declined in absolute terms while the consumer price index (CPI) has risen nearly 7%. The Bureau of Labor Services doesn't track WAN (wide area network) data services like Ethernet but it is widely agreed that prices per bit are declining²⁹.

Figure 8: Consumer Price Index vs. Business Internet Producer Price Indices, 2011-2016³⁰



6) Asset-Light Service Providers Rely More on Special Access Circuits than UNEs.

A number of commenters³¹ note that there are not adequate replacements in the marketplace for UNEs for both wholesale customers (asset-light service providers and other service providers) and retail end-customers (businesses).

On the wholesale side, asset-light service providers can purchase DS1s and DS3s from ILECs, and the component parts of EELs from ILECs. Some ILECs also offer wholesale versions of DS0s

²⁹ Rick Malone, principal at Vertical Systems Group, a fiber industry research group, recently said about the Ethernet market, "Most providers experienced acute price compression across all data rates, partially offsetting the revenue typically generated from higher-speed services." See "Mid-Year Carrier Ethernet Leaderboard," <https://www.verticalsystems.com/2018/08/22/mid-2018-us-ethernet-leaderboard/>, accessed Sept. 3, 2018. In a declaration as part of the Business Data Services proceeding, Julie Brown, Director of Wholesale Pricing, Marketing and Training in CenturyLink's Wholesale Markets Group, and Glen Hannum, Director of Retail Pricing and Offer Management at CenturyLink, stated in 2016, "Over the past several years, CenturyLink has witnessed tremendous pricing compression for Ethernet services sold to both wholesale and retail customers." See CenturyLink, Comments Re: Docket 16-143, Exhibit 2 (2).

³⁰ Bureau of Labor Statistics, Producer Price Index by Industry: Wired Telecommunications Carriers: Business Internet Access Services, 2011-2018, retrieved from <https://data.bls.gov/pdq/SurveyOutputServlet>.

³¹ Sappington (5-6). Incompas (30-33).

in areas where otherwise not available³². In any case, asset-light providers today are relying far more on Special Access circuits than UNE-based circuits. Our report estimated that UNEs today are associated with \$1.9 billion in end-customer revenue³³, while the combined Special Access and UNE market is around \$9.7 billion³⁴. Put another way, nearly 80% of revenue from leased copper circuits is derived from Special Access circuits, not UNEs.

Dark fiber UNEs are also extremely rare, despite anecdotal testimony about their importance to select CLECs³⁵. Recently submitted data from USTelecom on behalf of Verizon, AT&T, CenturyLink and Frontier show that other service providers are currently leasing about 5,900 dark fiber circuits³⁶ from these four ILECs, with the vast majority being used for transport between central offices. Dark fiber UNEs therefore account for less than 0.3% of all UNEs currently in use³⁷. CMA estimates these dark fiber circuits account for 20,000 to 60,000 fiber miles³⁸, which is a small fraction of total fiber miles in the U.S. Zayo reports 11.8 million fiber miles³⁹ while Uniti has 1.3 million fiber miles.⁴⁰ ILECs also offer a number of substitutes for transport between central offices, including DS1s, DS3s and Ethernet transport links. There are also numerous dark fiber providers in the U.S. Of the top 15 facilities-based CLECs from Form 477 that serve the business market, 67% offer dark fiber.⁴¹

³² CenturyLink offers a DS0 alternative in the Omaha wire center, where all of its unbundling obligations have been eliminated. Verizon offers Special Access 64k voice grade service as a substitute for DS0 analog and Digital Data Service (DDS) 64 kbps circuits as a replacement for DS0 digital. For customers looking to offer Ethernet to their end customers, Verizon offers DS1 (for the customer to provide Ethernet over) or Ethernet.

³³ Singer et al. (15).

³⁴ Marc Rysman's analysis of the Business Data Services proceedings estimates that competitive providers (i.e., everyone but ILECs in-footprint) captured \$9.7 billion in revenues from circuit-based services in 2013. Since the BDS proceeding did not segment out UNEs from Special Access circuits, we assume that the \$9.7 billion is the combined UNE and Special Access market, with a small amount of revenue from non-ILECs who have their own copper facilities. Mark Rysman, "Empirics of Business Data Services," White Paper (April 2016) (Appendix B to Business Data Services in an Internet Protocol Environment et al., Tariff Investigation Order and Further Notice of Proposed Rulemaking, WC Docket Nos. 16-143, 15-247, 05-25, RM 10593, FCC 16-54 (rel. May 2, 2016) (BDS FNPRM)) (3).

³⁵ Incompas (5). *Declaration of Douglas Denney*, Attachment 4 to *Incompas*, (9). *Declaration of Jeff Buckingham*, Attachment 6 to *Incompas* (10).

