

The Benefits of a Competitive Business Broadband Market

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Executive Summary: The Benefits of a Competitive Business Broadband Market

There is little disagreement in our society that markets function best and society benefits most where competition is allowed to flourish. Telecommunications service markets, and the market for what will be described here as *Business Broadband Service*, are no exception. The most heralded benefits of competition are efficiency and innovation, but there are other positive byproducts of competition: in the case of telecommunications markets, empirical historical data reveal that competition spurs firms to increase investment of private capital and to employ more workers.

Not all markets exhibit the same level of natural opportunities for competitive activity. As a result, U.S. policymakers (legislators, regulators and the Justice Department) have taken affirmative steps to introduce and maintain competition in markets that otherwise exhibit tendencies toward extreme concentration or even monopoly, because of the high barriers to entry. The Federal Communications Commission’s (“FCC’s”) efforts in shepherding competition into various segments of the telecommunications industry reach back more than thirty years. Those efforts have been successful where the regulatory framework – “rules of the road” – that enabled a market segment to transition from monopoly to competition combined policies that guaranteed interconnection with policies that ensured access to essential, non-duplicable inputs (such as last-mile connections) at reasonable and nondiscriminatory rates. Every competitive success in the telecommunications industry has resulted in both innovation and growth.

Today, the market for Business Broadband Services remains the segment of the broader telecom market that retains the most persistent barriers to entry, and it is where there is the greatest potential risk to competition if the regulatory structures (though suboptimal) that have made some competition possible in this sector are not appropriately maintained and updated. The precise regulatory structures best suited to fostering competition for Business Broadband Services were discussed in an earlier paper, *Investment, Regulation and Jobs* (full citation found at footnote 34). This paper examines (1) the potential economic gains that can be expected to flow from changes that establish the preconditions for increased competition and (2) the potential economic losses that can be expected if such changes are not made.

“Business Broadband Services” comprise a rich set of services provided to business customers over dedicated last-mile telecommunications facilities that allow customers to connect

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from the served location to any other premises or service (point to any point). Such services differ significantly from the “best efforts” types of broadband (DSL, cable modem or FiOS-like services) used for Internet access (point to Internet). “Best efforts” Internet access broadband is not a substitute for customers that need dedicated Business Broadband Services.

The primary participants in the markets for Business Broadband Services are the legacy providers (i.e., incumbent local exchange carriers or “ILECs”) and a variety of competitive local exchange carriers (competitors or “CLECs”), whose businesses are focused almost entirely on this segment. Cable companies play a relatively small (albeit growing) role, with the vast majority of the services they offer directed to the smallest of businesses who buy services in the “best efforts” category. Where cable companies do (or may in the future) offer true Business Broadband Services, they face many of the same market hurdles as the CLECs.

Where CLECs have successfully overcome entry barriers, business customers have benefitted in many ways. CLECs have led the charge in the development and offering of the new Business Broadband Services and applications upon which businesses have come to rely today. Dedicated Ethernet access services, Voice over Internet Protocol (“VoIP”), and “cloud”-based services were all developed and introduced to the business market by CLECs striving to differentiate their products and meet customer needs that remained unfilled by the incumbents. Where the CLECs have led, the legacy providers (and the cable companies, in the locations in which they can offer service given the limited reach of their networks) have followed. CLEC innovation has spurred incumbent providers and cable companies to respond with competitive offerings of their own, and the rivalry thus created means that more productive uses of telecommunications spread further and more quickly to business customers in all sectors of the economy.

