ATTACHMENT 1

Premature, Ubiquitous Forbearance Will Harm Consumers

by David E. M. Sappington

I. Qualifications.

My name is David Sappington. I hold the titles of Eminent Scholar and Director of the Public Policy Research Center, both at the University of Florida. Since earning my Ph.D. in economics from Princeton University in 1980, I have served on the faculties of the University of Michigan and the University of Pennsylvania and on the technical staff of Bell Communications Research. I have also served as the Chief Economist for the Federal Communications Commission and as the President of the Industrial Organization Society. I presently hold positions on the editorial boards of six major journals, including the *Journal of Regulatory Economics*, the *Rand Journal of Economics*, and the *Review of Industrial Organization*.

My research analyzes a broad range of issues in the field of industrial organization, with a focus on the design and implementation of regulatory policy. I have published more than one hundred and fifty articles in leading journals in the profession and have coauthored a book on *Designing Incentive Regulation for the Telecommunications Industry*. My curriculum vitae appears as an attachment to this report.

II. Purpose and Outline of this Report.

USTelecom ("UST") has petitioned the U.S. Federal Communications Commission ("the FCC" or "the Commission") to forbear from applying unbundling, resale, and non-discrimination obligations that ILECs presently face. This report explains why the nationwide forbearance UST seeks is inappropriate and would harm consumers. This report also explains why UST's justification for the ubiquitous forbearance it seeks is fundamentally flawed. This report further documents the critical error in the economists' report ("the *Economists' Report*")[1] that accompanies UST's petition for forbearance ("the *UST Petition*").[2] This critical error completely undermines the credibility of the *Economists' Report*.

The extent and nature of competition in the provision of communications services varies substantially across the country. Competition is pronounced for certain services in some geographic regions. In contrast, competition is extremely limited, if not entirely non-existent, for particular services in other geographic regions. In order to protect consumers as necessary without impeding beneficial competitive forces, regulatory policy must be tailored to the environment in which it is implemented. The *UST Petition* ignores this fact and fails to acknowledge the wide

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[1] Hal Singer et al., "Assessing the Impact of Forbearance from 251(c)(3) on Consumers, Capital Investment, and Jobs" (May 2018), appended as Appendix B to the UST Petition.

[2] *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 (filed May 4, 2018).

variation in competitive conditions across the nation. Consequently, the petition's call for nationwide forbearance is inappropriate and misguided. The requested forbearance would harm consumers by limiting competition in the supply of important communications services in many regions.

The *Economists' Report* shares the same fundamental flaw with the *UST Petition*. The *Economists' Report*'s failure to account for relevant differences in competitive conditions leads it to adopt highly implausible assumptions that completely undermine the credibility of the report's conclusions. The report also fails entirely to address the role of resold telecommunications services in promoting competition and delivering benefits to consumers.

The present report explains these conclusions as follows. Section III first describes the widely-varying nature and extent of competition in the provision of communications services in the United States. Section III then identifies UST's fundamental error in ignoring this variation in competitive conditions. Section III's review of competitive conditions observes that there are at most two full facilities-based suppliers of key communications services in many geographic regions. Section IV explains why, as the Commission has noted, duopoly competition cannot be relied upon to protect consumers. Section V demonstrates how the nationwide forbearance the UST advocates would harm consumers by fostering monopoly and duopoly industrial structures, thereby limiting price and quality competition and valued service differentiation. Section V also explains how forbearance would harm consumers and impede economic development in the United States by reducing broadband infrastructure investment by both competitive local exchange carriers ("CLECs") and incumbent local exchange carriers ("ILECs"). Section VI identifies the fundamental flaw in the *Economists' Report* that totally undermines its credibility. Section VII summarizes the key conclusions of the present report.

III. The *UST Petition* is Fundamentally Flawed Because it Fails to Recognize the Highly Varied Nature and Extent of Competition in the Provision of Communications Services.

A. Competitive Conditions Vary Widely.

Customers can purchase a broad range of communications services from several facilities-based suppliers in some areas of the United States. For example, companies located in the central business districts of the largest and most densely populated metropolitan areas often can secure a diverse range of voice and data services from the ILEC or from one of several CLECs that serve customers using their own fiber networks.[3]

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[3] As of 2016, approximately one-half of one percent of the U.S. population lived in census blocks where five or more facilities-based suppliers offered high-speed wireline broadband service. (David S. Evans, "Economic Findings Concerning the State of Competition for Wired Broadband Provision to U.S. Households and Edge Providers," Global Economics Group discussion paper, August 29, 2017, available at https://ssrn.com/abstract=3029006 ("Evans Report"), Table 2, p. 11.

In contrast, there are many regions in the U.S. where consumers have little or no choice among suppliers of communications services. To illustrate, as of 2013, there was only one full facilities-based supplier of business data services ("BDS") at 84% of the locations where customers purchase BDS with cumulative bandwidth below 100 Mbps. There were at most two such suppliers in nearly all (more than 99%) of these locations.[4] Even when BDS locations of all bandwidths are considered, ILECs had the sole facilities to 77% of locations, and less than 1% were served by more than two full facilities-based providers.[5]

Industry concentration is less extreme, but often still pronounced, when measured at the level of the census block. As of 2016, less than 23% of the U.S. population lived in census blocks where more than two facilities-based suppliers delivered high-speed broadband service.[6] Approximately 7% of the U.S. population lived in census blocks where no facilities-based supplier offered high-speed wireline broadband service.[7]

In summary, the nature and intensity of competition in the provision of voice and data services varies widely across geographic regions of the United States. Furthermore, there are many regions in which competition among facilities-based suppliers to deliver important communications services is limited.

B. The *UST Petition* Fails to Identify Relevant Geographic Markets.

The *UST Petition* asserts that the unbundling, resale, and non-discrimination obligations that ILECs presently face "are not necessary to protect competition or consumers" (p. 2). In an attempt to support this assertion, the *UST Petition* presents some statistics regarding national trends in the provision and consumption of communications services.[8] The petition then cites these statistics in an attempt to support broad, sweeping generalizations like: (i) "The marketplace is indisputably competitive;"[9] (ii) "UNEs today play a very minor and diminishing role in this

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4 Letter from John T. Nakahata, Counsel to Windstream, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143 et al., at attached table (filed Oct. 21, 2016).

5 Marc Rysman, "Empirics of Business Data Services," Revised June 2016 at Table 7, https://docs.fcc.gov/public/attachments/DOC-340040A6.pdf.

6 Evans Report, Table 2, p. 11. This statistic likely overstates the extent of actual competition at particular locations because a supplier that serves any portion of a census block, no matter how small its actual service territory, is effectively counted as serving the entire census block.

7 *Ibid*.

8 For example, the *UST Petition* reports UNE loops nationwide (Chart 4, p. 16), non-ILEC lines nationwide (Chart 5, p. 17), and ILEC wholesale lines and non-ILEC resold lines nationwide (Chart 6, p. 18).