³⁶ USTelecom – The Broadband Association, Highly Confidential Document, WC 18-141 (filed Sep. 5, 2018).

³⁷ $5,900/2,100,000 = 0.28\%$.

³⁸ Average fiber mile distances for reporting ILECs ranged between 3.5 miles and nine miles. Even if the average overall is closer to 10 miles, total fiber strand miles would still only be 59,000. $5,900 \text{ dark fiber circuits} \times 10 \text{ fiber miles/circuit} = 59,000$.

³⁹ See "Dark Fiber," <https://www.zayo.com/services/dark-fiber/>. Accessed Aug. 28, 2018.

⁴⁰ See "Fiber," <https://uniti.com/fiber/>. Accessed Aug. 28, 2018.

⁴¹ Ranking based on total served housing units based on form 477 data. Information on Dark Fiber services were gathered from firm websites: Crown Castle, América Móvil, Unite Private Networks, Telapex, Metronet, Southern Light, Everstream, Seimitsu, Zayo Group, Visicom Group, Vast Networks, Cogent Communications, Northland Communications, Critical Hub Networks.

On the retail side, some commenters have raised questions about why end-customers of UNE-based services have not switched to next-generation services if suitable and often cheaper substitutes exist⁴². By definition, end-customers using UNEs are the “long tail” of businesses who are not proactively switching to next-generation services. The expectation of communications services for most businesses is that “they just work”; So long as business voice and data needs do not exceed the capacity of the legacy UNE-based products they are using, there is not a strong incentive to seek out better-performing or cheaper alternatives⁴³. In most businesses, the IT department is responsible for managing the communications budget, and optimizing communications spend is typically lower priority than ensuring network uptime and performance, and providing the appropriate hardware and software for the business’s needs. There are also costs associated with switching providers, including the risk of service interruptions, installation costs and the need for new customer premise equipment⁴⁴. This customer inertia is evident in low churn benchmarks across the industry. Asset-light service providers report quarterly revenue churn of approximately 1.7%.⁴⁵

7) The Distinction Between Local and National Markets is Less Relevant for Next-Gen Services.

Multiple commenters have critiqued our study for not being sufficiently geographically granular⁴⁶ and treating the United States as a single market when it comes to pricing of telecom services⁴⁷. While legacy services may show significant variability in pricing between markets,

⁴² Sappington (18-10).

⁴³ See Tom Nolle, “Is Inertia the Biggest Factor in Tech Innovation?”, Aug. 23, 2018, <https://www.nojitter.com/post/240173788/is-inertia-the-biggest-factor-in-tech-innovation>, accessed Sept. 5, 2018.

⁴⁴ Our report did not quantify switching costs, which vary greatly by customer and service. Additionally, because we modeled incremental effects only, and the model is in steady-state nominal dollars, the switching costs for many customers are irrelevant because they would have been incurred eventually anyway in the status quo scenario.

⁴⁵ SEC Filings, Cbeyond 2013, *available at* www.last10k.com/sec-filings/cbey; Broadview Networks Holdings, Inc. 10-K SEC Filing 2013, *available at* <http://quote.morningstar.com/stock-filing/Annual-Report/2016/12/31/t.aspx?t=:BVWN&ft=10-K&d=759e670b545376eda3bb75f8a3dc6b00>

⁴⁶ Sappington states that “the report fails to address to adequately assess the state of competition in relevant product and geographic markets” (19). The *Opposition of Public Knowledge, The Benton Foundation, Next Century Cities, New America’s Open Technology Institute, and the National Hispanic Media Coalition*, WC Docket No. 18-141 (filed Aug. 6, 2018), argues that “nothing in USTelecom’s petition shows that every market in the United States is competitive” (9) and that “nothing in the USTelecom Petition demonstrates ‘robust facilities-based competition’ in every geographic market in the United States” (15).

⁴⁷ “In summary, the nature and intensity of competition in the provision of voice data services varies widely across geographic regions of the United States.” Sappington (3).

the pricing for many next-generation services is national. This buttresses the conclusions of the FCC’s BDS Order⁴⁸, which concluded that the market for high-capacity services is competitive.

To assess the level of pricing variability for next-generation broadband services⁴⁹, which can replace UNEs where they are used for Internet access, CMA looked at the four largest cable providers in the U.S. and looked at 10-22 markets for each. These providers cover 79% of U.S. housing units, and a similar share of businesses.