In order to compete, carriers (ILECs, CLECs and cablecos) must constantly maintain and improve their networks and customer service capabilities – which requires them to invest capital into their businesses and employ more skilled workers. While data is not available for Business Broadband Services investment specifically, data for the broader telecommunications sector demonstrates the effect of competition and that same effect undoubtedly occurs in the Business Broadband Services market. For example, in an earlier period (1996-2000) in which pro-competition policies stimulated competitive activity, the data reveal that capital investment in the telecom sector grew at two and a half times the rate of investment growth throughout the rest of economy and employment levels increased three times as fast as the economy generally. Given the growth in the use of and strategic importance of Business Broadband Services (both to the customers that use them and the carriers that provide them), there is every reason to expect that similar gains can be achieved going forward if the competitive “rules of the road” are strengthened (or, in some cases, simply enforced). As the report details, prompt adoption of policies that fix the known shortcomings in the present regulatory structure can be expected to stimulate the hiring of as many as 650,000 new employees into the ranks of the telecom sector over the next five years and the investment of an additional \$184-billion in private funds into U.S. telecommunications networks.

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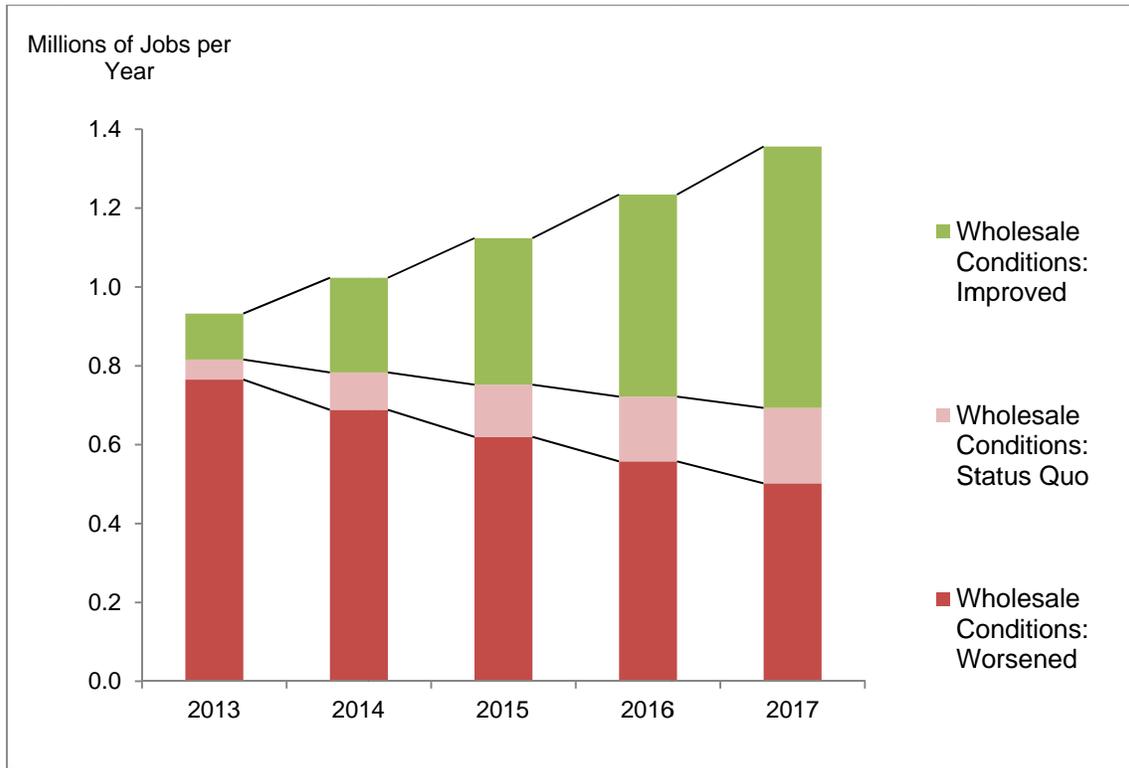


Figure ExecSum -1: Projected Changes in Telecom Sector Employment Levels - 2013 to 2017

Unfortunately, current competition policies are not as effective at lowering entry barriers and establishing the preconditions for competition as the policies that existed between 1996 and 2000. The existing policies go some way toward promoting competition, but apparently not far enough. During the time period since 2000 when the FCC began scaling back its competition policies, the level of investment and job creation in the telecommunications sector has lagged behind the economy as a whole. One can expect this pattern to continue if the flaws in the current policies are not fixed.