9 *UST Petition*, note 22.

competitive marketplace;"[10] (iii) "The marketplace is irrevocably open to competition;"[11] (iv) "The market is highly competitive."[12]

The petition's focus on broad national statistics suggests that UST believes the relevant geographic market is the entire United States of America when assessing the nature and extent of competition in the provision of communications services. This belief is fundamentally incorrect. In fact, relevant geographic markets are far more local.

As the Commission has noted, a relevant geographic market is a region in which "consumers can 'practically turn for alternative sources,' and within which providers can reasonably compete."[13] An individual or business that seeks to secure wireline telecommunications services for use at its residence or business location cannot secure the services from a firm that does not and cannot profitably supply the services to the customer's residence or place of business. Consequently, the fact that many firms supply a relevant service in one town does not imply that they compete to serve a customer in a different town, or even at different locations within the same town.

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.[14] This is the region in which the customer in question can practically seek alternative sources of supply. The relevant geographic market may be larger when nearby suppliers can readily expand their networks to deliver relevant services to a customer's premise. However, the relevant geographic region does not include regions in which suppliers cannot reasonably compete for the customer's patronage.

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10 *Ibid*, p. 15.

11 *Ibid*, p. 26.

12 *Ibid*, p. 29.

13 *Business Data Services in an Internet Protocol Environment,* Report and Order, 32 FCC Rcd 3459, 3461, ¶ 39 (2017) *("BDS Order").*

14 The FCC observes that "each customer location constitutes a separate relevant geographic market, given that a customer is unlikely to move in response to a small, but significant and nontransitory increase in the price of the service. [footnote omitted.] For reasons of administrative convenience, the Commission traditionally has aggregated customers facing similar competitive choices." *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, 8657 ¶ 64 (2010) ("*Qwest Phoenix Order*").

C. Incorrect Geographic Market Definitions Engender Inappropriate Policy Prescriptions.

A failure to identify relevant geographic markets can give rise to inappropriate policy prescriptions. This fact is readily illustrated by the following simple example. Suppose a territory consists of two geographic regions, labeled region A and region B. Further suppose 19 firms can and do supply the relevant service in region A, whereas only 1 firm can and does supply the service in region B. On average, there are 10 suppliers in each region in this territory, and 10 suppliers may be sufficient to generate strong competitive discipline in any region. However, there is only 1 supplier in region B, and a single supplier that faces no actual or potential competition in this region may be able to raise prices well above cost and thereby harm consumers in the region.

In this setting (and more generally), removing regulatory constraints throughout the territory because there are many competitors in the territory on average will harm consumers in region B. The relaxed regulation will empower the sole supplier in region B to impose monopoly prices on consumers in the region. The appropriate policy here and more generally is to relax regulatory constraints only in regions where competitive discipline alone is sufficient to protect consumers (which is region A in this example).

In the present setting, UST's failure to identify relevant geographic markets renders its policy prescriptions inapposite. Robust competition for a given product in relevant geographic markets justifies regulatory forbearance for the product in those specific markets. It does not justify the ubiquitous forbearance that UST seeks.

D. The *UST Petition* Fails to Identify Relevant Product Markets.

The *UST Petition* does not simply fail to distinguish among relevant geographic markets. The petition also fails to distinguish adequately among relevant product markets. The Commission has noted that it "distinguish[es] product markets by generally looking at whether various services are reasonably interchangeable, with differences in price, quality, and service capability being relevant."[15]

Many communications services exhibit very different prices, qualities, and service capabilities and are not reasonably interchangeable. Retail voice service typically is not readily interchangeable with retail data service, and wireless data service often is not a good substitute for wireline data service.[16] In addition, the best-efforts broadband service that cable companies

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15 *BDS Order*, ¶ 19.

16 *Ibid.* ¶ 37 (stating that fixed wireless service are "at most, a gap filler for special access services providing last-mile access to buildings"); *see also Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2018 Broadband

typically supply often is not an adequate substitute for high-bandwidth service provided over a dedicated circuit.[17] Furthermore, wholesale products like access to dark fiber that can be employed to transport large quantities of data between ILEC central offices differ in many respects (including price and service capability) from retail products like residential broadband service.

Even retail services that exhibit many common features can fail to be reasonably interchangeable. To illustrate, the fact that certain TDM services continue to function even when electrical power is interrupted make them nearly indispensable to certain suppliers of alarm and monitoring services.[18] This is the case even though non-TDM technologies can deliver nearly identical communications services when they are operating, but do not operate when the electrical power is interrupted.

E. Incorrect Product Market Definitions Promote Inappropriate Policy Prescriptions.

When communications services vary in price, quality, and service capabilities, even intense competition in the provision of one service can fail to protect consumers of other services. To illustrate this more general conclusion, suppose that several suppliers compete to deliver basic voice service in a given geographic region, but the ILEC is the sole facilities-based supplier of high-speed dedicated broadband service in the region. In such a setting, competition may ensure relatively low prices and high levels of service quality for basic voice service. However, competition is unlikely to effectively constrain the price of the dedicated broadband service or ensure it is delivered with high quality.

In this setting and more generally, when assessing the impact of forbearance on competition and thus on consumer welfare, it is imperative to do so on a product-by-product basis. Forbearance might not harm consumers of basic voice service in the present example if several of the suppliers can deliver the service without using UNEs or resold services. In contrast, forbearance may impose substantial harm on consumers of high-speed broadband service by undermining the ability of CLECs to employ UNEs to deliver the service.

CLECs can employ UNEs and resold services to deliver communications services in direct competition with ILECs, thereby constraining the retail prices that ILECs charge and spurring the ILECs to improve their service quality. CLECs can also employ UNEs and resold services to

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Deployment Report, FCC 18-10, ¶ 18 (rel. Feb. 2, 2018) ("[W]e disagree with those that argue that mobile services are currently full substitutes for fixed services.").

[17] *BDS Order*, ¶¶ 190-196 (discussing why "Best Efforts and Business Data Services Are Not in the Same Product Market").

[18] *See*, for example, Declaration of Larry Antonellis, ¶¶ 15, 18, Attachment A to Opposition of Granite Telecommunications, LLC, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Larry Antonellis"); *see also*, Declaration of Russell Shipley ¶ 35, attached as Exhibit 1 to Opposition of U.S. TelePacific Corp., WC Docket 18-141 (filed Aug. 6, 2018) ("Declaration of Russell Shipley").

deliver differentiated services that ILECs do not deliver. These differentiated services include higher-speed broadband service and consolidated voice and data services at multiple locations across the operating territories of multiple ILECs.[19] Both of these types of CLEC activities benefit consumers by enabling them to enjoy lower prices, higher levels of service quality, and valued service differentiation. As explained further in Section V below, CLEC access to UNEs and resold services also can enhance fiber-based network investment by CLECs and ILECs alike.