Figure 9: Overview of Cable Providers and Markets Analyzed⁵⁰

| Provider | Housing Units Covered | Percentage of National Housing Units Covered | Broadband Subscribers | Number of Markets Analyzed | Markets Analyzed |
|--------------|-----------------------|--|-----------------------|----------------------------|--|
| Comcast | 47,564,333 | 35% | 26,509,000 | 22 | Albuquerque, Atlanta, Boston, Charleston, Chicago, DC, Denver, Detroit, Las Vegas, Little Rock, Miami, Minneapolis, Nashville, Philadelphia, Pittsburgh, Portland, Sacramento, Salt Lake City, San Jose, Seattle, San Francisco, Spokane |
| Charter | 43,282,778 | 32% | 24,622,000 | 13 | Austin, Boseman, Buffalo, Cheyenne, Columbus, Dallas, El Paso, Kansas City, Los Angeles, Montgomery, New York City, Reno, San Antonio |
| Cox | 8,898,462 | 7% | 5,020,000 | 10 | Las Vegas, New Orleans, Norfolk, Oklahoma City, Omaha, Parma, Phoenix, Providence, Santa Barbara, Tulsa |
| Altice | 7,714,534 | 6% | 4,082,100 | 10 | Alexandria, Amarillo, Bridgeport, Charleston (WV), Eureka, Flagstaff, Greenville, Jonesboro, Newark, Parkersburg |
| Total | 106,200,981 | 79% | 60,233,100 | 55 | |

⁴⁸ *Business Data Services in an Internet Protocol Environment et al., Report and Order*, 32 FCC Rcd 3459, (2017) (“BDS Order”), para. 87-98.

⁴⁹ Ideally this analysis would be conducted on actual ARPUs for like-for-like services, but that data is not public.

⁵⁰ Housing units covered drawn from cross-referencing US Census and Form 477 data at the census block level. Broadband subscribers from Leichtman Research Group, “455,000 Added Broadband in 2Q 2018,” <https://www.leichtmanresearch.com/455000-added-broadband-in-2q-2018/>, Aug. 14, 2018, accessed Aug. 30, 2018.

For each market, CMA checked 5-10 addresses to determine whether there was any variance in business broadband pricing within markets and between markets, and documented permanent—not promotional—pricing only. CMA found that there was no variance in pricing within markets for any of the four providers assessed, belying the criticism that building-level competitive analysis is necessary.⁵¹ Moreover, there is very little variation in pricing for like-for-like services between markets either, as the two largest operators, Comcast and Charter, offer nearly uniform national pricing.

Comcast offers the following download speeds to business customers in all of the analyzed markets: 25Mbps, 75Mbps, 150Mbps, 300Mbps, and 1000Mbps. For the four lowest speed plans, pricing is the same across all of the 22 analyzed markets. Comcast’s 1 Gig plans were split between a \$499.95 and \$299.95 price point with 15 markets at the former rate and five markets at the latter rate.

Figure 10: Comcast Business-Internet Plans and Pricing⁵²

| | Number of Markets | 25 | 75 | 150 | 300 | 1000 | Markets |
|--------|-------------------|---------|---------|----------|----------|----------|--|
| Menu 1 | 15 | \$69.95 | \$99.95 | \$139.95 | \$199.95 | \$499.95 | Albuquerque, Boston, DC, Denver, Las Vegas, Little Rock, Philadelphia, Pittsburgh, Portland, Sacramento, Salt Lake City, San Jose, Seattle, San Francisco, Spokane |
| Menu 2 | 5 | \$69.95 | \$99.95 | \$139.95 | \$199.95 | \$299.95 | Atlanta, Chicago, Detroit, Miami, Nashville |

Charter offers the following download speeds: 100Mbps, 200Mbps, 400Mbps, and 940Mbps. While Charter did not offer each of the plans in every market analyzed, the pricing was the same across all markets that had a given plan available.

⁵¹ “The relevant geographic market when assessing the extent to which competition can protect a local customer can be as small as the customer’s premise.” Sappington (4).

⁵² Comcast Business Internet website, available at <https://business.comcast.com/internet/business-internet>, Accessed Aug. 21, 2018.

Figure 11: Charter Business-Internet Plans and Pricing⁵³

| | Number of Markets | 100 | 200 | 300 | 400 | 940 | Markets |
|--------|-------------------|---------|---------|----------|----------|----------|--|
| Menu 1 | 4 | | \$59.99 | | \$109.99 | \$249.99 | Austin, Dallas, New York City, San Antonio |
| Menu 2 | 4 | \$59.99 | | | \$109.99 | \$249.99 | Buffalo, El Paso, Kansas City, Los Angeles |
| Menu 3 | 4 | \$59.99 | | | \$109.99 | | Boseman, Cheyenne, Montgomery, Reno |
| Menu 4 | 1 | \$59.99 | | \$109.99 | | | Columbus |

Seven of the 10 Altice markets offer the same set of speeds and prices. Two other markets shared the same speed-pricing combinations, and one market (Eureka, CA) had a unique set of options.