Moreover, any further dismantling of the market opening rules that provide the underpinnings of competition in telecommunications can be expected to result in a reduction from current levels of investment and jobs. Further removal of these rules (whether by initiative or inaction) will weaken competitors, likely eliminating some, and the resulting loss of competition will cause not only CLECs but also incumbents to cut back on their investments and to implement workforce reductions.

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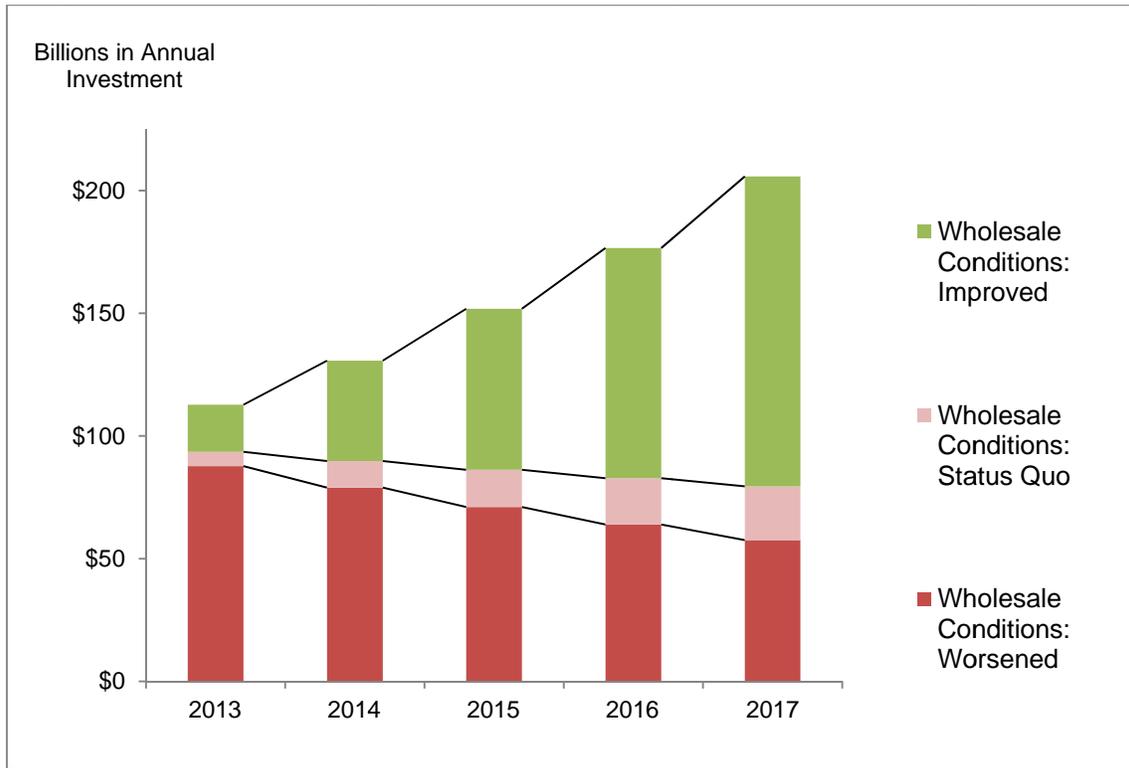


Figure ExecSum -2: Projected Changes in Information Sector Investment Levels - 2013 to 2017

Under these conditions, rather than adding 650,000 new employees, the telecom sector can be expected to shed as many 300,000 (40%) of its current jobs and reduce investment by as much as \$30 billion per year. The figures above and below starkly illustrate the impact that getting the “rules of the road” properly crafted can be expected to have for telecom sector employment and investment levels over the next five years.