F. The UST is Aware that the Policy it Advocates is Inappropriate.

The nationwide forbearance that UST advocates is inconsistent with its own view of sound regulatory policy. The ubiquitous forbearance the UST recommends is very distinct from the more granular policy the Commission has adopted for BDS … a policy the *UST Petition* commends. The *UST Petition* observes, for instance, that the Commission's BDS policy is "tailored precisely to today's competitive realities," noting that the Commission's "framework uses a 'competitive market test' to identify *counties* in which BDS competition has taken hold" (emphasis added).[20] The *UST Petition* further notes that "In counties that do not pass the test, … price cap regulation, with an increased annual productivity offset [is employed] to ensure that rates remain just and reasonable."[21] The *UST Petition* concludes that the Commission's policy is "carefully designed to balance the Commission's twin goals of removing regulation that creates disincentives for broadband investment, but retaining such regulation where it [is] necessary to protect consumers."[22]

Clearly, UST recognizes the merits of granular regulatory policies that tailor the nature and extent of regulation to the prevailing local market conditions. Despite this recognition, UST calls for nationwide forbearance, eschewing any need to assess the strength of competitive forces in relevant geographic and product markets. UST also calls for the elimination of price regulation – not the imposition of more stringent price regulation – in regions where competition is not yet able to impose effective price discipline on incumbent suppliers. Furthermore, UST does not acknowledge any need to balance the twin goals of encouraging broadband investment and protecting consumers where some ongoing protection is warranted.[23]

In summary, UST advocates regulatory policy that is inconsistent with its own view of appropriate regulatory policy. Furthermore, the evidence in the *UST Petition* provides no

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[19] See the discussion in Section IV.C below.

[20] *UST Petition*, p. 15.

[21] *Ibid*.

[22] *Ibid*.

[23] The *UST Petition* also fails to note that the nationwide forbearance it seeks will reduce, not increase, broadband investment in many geographic regions. (See Section V below.)

meaningful support for the policy that UST advocates. The evidence consists of highly aggregated statistics that provide little insight regarding the nature and extent of competition in relevant geographic and product markets. Consequently, the *UST Petition* is fundamentally flawed and fails to provide the information the Commission requires to properly evaluate the impact of forbearance on consumers and competition.

IV. Duopoly Competition Will Not Protect Consumers.

A. Limited Competition Will Persist.

In the many geographic regions where competition presently is limited, ubiquitous, robust competition is unlikely to develop rapidly. The same factors that have inhibited robust competition in many relevant geographic and product markets to date are likely to persist in the near future. Relevant factors include limited geographic concentration of businesses that demand high-bandwidth broadband service, limited revenue potential from low-bandwidth services, and high fixed costs of full facilities-based supply. These costs include the costs of network expansion and the costs of securing access to buildings, conduits, and rights-of-way.[24]

The sunk cost nature of facilities-based supply also can limit entry into a geographic region. In the face of entry, an incumbent supplier can find it profitable to lower the price it charges for a service all the way down to the supplier's incremental cost of delivering the service. Incremental cost can be minimal in the presence of substantial fixed, sunk costs. Fierce price competition from an incumbent supplier will reduce the financial return that a new supplier anticipates from making large, sunk investments to serve potential customers. Consequently, in addition to the often-substantial costs of initiating facilities-based service to a new customer, a non-incumbent supplier that has not established a solid base of loyal customers faces substantial financial risk due to intense price competition from a full facilities-based incumbent supplier.[25] This risk can constitute a

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[24] *See*, for example: (i) Letter from Paul Margie, Counsel, Sprint, to Marlene H. Dortch, Secretary, FCC, at 7-11, WC Docket No. 16-143 et. al. (filed Mar. 22, 2017) ("Sprint March 22 Ex Parte") (discussing evidence of entry barriers); (ii) Letter from John Nakahata, Counsel, Windstream, to Marlene H. Dortch, Secretary, FCC, at 17-21, WC Docket Nos. 16-143 et. al. (filed Mar. 27, 2017) ("Windstream March 27 Ex Parte") (same); (iii) Declaration of Matthew Kohly ¶ 28, attached as Attachment 15 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) (noting, for instance, the difficulties associated with securing access to telephone poles and rights of way) ("Declaration of Matthew Kohly"); and (iv) Declaration of Dane Jasper, attached as Attachment A to Opposition of Sonic Telecom, LLC to Petition for Forbearance of USTelecom, WC Docket No. 18-141, ¶ 10 (filed Aug. 6, 2018) (citing the problems created by "overloaded poles, inadequate conduit space, local moratoria, and permitting delays") ("Sonic Decl.").

[25] The Commission has noted that large sunk costs can promote intense competition among established suppliers ("the high sunk network cost nature of this industry indicates that even as few as two nearby providers have the incentive to undercut each other's price to win customers so long as they at least recover the incremental cost of extending supply to any customer." *BDS Order*, ¶123). However, the

substantial barrier to entry by new suppliers. Methods of market entry, such as UNEs and resale, that allow a competitor to build a customer base in a given area before incurring the large fixed, sunk costs of serving the area lower barriers to investment in last-mile fiber networks.

B. Reliance on Duopoly Competition is Inappropriate.

As documented above, many geographic areas are served by at most two full facilities-based providers. Furthermore, the prevailing industry structure in these areas is unlikely to change rapidly.

It is generally inappropriate to rely on duopoly competition to protect consumers. Indeed, economists have cautioned for nearly a century that duopoly may fail to serve consumers any better than monopoly. To illustrate, when analyzing the interaction between two suppliers, Chamberlin observed: "If each seeks his maximum profit rationally and intelligently, he will realize that when there are only two or a few sellers his own move has a considerable effect upon his competitors, and that this makes it idle to suppose that they will accept without retaliation the losses he forces upon them. Since the result of a [price] cut by any one is inevitably to decrease his own profits, no one will cut [price], and although the sellers are entirely independent, the equilibrium result is the same as though there was a monopolistic agreement between them."[26]

In summarizing more recent work, Scherer observes: "Any realistic theory of oligopoly must take as a point of departure the fact that when market concentration is high, the pricing decisions of sellers are interdependent, and the firms involved can scarcely avoid recognizing their mutual interdependence. … [W]e should expect oligopolistic industries to exhibit a tendency toward the maximization of collective profits, perhaps even approaching the pricing outcome associated with pure monopoly."[27]

Similarly, Martin observes that: "when industry output is produced by a few large firms, it is more likely that they will be able to reach a common view about what it is they should do, all else equal. This makes it easier for them to agree to do it. Further, when there are only a few producers, it is […] easier to detect deviations from the agreed or understood line of conduct. We therefore expect that joint exercise of market power is more likely to occur when seller concentration is high."[28]

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prospect of intense competition post-entry can serve to deter entry. Consequently, the presence of large sunk costs can harm – not benefit – consumers.