Figure 12: Altice Business-Internet Plans and Pricing⁵⁴

| | Number of Markets | 50 | 100 | 150 | 250 | 300 | 350 | 500 | 1000 | Markets |
|--------|-------------------|---------|----------|----------|----------|----------|----------|----------|----------|---|
| Menu 1 | 7 | | \$84.95 | | | \$139.95 | | \$199.95 | \$399.95 | Alexandria, Amarillo, Charleston, Flagstaff, Greenville, Jonesboro, Parkersburg |
| Menu 2 | 2 | | | \$129.95 | \$179.95 | | \$219.95 | | | Bridgeport, Newark |
| Menu 3 | 1 | \$84.95 | \$139.95 | \$199.95 | | | | | | Eureka |

Cox seems to be the sole provider of the big four cable operators that tailors plans and prices for individual markets. However, even for the one major cable operator that offers market-specific pricing, the spread among prices is not great compared to legacy services. The average price for a DS1 is \$218.96 with a \$252.36 standard deviation⁵⁵ whereas Cox's 25 Mbps plans have an average price of \$130.50 with a standard deviation of \$28.13, and their 50 Mbps plans have an average price of \$173.00 with a standard deviation of \$33.02.

⁵³ Spectrum Business website, available at <https://sb.spectrum.com/>, Accessed Aug. 21, 2018.

⁵⁴ SuddenLink Business and Optimum Business Pricing & Packages websites, available at <https://order.suddenlinkbusiness.com> and <https://www.optimum.net/pricing-packages-business> respectively, Accessed Aug. 22, 2018.

⁵⁵ Rysman (19).

Figure 13: Cox Business-Internet Plans and Pricing⁵⁶

| | Number of Markets | 10 | 25 | 50 | 100 | 200 | 300 | Markets |
|--------|--------------------------|-----------|-----------|-----------|------------|------------|------------|-----------------------------|
| Menu 1 | 3 | \$110.00 | \$140.00 | \$190.00 | \$260.00 | | | Oklahoma City, Omaha, Tulsa |
| Menu 2 | 1 | | \$125.00 | \$165.00 | \$235.00 | \$310.00 | | New Orleans |
| Menu 3 | 1 | | \$90.00 | \$130.00 | \$199.00 | | | Phoenix |
| Menu 4 | 1 | \$110.00 | \$140.00 | \$190.00 | \$260.00 | \$310.00 | | Las Vegas |
| Menu 5 | 1 | \$95.00 | \$185.00 | \$225.00 | \$235.00 | \$310.00 | \$430.00 | Norfolk |
| Menu 6 | 1 | \$95.00 | \$125.00 | \$165.00 | \$235.00 | \$310.00 | | Parma |
| Menu 7 | 1 | \$95.00 | \$135.00 | \$175.00 | \$290.00 | | | Santa Barbara |
| Menu 8 | 1 | \$70.00 | \$85.00 | \$110.00 | \$145.00 | \$195.00 | \$250.00 | Providence |

CMA also looked at business VoIP services offered by both cable companies and other providers who offer business VoIP services. We found that providers commonly offer national pricing, regardless of where a customer is located.

Figure 14: VoIP Standard-Plan Pricing⁵⁷

| Provider | (Per User Per Month) | Plan Region |
|-----------------|-----------------------------|--------------------|
| 8x8 | \$25.00 | National |
| Charter | \$29.99 | National |
| Comcast | \$34.95 | National |
| Cox | \$24.95 - \$34.95 | National |
| Cyclix | \$17.95 - \$39.95 | National |
| Jive | \$19.95 - \$29.95 | National |
| Line2 | \$12.45 | National |
| MegaPath | \$19.95 | National |
| Nextiva | \$19.95 - \$34.95 | National |
| Phone.com | \$16.99 - \$29.99 | National |
| RingCentral | \$19.99 - \$24.99 | National |
| VoIP Studio | \$19.99 | National |
| Vonage | \$14.99 - \$19.99 | National |

⁵⁶ Cox Business website, available at <https://www.cox.com/business-shop>, Accessed Aug. 22, 2018.

⁵⁷ VoIP Standard-Plan Data was gathered in a survey of the included 13 VoIP providers' websites. Plans with a single price had flat pricing across all amounts of user seats. Plans with a range of prices did differentiate across the amount of user seats: the lower price stated is for the smallest user-seat package and the larger price is for the largest user-seat package.

8) The Report's Assumptions Are Based on Real Carrier Data.

A number of commenters have questioned the legitimacy of the assumptions⁵⁸ used in the paper. All assumptions were based on actual carrier data where available.