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Chapter One: Competition is the Bedrock of Functioning Markets

Competition is the bedrock of functioning markets, and this is nowhere more true than in the market for Business Broadband Services.¹ Throughout the U.S. economy, we rely on competition to drive gains in productivity and foster innovation. The telecommunications industry is no exception. Not only has competition led to growth and investment in telecommunications and IT products and services, but where competition has been successfully introduced in the telecommunications industry, the entire national economy has benefitted. As the nation's businesses become increasingly reliant on telecommunications as the foundation for productivity and growth, supporting opportunities for competition in Business Broadband Services becomes all the more important. As this paper will show, ensuring that all of the competition-enabling policies are in place and functioning will allow the competitive business broadband market to flourish, which has substantial impacts on the level of investment and employment in the telecom sector.

Under the Telecommunications Act of 1996 (the "1996 Act"), Congress directed the FCC to adopt policies that support competition in all segments of the telecommunications industry, and, where necessary, to use its rulemaking authority to overcome persistent barriers to entry. Describing the benefits of competition, the FCC has observed,

Free and open competition benefits individual consumers and the global community by ensuring lower prices, new and better products and services, and greater consumer choice than occurs under monopoly conditions. In an open market, producers compete to win customers by lowering prices, developing new services that best meet the needs of customers. A competitive market promotes innovation by rewarding producers that invent, develop, and introduce new and innovative products and production processes. By doing so, the wealth of the society as a whole is increased. In a competitive environment, businesses that fail

¹ For the remainder of this paper, the term "Business Broadband Services" will be used to mean dedicated point-to-point last-mile facilities and will be meant to exclude "best-efforts" broadband Internet access. The distinctions between the two are discussed more fully in Chapter 2.

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to understand and react to consumer needs face the loss of customers and declining profits.²

Competition also creates the incentive for providers to achieve and maintain a high quality of service and reliability: in the case of business broadband services, this translates directly into increased use of private investment dollars for the maintenance and improvement of network facilities and the retention of employees in furtherance of the same goals.

Businesses, in particular, value competition among their suppliers, because it enables them, in turn, to grow and profit.³ Most businesses sell their services in highly competitive markets, so they need competitively priced inputs to maintain their competitive edge. Beyond the price advantages, businesses understand that competing approaches to the delivery of services results in solutions that are more specifically responsive to their needs. Businesses of all sizes can become more profitable and stimulate jobs and economic growth throughout the economy when they are able to buy inputs on a competitive basis.

Under ideal conditions – i.e., with no barriers to entry and exit – new providers enter markets to meet consumer demand. These entrants have the incentive to innovate and to distinguish their products or services, and their presence often spurs a more nimble response from incumbents as well. Our laws recognize, however, that real-world conditions do not always lead to competition. Antitrust laws, for example, are meant to discourage (and, if necessary, prevent) companies from acquiring and abusing market power to impede competition. There can also be barriers to entry that impede competition, completely independent of any competitive misconduct. Specifically, the market for last-mile telecom facilities has persistently exhibited precisely these entry barriers. Targeted, market-opening rules for the purpose of lowering entry barriers have proven to be an effective way to overcome impediments to competition. Moreover, because telecommunications is an essential input for economic activity in virtually every sector of the national economy, the competition that is enabled by such lowered entry barriers is multiplied in economy-wide economic growth.

In the telecommunications industry, competition did not simply arise based on natural economic forces. It took concerted changes in legal and regulatory policies to advance it. Some segments of the telecommunications industry – namely those that could operate independently of network access – were relatively easy to convert to a competitive structure. For example, by establishing basic technical standards for attaching user-owned equipment to the network, the FCC enabled independent manufacturers to develop, and customers to purchase, innovative and

² Connecting the Globe: A Regulator’s Guide to Building a Global Information Community, FCC, 1999, accessed at <http://transition.fcc.gov/connectglobe/sec5.html>, January 14, 2013, at V-1.