[26] Edward Chamberlin, *The Theory of Monopolistic Competition*. Seventh Edition. Cambridge, MA: Harvard University Press, 1960 (p. 48). This work was first published in 1933.

[27] F. M. Scherer, *Industrial Market Structure and Economic Performance*. Second Edition. Boston, MA: Houghton Mifflin Company, 1980, p. 168.

[28] Stephen Martin, *Industrial Organization in Context*. Oxford: Oxford University Press, 2010, p. 190.

Substantial analytic work formalizes these intuitive observations and identifies conditions under which industry suppliers are particularly likely to engage in tacit collusion that increases prices above competitive levels.[29] Empirical evidence also documents that industry prices increase as industry concentration increases,[30] and that collusive outcomes can emerge under duopoly supply. To illustrate, Parker and Röller document the collusive outcomes that arose in the wireless telecommunications industry when only two carriers were authorized to provide service.[31] In addition, Reiffen and Ward's study of the pharmaceutical industry finds that "prices steadily decline with an increase in the number of producers and begin to approach long-run marginal cost [only] when there are 10 or more competitors" (*parenthetical text added*).[32] In a recent comprehensive review of mergers in many industries, Kwoka finds that increased industry concentration leads to substantial price increases whenever there are fewer than five competitors.[33]

C. Forbearance Will Harm Consumers by Limiting Price and Quality Competition.

Competition can benefit consumers in many ways. For example, competition promotes low prices and high levels of service quality. Competition can also benefit consumers by compelling

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[29] See, for example: (i) George Stigler, "A Theory of Monopoly," J*ournal of Political Economy*, 72(1), February 1964, 44-61; (ii) Jean Tirole, *The Theory of Industrial Organization*. Cambridge, MA: The MIT Press, 1988, chapter 6; and (iii) Carl Shapiro, "Theories of Oligopoly Behavior," in Richard Schmalensee and Robert Willig (eds.), *Handbook of Industrial Organization*, Volume I. Amsterdam: North-Holland, 1989, pp. 329-414.

[30] In summarizing relevant empirical evidence, Schmalensee concludes that "In cross-section comparisons involving markets in the same industry, seller concentration is positively related to the level of price" (Richard Schmalensee, "Inter-Industry Studies of Structure and Performance," in *Handbook of Industrial Organization*, Vol. II, Richard Schmalensee and Robert Willig (eds), Amsterdam: North-Holland, 1989, p. 988). Similarly, Sutton observes that "a fall in concentration will lead to a fall in prices and price-cost margins is well supported both theoretically and empirically" (John Sutton, "Market Structure: Theory and Evidence," in *Handbook of Industrial Organization*, Vol. III, Mark Armstrong and Robert Porter (eds), Amsterdam, North-Holland, 2007, p. 2307). Coates and Hubbard observe that "Empirical studies of auction markets and various industries, such as airlines, railroads, books, and pharmaceuticals, show prices declining as the number of bidders or rivals increases and as concentration of sales in a few firms declines" (John Coates and R. Glenn Hubbard, "Competition in the Mutual Fund Industry: Evidence and Implications for Policy," *Journal of Corporation Law*, 33(1), Fall 2007, p. 164).

[31] Philip Parker and Lars-Hendrik Röller, "Collusive Conduct in Duopolies: Multimarket Contact and Cross-Ownership in the Mobile Telephone Industry," *RAND Journal of Economics*, 28(2), Summer 1997, pp. 304-322.

[32] David Reiffen and Michael Ward, "Generic Drug Industry Dynamics," *Review of Economics and Statistics*, 87(1), February 2005, 37-49 (at 38).

[33] John Kwoka, "The Structural Presumption and the Safe Harbor in Merger Review: False Positives or Unwarranted Concerns?" Northeastern University discussion paper, February 2017 (forthcoming in the *Antitrust Law Journal*) ("the vast majority of mergers resulting in five or fewer significant competitors … have anticompetitive consequences," p. 47).

suppliers to offer new, innovative services or valued service differentiation. Competing suppliers often attract customers by offering new or differentiated, high-quality services that meet the customers' idiosyncratic needs.

As illustrated in Mr. Zarakas' declaration, a CLEC that employs UNEs can use the ILEC's copper loops in combination with the CLEC's own electronics to offer levels of service that the ILEC has not yet introduced. In approximately half of the census blocks in which Sonic offers broadband service at speeds of 25 Mbps downstream and 3 Mbps upstream ("25/3") or greater, the ILEC does not offer such service.[34] The CLEC is clearly differentiating its service, to the benefit of consumers.

In addition, a single firm is seldom best-equipped to meet the diverse needs of all potential customers. Instead, different firms develop the skills, expertise, and resources required to best meet specialized needs.[35] ILECs often focus on serving large business customers and delivering mass market voice and basic data services to residential customers. In contrast, CLECs often focus on meeting the special needs of small enterprises, municipal governments, schools, and hospitals.[36]

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[34] Declaration of William P. Zarakas, Attachment 2 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, at ¶ 10 and Table 4 ("Zarakas Declaration").

[35] Just as countries tend to focus on activities in which they enjoy a comparative advantage relative to other countries (*see*, for instance, R. Dornbusch, S. Fischer and P. Samuelson, "Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods," *American Economic Review*, 67(5), December 1977, 823-839), companies focus on supplying the goods and services that they have become particularly adept at supplying.

[36] *See*, for example, the Declarations of Larry Antonellis (Granite ¶ 4); James Bellina ¶ 9, attached as Attachment 5 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of James Bellina"); Jeff Buckingham ¶ 9, attached as Attachment 6 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018); Dan Bubb ¶ 7, attached as Attachment 9 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Dan Bubb"); Douglas Denney (Allstream ¶ 16), attached as Attachment 4 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Douglas Denney"); Daniel Friesen ¶ 2, attached as Attachment 11 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Daniel Friesen"); John Hoehne ¶¶ 7-8, attached as Attachment 3 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of John Hoehne"); Dusan Janjic ¶ 2, attached as Attachment 16 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018); Declaration of Matthew Kohly (Socket ¶¶ 47-48); Jeff Rhoden ¶ 2, attached as Attachment 12 to Opposition of

Serving these customers may not be as profitable as serving large corporations and mass-market residential customers. However, such specialization can allow CLECs to earn a reasonable return on their investments as they serve idiosyncratic needs that ILECs often choose not to serve.[37] Such specialization also secures benefits for CLEC customers, as evidenced by their decision to purchase the specialized services.