USTelecom recently filed all data on UNE circuit counts, UNE circuit mix, pricing and state that were provided to CMA by Verizon, AT&T, CenturyLink and Frontier⁵⁹. The same filing also included all retail pricing sources. Wholesale pricing assumptions used in the report were based on the FCC's own comprehensive data collection on Business Data Services⁶⁰.

It is also worth clarifying a point about CMA's analysis: asset-light service provider margins had no impact on the modeling⁶¹. As inputs to the model, CMA calculated average wholesale UNE pricing and benchmarked retail pricing for UNE-based products, but whether the difference between the two should be considered all gross margin or not was irrelevant to our modeling. UNE prices were used to compare with the prices of market-rate wholesale substitutes to calculate the additional revenue that would flow to ILECs in a post-forbearance world, and therefore were necessary to calculate additional ILEC capital investment. Retail prices for UNE-based products were used to compare with retail prices for retail substitute products so as to calculate consumer surplus. Asset-light service provider investment in both the status quo and investment scenario was assumed to be 5.7%⁶².

⁵⁸ Sappington (19-20).

⁵⁹ USTelecom – The Broadband Association, Confidential Document, WC 18-141, filed June 5, 2018.

⁶⁰ Only a few findings from this proceeding were made public, including Rysman. DS1 and DS3 pricing were drawn from Rysman (19).

⁶¹ Incompas (40).

⁶² Singer et al. (18). Estimated by analyzing financials of known UNE purchasers. This represented the weighted average of capital intensities for GTT (2016 and 2017) and Paetec (2011, their last year as an independent public company) using their 10-K reports. One challenge with estimating capital intensity for UNE purchasers is that most have been acquired by larger companies with other lines of business, or gone private. GTT filings *available at* <http://www.gtt.net/investor-relations/sec-filings/> and PAETEC filing at <https://www.last10k.com/sec-filings/paet/0001193125-11-299623.htm#fullReport>.

Appendix A: Form 477 Holding Companies, by Provider Type

| Holding Company | Provider Type | % of Big 4 ILEC Footprint by Housing Units |
|---|------------------------------|---|
| AT&T Inc. | ILEC | 47.5% |
| Comcast Corporation | Cable Co | 39.7% |
| Charter Communications | Cable Co | 32.4% |
| Verizon Communications Inc. | ILEC | 22.0% |
| CenturyLink, Inc. | ILEC | 19.5% |
| Frontier Communications Corporation | ILEC | 12.4% |
| Cox Communications, Inc. | Cable Co | 7.5% |
| Altice | Cable Co | 6.4% |
| LTS Group Holdings LLC (Lighttower, now Crown Castle) | Facilities-Based CLEC | 5.0% |
| Windstream Holdings, Inc. | ILEC | 3.0% |
| Pivotal Global Capacity, LLC (now GTT) | Asset-Light Service Provider | 2.9% |
| Level 3 Financing, Inc. (now CenturyLink) | Asset-Light Service Provider | 2.7% |
| WideOpenWest (WOW!) | Cable Co | 2.6% |
| Crown Castle International Corp. | Facilities-Based CLEC | 2.2% |
| Radiate Holdings, LP (RCN/Grande Communications) | Cable Co | 2.2% |
| Mediacom Communications Corp. | Cable Co | 2.1% |
| Telephone and Data Systems, Inc. (TDS) | ILEC | 1.7% |
| EarthLink Holdings Corp. (now Windstream) | Asset-Light Service Provider | 1.4% |
| America Movil | Asset-Light Service Provider | 1.3% |
| Sonic Telecom, LLC | Asset-Light Service Provider | 1.2% |
| Liberty Global, Inc. | Cable Co | 1.2% |
| Birch Communications, Inc. (now Fusion) | Asset-Light Service Provider | 1.2% |
| Cable One, Inc. | Cable Co | 1.1% |
| Fiber Platform, LLC (Unite Private Networks) | Facilities-Based CLEC | 1.0% |
| U.S. TelePacific Holdings Corp. (Tpx) | Asset-Light Service Provider | 0.9% |
| Google Fiber Inc. | Facilities-Based CLEC | 0.8% |
| WaveDivision Holdings, LLC (now Radiate) | Cable Co | 0.8% |
| US Signal Company, L.L.C. | Facilities-Based CLEC | 0.7% |
| XO Holdings, Inc. (now Verizon) | Asset-Light Service Provider | 0.7% |
| Electric Lightwave Holdings, Inc. (now Zayo) | Asset-Light Service Provider | 0.7% |
| Pencor Services, Inc. | Cable Co | 0.7% |
| Harbor Communications | Asset-Light Service Provider | 0.6% |
| Acquisitions Cogeco Cable Holdings II Inc. (Atlantic Broadband) | Cable Co | 0.5% |
| Digital Agent, LLC | Asset-Light Service Provider | 0.4% |
| ECSIS.NET, LLC | Asset-Light Service Provider | 0.4% |
| Telapex, Inc. | Facilities-Based CLEC | 0.4% |
| Broadview Networks Holdings, Inc. (now Windstream) | Asset-Light Service Provider | 0.4% |
| Midcontinent Communications | Cable Co | 0.4% |
| Service Electric Cable TV Inc. | Cable Co | 0.3% |
| Consolidated Communications, Inc. | ILEC | 0.3% |
| Raw Bandwidth Telecom, Inc. | Asset-Light Service Provider | 0.3% |
| Block Communications, Inc. | Cable Co | 0.3% |
| Armstrong Holdings, Inc. | Cable Co | 0.3% |
| Acme Communications, Inc. | Asset-Light Service Provider | 0.2% |