³ A recent nationwide survey of small businesses, commissioned by the Small Business Administration’s Office of Advocacy, found that “small businesses want both competition and choice (of providers and services) in broadband, and are dissatisfied with the choices they currently have available. The survey data demonstrate that the small business Internet market does not provide this competition or choice to small business.” *The Impact of Broadband Speed and Price on Small Business* prepared by Columbia Telecommunications Corporation, under a contract with the Small Business Administration, Office of Advocacy, November 2010 (“SBA Study”), at p. 2. In fact, when the survey asked participants to rate various options for improving their Internet service, the one they rated as most important was “the ability to choose from more providers.” *Id.*

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less expensive new telephones or telephone systems. In relatively short time, the legacy providers' monopoly over equipment gave way to robust competition; prices dropped and the capabilities of premises-based systems grew exponentially. Similarly, the FCC's pro-competitive access policies and the DOJ's restructuring of the Bell System to separate AT&T from its local exchange carrier subsidiaries caused the long distance voice market to become open to competition, and competition flourished.

The FCC, Congress, and the courts have all recognized that the segment of the telecommunications market that poses the greatest challenge for competition is the "last-mile" services and facilities that connect every customer from a home or business location. With access to last-mile services and facilities, competitors are able to become more robust in their offerings of a broad range of services, providing business customers with a whole suite of innovative, competitively priced services that help spur growth throughout the economy. Thus the divestiture of the Bell operating companies from AT&T in 1984, the 1996 Telecom Act, and major FCC proceedings throughout the past several decades have focused on creating the conditions for competition that relies on access to last-mile facilities.

Yet, despite a broad understanding of the importance of access to last-mile facilities as competitive inputs that cannot be efficiently replicated by competitors in most locations, the Commission's policies have not always provided a solid foundation for supporting competitive Business Broadband Services. Despite clear evidence that legacy providers have enduring market power with respect to local transmission facilities and services (such as those provided as special access services), the Commission has failed to conclude its prolonged investigation of ILEC special access prices, terms and conditions – already past the one-decade mark – while competitors are forced to pay excessive rates for these services. The FCC has essentially deregulated the legacy providers' packetized local transmission facilities and services, including Ethernet special access services, without conducting its established market power analysis of those services. This is troubling because there is no reason to expect that the legacy providers' market power in the provision of Ethernet local transmission services would be any less than has been the case with local transmission facilities and services that utilize older technologies (e.g., DS1 and DS3 services). These actions – and inactions – have had negative consequences for the broader expansion of competitive services and continue to limit choices available to business customers. The result is a marketplace that offers purchasers fewer alternatives than might otherwise be available, and that dampens the additional incentives of both incumbent and competitive providers to hire employees and invest in those portions of their networks.

Examples of effective, targeted regulatory action in response to entry barriers

The use of regulation to ensure access to inputs subject to market failure and promote efficient use of hard-to-duplicate distribution infrastructure is hardly unique to last-mile telecommunications facilities. There are many examples, particularly where scarce resources and/or large physical distribution networks are involved, in which a targeted regulatory action is needed to create the necessary conditions for the development and maintenance of competition. Here are just a few examples:

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Pole and conduit access: Congress has adopted, and the FCC has enforced, a requirement that utilities rent space on their poles and conduits⁴ to cable companies and telecommunications carriers (at cost-based rates). The law that gave rise to this requirement dates from 1977, but the FCC has repeatedly affirmed that the reasons for the original policy continue to apply. Explaining the continuing need for this requirement, the FCC recently stated that “lack of reliable, timely, and affordable access to physical infrastructure—particularly utility poles—is often a significant barrier to deploying wireline and wireless services.”⁵ Today, legacy providers, cable companies, and CLECs all rely on pole attachment rules to obtain access to utility-owned poles and conduits.

Building access: The Commission has acted to ensure that competitive providers of video services, including ILECs such as Verizon and AT&T that have relatively recently entered that business, are not excluded from serving customers in multiple dwelling unit buildings by virtue of exclusivity arrangements between an incumbent cable operator and building owner.⁶

Regional sports networks (RSNs): In the 1992 Cable Act,⁷ Congress granted the FCC broad authority to prohibit “unfair acts” of cable operators that significantly hinder or prevent their competitors from providing video programming to consumers.⁸ The FCC later determined that “unfair acts” could also arise in the context of terrestrially-delivered programming. In so doing, the Commission explained that “some programming may be non-replicable and sufficiently valuable to consumers that an unfair act regarding this programming presumptively, but not conclusively, has the purpose or effect set forth in Section 628(b)” – that is, of disrupting competition. In explaining the anticipated benefits of its action, the FCC stated: “Our efforts to spur competition in the marketplace for video programming are also aimed at increasing consumer benefits, including better services, innovations in technology, and lower prices.”⁹ ILECs that have relatively recently entered the video business are major beneficiaries of the RSN access regulation.