Access to UNEs and resold services is often instrumental in allowing CLECs to serve their customers' needs, particularly during initial stages of operation. Such access can enable CLECs to offer higher-quality services than ILECs offer. To illustrate, UNE access has permitted Douglas Fast Net, Gorge Networks, and IdeaTek to offer much faster broadband service to rural customers than ILECs offer.[38]

Access to UNEs and resold services also enables CLECs to deliver services that ILECs choose not to offer. For example, Digital West, Gorge Networks, IdeaTek, Mammoth Networks, and Socket Telecom employ UNEs to deliver broadband service in rural regions where ILECs

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INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Jeff Rhoden"); Margi Shaw ¶¶ 2-3, attached to Opposition of First Communications, LLC, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Margi Shaw"); Brian Worthen ¶ 4, attached as Attachment 13 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Brian Worthen"); Russell Shipley (TPx ¶¶ 9, 15, 35).

[37] Thus, specialization promotes product differentiation and the development of specific expertise that customers value. (See, for instance Alton, Larry, "5 Reasons Modern Businesses Are Turning To Specialization," *Forbes*, December 20, 2016 (https://www.forbes.com/sites/larryalton/2016/12/20/5-reasons-modern-businesses-are-turning-to-specialization/#37cbb6634a29). The reasons for and the benefits of specialization are analyzed in numerous academic studies, including: (i) Robert Lucas, "On the Size Distribution of Business Firms," *Bell Journal of Economics*, 9(2), Autumn 1978, 508-523; and (ii) Luis Garicano and Thomas Hubbard, "Specialization, Firms, and Markets: The Division of Labor within and between Law Firms," *Journal of Law, Economics, and Organization*, 25(2), October 2009, 339-371.

[38] *See* Declaration of Todd Way ¶ 2 (explaining that "DFN's fiber-to-the-node network drastically outperforms the CenturyLink's Tl-fed DSLAMs, offering services of up to 40 Mbps where CenturyLink only offers 1.5 Mbps."), attached as Attachment 7 to Opposition of INCOMPAS, FISPA, Midwest Association of Competitive Communications, and the Northwest Telecommunications Association, WC Docket No. 18-141 (filed Aug. 6, 2018) ("Declaration of Todd Way"); Declaration of Dan Bubb (Gorge ¶¶ 2, 7) (noting that Gorge "bond[s] several DS0 loops to provide speeds well beyond what the ILEC can provide over the same copper loops," in rural areas of Oregon and Washington); and Declaration of Daniel Friesen (IdeaTek ¶ 4) (explaining that it is extending "service outside the ILEC service coverage area," to "serve … rural farms and homes often unserved or serve with lower speed broadband.").

have the technological capability to deliver corresponding service, but decline to do so.[39] In addition, companies like Allstream Business US, Granite Telecommunications, and Socket Telecom employ UNEs and resold services to deliver voice, basic data, trouble-shooting, and coordinated billing services to customers that operate simultaneously at hundreds, if not thousands, of dispersed locations throughout the nation.[40]

In these ways and others, access to UNEs and resold services empower CLECs to benefit consumers by fostering more robust competition than duopolies engender. The more robust competition promotes lower prices, higher levels of service quality, and valued service differentiation.

D. The Commission Recognizes the Dangers of Duopoly Supply.

The Commission is well aware of the fact that duopoly competition generally is insufficient to protect consumers. The Commission has observed that it is not the case that "duopoly always constitutes effective competition and is necessarily sufficient to ensure just, reasonable, and nondiscriminatory rates and practices, and to protect consumers."[41] The Commission has further noted that a compelling case for forbearance requires "additional evidence of robust competition" above and beyond the presence of duopoly competition.[42] The Commission's policy in this regard is well-crafted. Forbearance risks substantial harm to consumers in geographic and product markets where forbearance would empower the ILEC to effectively operate as a duopolist (or monopolist).

In summary, duopoly competition generally fails to protect consumers adequately. The ubiquitous forbearance that UST seeks would expand monopoly and duopoly supply of important communications services. Consequently, although the ubiquitous forbearance that UST seeks would enhance the profits of its members by allowing them to charge monopoly prices for critical inputs or deny access to the inputs altogether, the forbearance would harm consumers.

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[39] *See* the Declarations of Jeff Buckingham (Digital West ¶¶ 2, 12); Dan Bubb (Gorge Networks ¶¶ 2, 10), Daniel Friesen (IdeaTek ¶ 4), Brian Worthen (Mammoth ¶ 10), and Matthew Kohly (Socket Telecom ¶ 8).

[40] *See* the Declarations of Douglas Denney (Allstream ¶ 14), Larry Antonellis (Granite ¶¶ 4-7), and Matthew Kohly (Socket Telecom ¶ 34-40).

[41] *Qwest Phoenix Order*, ¶ 29.

[42] *See id.*, ¶ 32.

V. Forbearance Will Also Harm Consumers by Reducing Broadband Infrastructure Investment.

In addition to harming consumers by expanding monopolistic or duopolistic supply of important communications services, the ubiquitous forbearance UST seeks would reduce broadband infrastructure investment. The *UST Petition* initially asserts (largely without explanation) that prevailing regulations "distort incentives to invest in broadband infrastructure."[43] This assertion appears to be based on the premise that if CLECs are denied access to UNEs and resold services, they will develop or expand their own infrastructure. This premise is suspect for at least two reasons.

A. Forbearance Will Raise CLEC Costs and Limit their Operation.

First, in some instances, the investment required to supply retail communications services over new, proprietary infrastructure is prohibitively costly. This is particularly likely to be the case in rural, residential regions with particularly low population densities. If CLECs are denied access to UNEs and resold services in these regions, they will not expand their infrastructure and will not serve customers. Consumers will be harmed when their choice among competing suppliers becomes more limited.

Retail customers will also be harmed if, after forbearance, ILECs continue to provide access to UNEs and resold services, but at prices that exceed present levels.[44] CLECs typically will be compelled to pass some or all of their increased costs onto retail customers in the form of higher prices. There is little doubt that ILECs will raise the prices of these services if authorized to do so. Indeed, the ILECs' clear purpose in requesting forbearance is to enhance their profit by securing the Commission's permission to raise their rivals' costs and thereby limit the rivals' ability to impose competitive discipline on ILECs.

Regardless of whether ubiquitous forbearance eliminates CLECs or simply diminishes their ability to discipline ILECs, the forbearance will harm consumers by limiting competition in the provision of important communications services in many geographic regions.[45]

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[43] *UST Petition*, p. 19.

[44] Forbearance could well lead to dramatic increases in the prices of key inputs. For instance, Socket Telecom observes that if it is forced to replace UNE DS1 EELs, its wholesale cost for comparable service could increase by more than 350%. (*See* the Declaration of Matthew Kohly, ¶ 46); Mammoth Networks notes that forbearance could increase its cost of inter-office transport by more than 800%. (*See* the Declaration of Brian Worthen, ¶ 13.)

[45] *See, e.g.*, Zarakas Declaration ¶ 10 (illustrating Sonic's competitive supply of broadband service levels of 25/3 or greater, and documenting that Sonic's absence would lead to monopoly or duopoly supply).