| | | |
|--|------------------------------|------|
| Telecommunications Management LLC | Cable Co | 0.2% |
| Huntleigh Technology Group, Inc. | Asset-Light Service Provider | 0.2% |
| Shenandoah Telecommunications Company (Shentel) | ILEC | 0.2% |
| Logix Communications, LP | Asset-Light Service Provider | 0.2% |
| Northland Communications Corp. | Cable Co | 0.2% |
| Clear Rate Communications, Inc. | Asset-Light Service Provider | 0.2% |
| Veracity Networks | Asset-Light Service Provider | 0.2% |
| Vyve Broadband | Cable Co | 0.2% |
| En-Touch Systems, Inc. | Cable Co | 0.2% |
| FairPoint Communications, Inc. (now Consolidated Communications) | ILEC | 0.1% |
| City of Tacoma | Muni/Coop | 0.1% |
| Worldnet Telecommunications, Inc. | Asset-Light Service Provider | 0.1% |
| Northeast Communications of Wisconsin, Inc. | ILEC | 0.1% |
| Fidelity Communications Company | Cable Co | 0.1% |
| Electric Power Board | Muni/Coop | 0.1% |
| Orlando Telephone Company, Inc. (Summit Broadband) | Asset-Light Service Provider | 0.1% |
| Cincinnati Bell Inc. | ILEC | 0.1% |
| Service Electric Television Inc. | Cable Co | 0.1% |
| Ultimate Internet Access, Inc. | Facilities-Based CLEC | 0.1% |
| Curatel, LLC | Asset-Light Service Provider | 0.1% |
| Metronet Holdings, LLC | Facilities-Based CLEC | 0.1% |
| WEHCO Video, Inc. | Cable Co | 0.1% |
| CTS Telecommunications Corporation | Facilities-Based CLEC | 0.1% |
| Southern Light, LLC (now Uniti) | Facilities-Based CLEC | 0.1% |
| Telephone Electronics Corporation | ILEC | 0.1% |
| Spectrotel, Inc. | Asset-Light Service Provider | 0.1% |
| LYNX Network Group, Inc. (now Everstream) | Facilities-Based CLEC | 0.1% |
| MTCO Corporation | Asset-Light Service Provider | 0.1% |
| Tier 2 Communications LLC | Facilities-Based CLEC | 0.1% |
| Lightspeed Communications, LLC/Stratos Networks, LLC | Facilities-Based CLEC | 0.1% |
| First Communications, LLC | Asset-Light Service Provider | 0.1% |
| Montana Internet | Asset-Light Service Provider | 0.1% |
| Clarity Telecom, LLC | Cable Co | 0.1% |
| Harron Communications LP | Cable Co | 0.1% |
| Socket Telecom LLC | Asset-Light Service Provider | 0.1% |
| Seimitsu Corporation | Asset-Light Service Provider | 0.1% |
| Zayo Group, LLC | Facilities-Based CLEC | 0.1% |
| TelNet Worldwide, Inc. | Asset-Light Service Provider | 0.1% |
| Avenue Broadband Holdings, Inc. | Cable Co | 0.1% |
| The Computer Works | Facilities-Based CLEC | 0.1% |
| Xchange Telecom Corp. | Asset-Light Service Provider | 0.1% |
| POPP.com, Inc. | Asset-Light Service Provider | 0.1% |
| ConnectTo Communications Inc. | Asset-Light Service Provider | 0.1% |
| VisiCom Group, Inc. | Facilities-Based CLEC | 0.1% |
| CVIN LLC | Facilities-Based CLEC | 0.1% |
| Air Advantage, LLC | Facilities-Based CLEC | 0.1% |
| Schurz Communications, Inc. | Cable Co | 0.1% |