Interconnection in other industries: In other industries as well, competition is facilitated by rules that ensure competitive interconnection. For many years, monopoly electric distribution companies also controlled (i.e., owned and operated) the generation and transmission of electricity. After it became apparent that generation and transmission did not need to be monopoly functions, policymakers acted to ensure that independent energy producers had non-discriminatory access to retail distribution. Retail electric competition has succeeded

⁴ The Commission has interpreted Section 224 as “encompass in-building facilities, such as riser conduits, that are owned or controlled by a utility.” In the Matter of Promotion of Competitive Networks in Local Telecommunications Markets, 15 FCC Rcd 22983, ¶ 80 (2000).

⁵ In the Matter of Implementation of Section 224 of the Act; A National Broadband Plan for Our Future, Report and Order and Order on Reconsideration, 26 FCC Rcd. 5240 ¶ 3 (2011).

⁶ Exclusive Service Contracts for Provision of Video Services in Multiple Dwelling Units & Other Real Estate Developments, Report & Order & Further Notice of Proposed Rulemaking, 22 FCC Rcd 20235 (2007), affirmed, Nat'l Cable & Telcoms. Ass'n v. FCC, 567 F.3d 659, 386 U.S. App. D.C. 131 (D.C. Cir. 2009).

⁷ Cable Television Consumer Protection and Competition Act of 1992, Public Law 102-385.

⁸ 47 U.S.C. §§628(b), 628(c)(1).

⁹ *Id.* at para. 1.

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(particularly with respect to higher-usage business customers) because interconnection of competitive suppliers is mandated and protected.

There are other examples in which infrastructure resources are owned and operated by the government, because of non-duplicability and/or interconnection requirements, such as in the case highways and, to a lesser extent, airports. In both trucking and air transportation, an affirmative decision was made to eliminate entry regulation. However, without access to a non-duplicable infrastructure resource, the competition that developed in these industries would not have been possible.

Chapter Two: Overview of the Market for Business Broadband Services

From the individual at home to the Fortune 500 company with offices nationwide and internationally, the reliance on advanced telecommunications capabilities continues to grow and become more sophisticated. The term “broadband” encompasses many different product markets. Here, *Business Broadband Service* refers to a rich set of services provided to business customers over last-mile telecommunications facilities and capacity to each individual customer – a dedicated, managed service. A dedicated, managed service allows a customer to connect from the served location to any other premises or service (point to any point) and also provides the quality of service demanded by most business customers.

Structure and participants in the Business Broadband Market

Businesses demand high-performance, high-capacity, and reliable telecommunications services to compete in today’s marketplace. While a small segment of business customers with relatively limited telecommunications needs use “best efforts” broadband services, such as legacy providers’ ADSL, FiOS, and U-Verse services and hybrid coaxial-fiber high-speed Internet access from cable companies, most sophisticated business applications require the robust reliability and performance guarantees only available when service is provided using dedicated point-to-point Business Broadband connections. These include traditional time-division multiplex (TDM)-based DS-0, DS-1, DS-3, and OCn as well as packetized Ethernet access services available in various capacities.¹⁰ As the FCC has consistently recognized,

business customers who are buying specialized, high-capacity services demand – and are often willing to pay a premium for – flexible and guaranteed quality offerings, and that as a result providers treat them differently from residential customers in the products they offer, the way they market and sell these products, and the prices they charge.¹¹

Business customers’ needs vary depending on the size and nature of their businesses. Large enterprise customers may have thousands of employees nationally (and internationally),

¹⁰ The underlying loop plant over which retail Business Broadband Ethernet services are offered can be copper or fiber.