B. Forbearance Will Reduce CLEC Broadband Investment.

Second, and perhaps more importantly, it is not appropriate to view a CLEC as making a single, static choice between building its own network and employing an ILEC's network to serve customers. In practice, CLECs often employ UNEs or resold services initially as they build their customer base. Then, once a CLEC has established a solid base of loyal customers in a given geographic region, the CLEC expands its own fiber-based network to serve customers in the region on a long-term basis.

This process is well-documented, both in principle and in fact. The Telecommunications Act envisions precisely this pattern of expanding industry investment.[46] In addition, many CLECs in this proceeding explain how they employ UNEs and resold services as stepping stones to more extensive facilities-based competition. For example, Socket Telecom explains how it initially employed UNEs to serve customers in rural Missouri that multiple facilities-based suppliers declined to serve, and how it now employs its own fiber network to serve these customers and others.[47]

Similarly, Sonic explains how it uses UNEs as a critical element of a dynamic policy to continually build out its fiber network in California. Whereas Sonic began by serving almost all of its customers with UNEs, the company now serves between a quarter and a third of its customers using its own fiber network.[48] As Mr. Zarakas documents, Sonic has been increasing the number of census blocks in which it serves customers using its own fiber.[49]

This increasing fiber investment reflects in part the ongoing race between ILECs and CLECs to deploy fiber. CLECs know that as ILECs make their own investments in fiber networks and retire copper networks, DS0 copper UNEs in particular will no longer be available. Consequently, CLECs recognize the importance of building their own networks to serve their customers before the ILEC retires any copper loops the CLECs may presently be employing. Thus,

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[46] *See Petition for Declaratory Ruling to Clarify 47 U.S.C. § 572 in the Context of Transactions Between Competitive Local Exchange Carriers and Cable Operators*, Order, 27 FCC Rcd. 11532, 11541 ¶ 20 (citing 47 U.S.C. §§ 251, 252) (2012) (noting that Congress enacted Section 251 "to foster development of competition for telecommunications services by allowing competitive LECs to use the incumbent LECs' networks (through resale or unbundled network elements), rather than forcing the new market entrants to rely exclusively on their own facilities"); *see also* S. Conf. Rep. No. 104-230, at 148, 142 Cong. Rec. H. 1078 (1996) ("This conference agreement recognizes that it is unlikely that competitors will have a fully redundant network in place when they initially offer local service, because the investment necessary is so significant.")

[47] *See* Declaration of Matthew Kohly, ¶¶ 25-26. For additional evidence of how CLECs routinely employ UNEs temporarily as they expand their network facilities, see the Declarations of Dan Bubb of Gorge Networks (¶ 11) and Douglas Denney of Allstream Business US, LLC (¶ 9).

[48] *See* Sonic Decl. ¶ 9.

[49] Zarakas Declaration ¶¶ 11-13.

the declining use of UNEs and resold services cited in the *UST Petition*[50] likely indicates that UNE access is performing its intended function well in certain geographic regions (e.g., those with moderate population densities), and that continued UNE access will allow this success to be extended to other regions (e.g., those with lower population densities) where fiber deployment is less profitable.

The central point here is that, in practice, CLECs cannot view UNEs as a long-term substitute for their own fiber investment. Instead, they must view UNEs as a transitional means to reduce the risk associated with investment in their own fiber network.[51] UNEs thereby enhance, rather than discourage, CLEC broadband investment. Consequently, the forbearance that UST seeks risks reducing CLEC broadband infrastructure investment, not increasing this investment as the *UST Petition* and the *Economists' Report* claim.

C. Forbearance Will Reduce ILEC Broadband Investment.

The long-term increase in CLEC investment facilitated by access to UNEs and resold services can, in turn, stimulate ILEC broadband investment. There are many geographic regions in which ILECs have not yet converted their copper-based facilities to fiber. As CLECs expand their fiber networks to serve customers in these regions, ILECs often will feel pressured to follow suit. This fact has been identified in empirical research.[52] This fact is also well-documented in the present proceeding. For instance, Sonic reports that it was the first company to deliver fiber to the premise in several regions of California. In many neighborhoods, AT&T only offered the service as a response to Sonic's initiative.[53] And Sonic has built fiber to more census blocks than its ILEC competitors.[54]

The ubiquitous forbearance that UST seeks also would eliminate an important incentive for ILEC broadband investment. Current regulations authorize CLECs to access certain UNEs only where the ILEC is employing copper-based facilities. Consequently, current regulations provide a strong incentive for ILECs to fully convert their copper facilities to fiber. The incentive arises because such conversion endows ILECs with expanded rights to deny CLEC access to their

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50 *UST Petition*, pp. 15-19.

51 Matthew Kohly of Socket Telecom characterizes as "unequivocally … not true" the assertion that CLECs have little long-term interest in building their own networks. *See* Declaration of Matthew Kohly, ¶ 17.

52 *See*, for example, Glenn Woroch, "Competition's Effect on Investment in Digital Infrastructure," University of California at Berkeley discussion paper, May 2000, available at *elsa.berkeley.edu/~woroch/investment%20 competition.pdf* (noting in reference to investment in digital fiber rings that "CLEC entry leads to subsequent ILEC investment" and "incumbents and entrants match each others' investments", at title page).

53 *See* Sonic Decl. ¶ 11.

54 *See* Zarakas Declaration, ¶ 5 and Table 1.

networks. ILECs value these expanded rights highly, as the *UST Petition* makes apparent. Forbearance would hand these rights to ILECs even if they choose not to fully convert their copper networks to fiber. Consequently, the ubiquitous forbearance that UST seeks stands to reduce fiber-based broadband infrastructure investment by removing a potentially strong incentive for such investment by ILECs.

D. State Reviews of UNE Rates Best Address Any Legitimate Concerns about Changing UNE Costs.

UST's call for forbearance remains suspect even if one (inappropriately) ignores the dynamic nature of CLEC operations and the fact that current access to UNEs and resold services can promote future investment in broadband infrastructure. The *UST Petition* eventually admits that prevailing regulations limit efficient, static investment in broadband infrastructure only if UNE prices are set below prescribed levels. Specifically, the petition states that "mandates that make legacy facilities and services available at artificially low rates reduce incentives for competitors to deploy their own broadband facilities."[55] The petition also asserts that "below-market UNE rates distort investment decisions."[56]

UNE prices are intended to reflect a supplier's total element long-run incremental cost (TELRIC). Therefore, a TELRIC-based UNE price reflects the forward-looking, efficient cost of supplying the UNE. When a supplier faces such a UNE price at any moment in time, it has an economic incentive to operate using the UNE if and only if industry costs are lower when the relevant retail service is supplied via the UNE rather than via independent infrastructure investment by the supplier. In other words, TELRIC-based UNE prices induce suppliers to make efficient "make-or-buy" decisions and thereby minimize industry production costs.[57]

This fact implies that even if one adopts UST's (inappropriate) static view of CLEC operations, UST's assertion regarding investment distortions has merit only if its claim that UNE prices do not reflect TELRIC principles is accurate. UST's assertion is thereby lacking in at least two important respects. First, the claim that UNE prices are set below TELRIC levels is

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55 *UST Petition*, p. 23.