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|---|------------------------------|------|
| Horry Telephone Cooperative, Inc. | ILEC | 0.1% |
| NetFortris Acquisition Co., Inc. | Asset-Light Service Provider | 0.1% |
| Cogent Communications Group | Facilities-Based CLEC | 0.1% |
| Desert Winds Wireless LLC | Asset-Light Service Provider | 0.1% |
| Peoples Telephone Cooperative, Inc./Peoples FiberCom | Muni/Coop | 0.1% |
| Columbia Energy LLC | Facilities-Based CLEC | 0.1% |
| Zito Media, LP | Cable Co | 0.1% |
| DKSL, Inc. | Facilities-Based CLEC | 0.1% |
| Stratus Networks, Inc. | Facilities-Based CLEC | 0.1% |
| Bristol Tennessee Essential Services | Muni/Coop | 0.1% |
| Massillon Cable TV, Inc. | Cable Co | 0.1% |
| Sho-Me Power Electric Cooperative | Muni/Coop | 0.1% |
| Wyoming.Com | Asset-Light Service Provider | 0.1% |
| Northland Communications (NY) | Facilities-Based CLEC | 0.1% |
| Hotwire Communications, Ltd. | Facilities-Based CLEC | 0.1% |
| Morris Broadband LLC | Cable Co | 0.1% |
| Blue Stream | Cable Co | 0.1% |
| Tabco Services | Cable Co | 0.1% |
| Utah Telecommunication Open Infrastructure Agency | Muni/Coop | 0.1% |
| LICT Corporation | Asset-Light Service Provider | 0.1% |
| Critical Hub Networks, Inc. | Facilities-Based CLEC | 0.1% |
| Lakeway Publishers, Inc. | Asset-Light Service Provider | 0.1% |
| Utility Telecom Group, LLC | Asset-Light Service Provider | 0.0% |
| MontanaSky Networks, Inc. | Asset-Light Service Provider | 0.0% |
| Cybernet1, Inc. | Asset-Light Service Provider | 0.0% |
| CableAmerica | Cable Co | 0.0% |
| Lumos Networks Corp. | Asset-Light Service Provider | 0.0% |
| Block Line Systems, LLC | Asset-Light Service Provider | 0.0% |
| Benton Ridge Telephone Company | ILEC | 0.0% |
| Lafayette City Parish Consolidated Government | Muni/Coop | 0.0% |
| TVC Albany, Inc. | Facilities-Based CLEC | 0.0% |
| ImOn Communications, LLC | Facilities-Based CLEC | 0.0% |
| USA Holdings LLC | Cable Co | 0.0% |
| May, Bott et al. | Asset-Light Service Provider | 0.0% |
| BVU Authority | Facilities-Based CLEC | 0.0% |
| Troy Cablevision, Inc. | Cable Co | 0.0% |
| American Broadband Communications et al. | ILEC | 0.0% |
| City of Madison, Wisconsin | Muni/Coop | 0.0% |
| Metropolitan Unified Fiber Network Consortium, Unincorporated Association | Facilities-Based CLEC | 0.0% |
| Access Media Holdings, LLC | Asset-Light Service Provider | 0.0% |
| Empire Telephone Corporation/North Penn Telephone Company | ILEC | 0.0% |
| NetCarrier Telecom, Inc. | Asset-Light Service Provider | 0.0% |
| Allo Communications LLC | Asset-Light Service Provider | 0.0% |
| Allied Telecom Group, LLC | Asset-Light Service Provider | 0.0% |
| Hargray Communications Group, Inc. | Cable Co | 0.0% |
| InterGlobe Communications, Inc. | Asset-Light Service Provider | 0.0% |
| iLOKA Inc. | Asset-Light Service Provider | 0.0% |