56 *Ibid*, p. 26.

57 *See Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, First Report and Order, 11 FCC Rcd. 15499, 15849 ¶ 685 (1996) (explaining that TELRIC-based pricing "encourages facilities-based competition to the extent that new entrants, by designing more efficient network configurations, are able to provide the service at a lower cost than the incumbent LEC"); *see also 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, 17392 ¶ 670 (2003) ("*TRO*") ("TELRIC assumes that the value of an incumbent LEC's network is constrained by the most efficient technology available, even if the incumbent LEC itself does not deploy, or plan to deploy, that technology").

unsubstantiated. Second, if there is some merit to this (unsubstantiated) claim, then UST's alleged concern with static, myopic investment decisions is better addressed by presenting state public utility commissions with evidence that justifies changes in UNE prices than by implementing nationwide forbearance. The former policy can address the alleged problem directly without risking the substantial consumer harm that ubiquitous forbearance would introduce.[58]

In summary, the nationwide forbearance that UST seeks threatens to reduce broadband investment by both CLECs and ILECs. In doing so, the forbearance would harm consumers of communications services and the American economy more broadly.

VI. The *Economists' Report* is Fatally Flawed.

A. The *Economists' Report* Repeats the Fundamental Error in the *UST Petition*.

The *Economists' Report* says nothing about how resold services can enable CLECs to better serve consumers and impose competitive discipline on ILECs. With respect to UNEs, the report suffers from the same fundamental flaw that plagues the *UST Petition*. Specifically, the report fails to adequately assess the state of competition in relevant product and geographic markets. This failure leads to implausible assumptions and conclusions.

The *Economists' Report* assumes that many consumers presently pay relatively high prices for legacy communications services of relatively low quality.[59] The report further assumes that many of these consumers would quickly begin to purchase higher-quality, lower-priced next-generation communications services once forbearance was implemented. The *Economists' Report* relies upon estimates of nationwide average prices for next-generation services like Ethernet broadband.[60] In doing so, the report assumes these services are readily available to all customers at the specified prices. However, if, as the report suggests, these superior services are readily

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[58] The *Economists' Report* (p. 12) faults current regulatory policy for setting UNE prices "below market." This criticism is misguided. It fails to recognize the appropriate role of regulatory policy. Competition drives prices to reflect costs. As Alfred Kahn has noted, the primary task of regulation is to replicate the discipline that competition would impose, if it were present. (*See* Alfred Kahn, *The Economics of Regulation: Principles and Institutions*, New York: John Wiley and Sons, Vol. I, 1970, p. 17 ("The single most widely accepted rule for the governance of the regulated industries is regulate them in such a way as to produce the same results as would be produced by effective competition, if it were feasible").) Thus, the price of a UNE should reflect its cost (as TELRIC principles prescribe). In the absence of robust competition, the market price of a service typically will exceed its cost. Consequently, UNE prices that reflect cost – not market prices – can be entirely appropriate, and do not reflect a failing of the regulatory process.

[59] The *Economists' Report* estimates that "Across the board, prices for next-generation products are lower than the legacy products they are replacing" (p. 16).

[60] *See*, for example, the *Economists' Report* (Figure 9, p. 17).

available at lower prices than consumers presently pay for corresponding legacy services, why would consumers purchase the allegedly lower-quality services at higher prices?

Clearly, the premise that underlies the *Economists' Report* makes no sense. Consumers will only purchase low-quality services at high prices if they are unable to purchase higher-quality services at lower prices. The obvious reason why consumers purchase legacy services at relatively high prices is that next-generation services are not available at the nationwide average prices cited in the *Economists' Report*.[61] The next-generation services may be available to customers in some geographic regions at the specified prices, but the services are not available at these prices in all relevant geographic markets. Thus, the failure of the *Economists' Report* to account for key differences across relevant geographic and product markets leads to implausible conclusions.

B. The Fundamental Error in the *Economists' Report* Leads to Implausible Conclusions.

The failure of the *Economists' Report* to adequately assess the state of competition in relevant product and geographic markets leads to implausible over-estimates of the gains that forbearance would deliver to consumers. The report predicts that forbearance would substantially increase consumer surplus as consumers rapidly switch from high-priced legacy services to low-priced next-generation services. The predicted increase in consumer surplus will not arise if, in fact, consumers in many geographic regions are unable to make such a switch.

The *Economists' Report* also exaggerates the impact of forbearance on broadband investment and job creation. The report predicts that a great deal of new investment will be undertaken in order to satisfy the substantial increase in the demand for next-generation services that forbearance will induce. However, as explained above, the predicted increase in demand reflects inappropriate assumptions about the prices and availability of next-generation services. If the projected demand does not materialize, then neither will the predicted investment and job creation – even if the assumptions in the *Economists' Report* regarding the investment patterns of industry participants are valid (which is far from apparent).

C. The *Economists' Report* Relies on Unverifiable Information.

Compounding the identified fundamental flaw in the *Economists' Report* is its reliance on unverifiable information. The authors report that they "calculated the weighted average price for each product based on pricing information provided by the ILECs."[62] Because the authors do not

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[61] It is also possible that, for the reasons explained above, some consumers prefer legacy circuit-based (TDM) services to next-generation services even when the two types of service are available at comparable prices.

[62] The *Economists' Report*, p. 14.

make this "pricing information" available, the accuracy of the information and thus the merits of the conclusions drawn using the information cannot be verified.

The authors further report that they "interviewed the contributing ILECs to better understand the most likely retail products associated with each UNE offering."[63] The nature and accuracy of the information provided during these interviews (and thus the conclusions drawn from the information) are difficult to assess.

In summary, the *Economists' Report* relies on unverifiable information and highly implausible assumptions. The implausible assumptions, in turn, completely undermine the credibility of the conclusions drawn in the report.

VII. Conclusions.

The nature and extent of competition in the provision of communications services varies widely across the United States. There are many geographic regions in which competition in the supply of important communications services is limited. The nationwide forbearance that UST advocates would harm consumers by further limiting competition in these regions. Forbearance would also reduce investment in broadband infrastructure and thereby harm consumers and the American economy.

The misguided analysis in the *UST Petition* and the *Economists' Report* does not support the UST's call for ubiquitous forbearance. The lack of meaningful support for such forbearance is not surprising. The requested forbearance would increase ILEC profit by authorizing ILECs to exclude or seriously weaken their competitors. However, the forbearance would harm consumers by limiting competition in the supply of important communications services in many geographic regions of the United States. The Commission can avoid this harm by declining to grant the UST's inappropriate request for nationwide forbearance.

I declare the foregoing to be true and correct to the best of my knowledge, under penalty of perjury.