| | | |
|---|------------------------------|------|
| ATN International, Inc. | Asset-Light Service Provider | 0.0% |
| Pavlov Media, Inc. | Facilities-Based CLEC | 0.0% |
| Onvoy, LLC | Asset-Light Service Provider | 0.0% |
| FiberComm L.C. | Asset-Light Service Provider | 0.0% |
| Georgia Public Web, Inc. | Asset-Light Service Provider | 0.0% |
| Community Antenna Service, Inc. | Cable Co | 0.0% |
| Hunt Telecommunications, LLC | Asset-Light Service Provider | 0.0% |
| E. Ritter Communications Holdings, Inc. | ILEC | 0.0% |
| Alpheus Communications, LLC (now Logix) | Asset-Light Service Provider | 0.0% |
| Hiawatha Broadband Communications, Inc. | Cable Co | 0.0% |
| Owensboro Municipal Utilities | Muni/Coop | 0.0% |
| City of Ocala | Muni/Coop | 0.0% |
| Douglas Electric Cooperative Inc. | Asset-Light Service Provider | 0.0% |
| Jackson Energy Authority | Muni/Coop | 0.0% |
| Seaport/CWB iTV-3 Holdco, LLC | Asset-Light Service Provider | 0.0% |
| Albany, Water, Gas and Light Commission | Muni/Coop | 0.0% |
| Reach Broadband | Cable Co | 0.0% |
| Thames Valley Communications, Inc. | Cable Co | 0.0% |
| Giggle Fiber LLC | Cable Co | 0.0% |
| Reserve Holdings, Inc. | Cable Co | 0.0% |
| The Champlain Telephone Company | ILEC | 0.0% |
| Odessa Office Equipment | Facilities-Based CLEC | 0.0% |
| Greenlight Networks, LLC | Facilities-Based CLEC | 0.0% |
| North-State Telephone Co. (NC) | ILEC | 0.0% |
| R. M. Greene, Inc. | Cable Co | 0.0% |
| Eaglenet, Inc. | Asset-Light Service Provider | 0.0% |
| Crystal Automation Systems, Inc. | Facilities-Based CLEC | 0.0% |
| Hunter Communications Inc. | Facilities-Based CLEC | 0.0% |
| Telefonica International Holding, BV | Facilities-Based CLEC | 0.0% |
| Clearnetworx LLC | Facilities-Based CLEC | 0.0% |
| NebraskaLink Holdings LLC | Facilities-Based CLEC | 0.0% |
| Conway Corporation | Cable Co | 0.0% |
| Futurum Communications Corp. | Asset-Light Service Provider | 0.0% |
| VAL-ED Joint Venture L.L.P. | Asset-Light Service Provider | 0.0% |
| Jaguar Communications | Facilities-Based CLEC | 0.0% |
| Kaplan Telephone Company, Inc. | ILEC | 0.0% |
| Chelan County PUD | Muni/Coop | 0.0% |
| Paul Bunyan Rural Telephone Cooperative | Muni/Coop | 0.0% |
| Farmers Telephone Cooperative, Inc. (SC) | Muni/Coop | 0.0% |
| Public Utility District #2 of Grant County, WA | Muni/Coop | 0.0% |
| BullsEye Telecom, Inc. | Asset-Light Service Provider | 0.0% |
| Iowa Network Services | Asset-Light Service Provider | 0.0% |
| Eagle Communications, Inc. | Cable Co | 0.0% |
| Trumansburg Telephone Co., Inc./Ontario Telephone Co., Inc. | ILEC | 0.0% |
| City of Wilson | Muni/Coop | 0.0% |
| Midwest Energy Cooperative | Muni/Coop | 0.0% |
| Prime Time Ventures, LLC | Asset-Light Service Provider | 0.0% |

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|---|------------------------------|------|
| Atlantech Online, Inc. | Asset-Light Service Provider | 0.0% |
| City of Longmont | Muni/Coop | 0.0% |
| Carolina Mountain/Country Cablevision | Cable Co | 0.0% |
| Rural Telephone Service/Golden Belt | ILEC | 0.0% |
| Smartcom Telephone, LLC | Asset-Light Service Provider | 0.0% |
| Cablevision of Marion County, LLC | Cable Co | 0.0% |
| D & P Communications, Inc. | ILEC | 0.0% |
| T3 Communications, Inc. | Asset-Light Service Provider | 0.0% |
| Pend Oreille Valley Networks, Inc. | Facilities-Based CLEC | 0.0% |
| Norcast Communications Corporation | Asset-Light Service Provider | 0.0% |
| MI Connection Communications System | Cable Co | 0.0% |
| Delta Communications | Asset-Light Service Provider | 0.0% |
| Eastern Shore of Virginia Broadband Authority | Muni/Coop | 0.0% |
| Comporium, Inc. | ILEC | 0.0% |
| Access One, Inc. | Asset-Light Service Provider | 0.0% |
| Origin Networks, LLC | Asset-Light Service Provider | 0.0% |
| Blackfoot Telephone Cooperative, Inc. | Asset-Light Service Provider | 0.0% |
| Visionary Communications, Inc. | Asset-Light Service Provider | 0.0% |
| Digital West Networks, Inc. | Asset-Light Service Provider | 0.0% |
| Axxis Communications/Gorge Networks | Asset-Light Service Provider | 0.0% |
| InfoStructure Inc. | Asset-Light Service Provider | 0.0% |
| Race Telecommunications, Inc. | Asset-Light Service Provider | 0.0% |
| Full Service Network LP | Asset-Light Service Provider | 0.0% |
| Biddeford Internet Corporation | Asset-Light Service Provider | 0.0% |
| IdeaTek Systems, Inc. | Asset-Light Service Provider | 0.0% |