David Sappington

August 6, 2018

Date

63 *Ibid*, p. 15.

REDACTED – FOR PUBLIC INSPECTION

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"In Memoriam to Michael A. Crew (1942–2016)," *The Journal of Regulatory Economics*, 52(2), October 2017, pp. 105-106 (with M. Spiegel).

HONORS AND AWARDS:

2017 – 2019	Term Professorship Award, University of Florida.
2017	*The Energy Journal*'s Best Paper Award.
2015	Distinguished Member Award Transportation and Public Utilities Group.
2015	Faculty Honoree, Anderson Scholars Program University of Florida.
2011 – 2014	Research Foundation Professorship, University of Florida.
2003	Distinguished Service Award, Public Utility Research Center University of Florida.
2000	Faculty Honoree, Anderson Scholars Program University of Florida.
1998	Professorial Excellence Program Award, University of Florida.
1997 – 2000	Research Foundation Professorship, University of Florida.
1992	Research Achievement Award, University of Florida.
1976	Inducted into the Phi Beta Kappa Society.

REFEREE/REVIEWER FOR:

Accounting Review
Addison Wesley, Publishers
American Economic Journals: Economic Policy, Microeconomics
American Economic Review
American Law and Economics Review
American Enterprise Institute
Bell Journal of Economics
Berkeley Electronic Press Journal of Economic Analysis and Policy
Bulletin of Economic Research
Cambridge University Press
China Economic Review
Danish Social Science Research Council
Economic Journal
Econometrica
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Economic Design
Economic Inquiry
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Energy Journal
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European Economic Review
European Journal of Operational Research
Games and Economic Behavior
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Israel Science Foundation
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Journal of Accounting Research
Journal of the American Statistical Association
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Journal of Competition Law & Economics
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Journal of Economic Behavior and Organization
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Journal of International Economics
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Review of Economic Studies
Review of Economics and Statistics
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Review of Network Economics
Sloan Foundation
Southern Economic Journal
Telecommunications Policy
Utilities Policy
World Bank Economic Review

SELECTED ADDITIONAL EXPERIENCE:

1997 – Present	Instructor in *The International Training Program on Utility Regulation and Strategy*, sponsored by The World Bank and the University of Florida's Public Utility Research Center.
2018 – Present	Advisor to DISH Network on Industry Consolidation in the Communications Sector.
2018 – Present	Advisor to INCOMPAS on The Design of Competition Policy in the Communications Sector.
2017	Advisor to DISH Network on Competition Policy in Broadband and Media Markets.
2016	Advisor to Norfolk Southern Corporation on The Design of Access Policy in the Railroad Industry.
2016	Advisor to the Alliance of Automobile Manufacturers on The Impact of Safety Recall Legislation in the Automobile Industry.
2015 – 2016	Advisor to Sprint Corporation on The Design of Regulatory Policy for Business Data Services.
2014 – 2015	Advisor and Expert Witness for Norfolk Southern Corporation on The Design of Regulatory Policy in the Railroad Industry.
2014 – 2015	Advisor and Expert Witness for DISH Network on The Design of Competition Policy in Broadband and Media Markets.
2014 – 2015	Advisor to EPCOR Utilities Incorporated on The Design of Performance Based Regulation in the Energy Sector.
2014	Advisor to COFETEL, Mexico's Telecommunications Regulator on Price Cap Regulation in Mexico's Telecommunications Industry.
2013 – 2014	Advisor and Expert Witness for the Alliance of Automobile Manufacturers on Warranty Repair Compensation Policy.
2013	Advisor to AT&T on The Design of Spectrum Auctions.
2013	Advisor to the National Grid Service Company on The Design of Service Quality Standards in the Electricity Sector.

SELECTED ADDITIONAL EXPERIENCE (CONTINUED):

2013	Advisor to Telefonica on The Design of Price Cap Regulation in Peru.
2011	Advisor to Leap Wireless International on Competition Policy in the Wireless Communications Industry.
2011	Advisor to Telstra Corporation, Ltd. on the Design of Access Pricing Policy in Australia's Telecommunications Industry.
2010	Advisor to COFETEL on Competition Policy in Mexico's Communications Industry.
2010	Advisor to the U.S. Federal Communications Commission on Incentive Regulation and Broadband Deployment.
2009	Advisor to the OECD on Competition Policy in Mexico's Communications Industry.
2009	Advisor to Afilias on the Design of Policy to Assign Internet Names and Addresses.
2008 – 2009	Advisor and Expert Witness for AT&T on the Design of Competition Policy in the U.S. Telecommunications Industry.
2008	Member of Advisory Committee to the "Electronic Health Information Exchange Project," sponsored by the National Governors Association.
2008	Advisor to United States Cellular Corporation on the Design of Telecommunications Universal Service Policy.
2007 – 2008	Advisor to United Parcel Service on the Design of Regulatory Policy in the Postal Industry.
2006 – 2007	Advisor to Earthlink, Inc. on the Design of Telecommunications and Internet Competition Policy.
2006 – 2007	Advisor to Telstra Corporation, Ltd. on the Design of Competition Policy in Australia's Telecommunications Industry.
2005 – 2006	Advisor to General Communication, Inc. on the Design of Telecommunications Competition Policy.
2005	Advisor to United Parcel Service on Competition Policy in the U.S. Postal Industry.

SELECTED ADDITIONAL EXPERIENCE (CONTINUED):

2004 – 2005	Advisor to the Antitrust Division of the U.S. Department of Justice on Competition Policy in the Telecommunications Industry.
2004	Advisor to OSIPTEL, Peru's Telecommunications Regulatory Agency, on the Design of Price Cap Regulation.
2003 – 2004	Advisor to SBC, Inc. on the Design of Performance Measurement Systems in the U.S. Telecommunications Industry.
2003	Presented Invited Testimony to the President's Commission on the United States Postal Service.
2003	Advisor to General Communication, Inc. on the Design of Universal Service and Competition Policy.
2001	Advisor to CONATEL, Ecuador's Central Regulatory Body on the Design of Telecommunications Policy.
2000 – 2001	Advisor to Ameren UE on the Design of Incentive Regulation for Electric Utilities.
1999 – 2000	Advisor to the Antitrust Division of the U. S. Department of Justice on a Proposed Merger in the Communications Industry.
1998 – 2000	Consultant and Expert Witness for United Parcel Service on Postal Industry Pricing.
1998 – 2000	Advisor to the World Bank on Telecommunications Privatization in Africa.
1996	Consultant and Expert Witness for TELUS Communications, Inc. on the Design of Price Cap Regulation.
1995	Advisor and Expert Witness for GTE-California on Incentive Regulation and Telecommunications Competition Policy.
1992 – 1994	Advisor to the Southern Bell Telephone Company on the Design of Incentive Regulation.
1992	Advisor to the New York State Public Service Commission on Incentive Regulation in the Electric Power Industry.