¹¹ Wireline Competition Bureau Seeks Comment on Business Broadband Marketplace, WC Docket No. 10-188, DA 10-1743, rel. November 4, 2010.

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while small-to-medium businesses typically have a local or regional footprint and employ roughly 5 to 500 employees. Large enterprises often have smaller branch locations that have the same level of telecommunications demand as a single-location small business. Legacy providers who operate on a national basis (i.e., AT&T and Verizon) target the largest enterprise customers with big account teams and one-stop shopping solutions, but these customers continue to want competitive options and network redundancy. Small and mid-sized business customers, who do not qualify for similar attention from legacy providers, often find that they get the personalized attention and customized solutions they require from CLECs. Businesses in rural areas may have the fewest choices, a condition they would strongly like to remedy.¹²

Many business customers have multiple locations, each of which requires broadband connectivity. Multi-location business customers generally demand that their service providers serve all or most of their locations. Moreover, they often require that their service providers provide both an integrated set of solutions designed to support intra-company communications as well as a complementary set of solutions designed to support connectivity to the public Internet and the Public Switched Telephone Network (“PSTN”). To be successful in serving the needs of business customers, a provider must be able to offer connections to and between every (or virtually every) customer location as well as connectivity to the Internet and PSTN.

Business applications are increasingly data-intensive, and both speed and cost are major considerations. Competitors help to simplify customer networks, permitting them to combine voice, data, video, and Internet traffic over a single connection. Through managed services, competitive providers are able to meet businesses’ needs for dynamic routing and allocation of transmission capacity.

Customized solutions developed under competitive conditions also respond to business requirements for cost savings and efficiency. Since no two business customers have exactly the same requirements, they are increasingly looking to providers for customized solutions to their specific business needs. As telecommunications and IT budgets often comprise a significant component of a business’s non-labor expenses, there is always emphasis on achieving cost efficiencies. Under competitive conditions, providing the customer with cost-efficient solutions – tailored to their individual businesses – is a high priority.

Businesses value reliability and knowing that their service will perform within specified (and contractually enforceable) parameters. CLEC services are designed to ensure specific Quality of Service levels – unlike “best efforts” services typically offered to residential customers.¹³ Many businesses also need to know that secure communications will be maintained under a wide variety of conditions. For these customers, a CLEC’s network may provide the opportunity to establish alternate (redundant) communications paths.

¹² Id., *SBA Study*, at 2.j

¹³ Services such as ADSL and cable modem promise the residential customer that upload and download speeds will be “up to” a particular level. This is referred to as a “best efforts” service commitment, since lower speed levels are technically acceptable.

“Best efforts” Internet Access Services are not substitutes for Business Broadband Service

Some may assume that higher-revenue business customers would have more competitive options than residential customers. But because of the service requirements that are unique to businesses and the high costs of duplicating last-mile facilities, this assumption does not reflect market realities. As a result of current FCC policies and naturally high barriers to entry, many businesses have fewer competitive service options for last-mile services than residential consumers.

Business Broadband Services are available from the legacy providers, CLECs, and some cable providers, either over their own facilities or by leasing ILEC facilities.¹⁴ “Best efforts” services offered by cable, wireless and legacy telephone companies may serve the needs of mass market customers, but they do not provide the dedicated connections that businesses rely upon for guaranteed uptime, redundancy, and broad, business-grade functionality.

Business customers do not consider “best efforts” services to be effective substitutes for Business Broadband Services (whether carrying TDM or packetized transmissions) for several key reasons. Cable infrastructure, which was deployed for purposes of distributing video programming, is located predominantly in residential neighborhoods rather than in urban business districts or suburban office parks and is often not available at locations businesses (including wireless carriers) seek to serve. More importantly, cable companies’ hybrid fiber-coaxial (“HFC”) networks utilize a shared architecture that makes them incapable of providing the guaranteed bandwidth that most small and medium business customers (and certainly all larger enterprise customers) demand.

Both cable company and ILEC “best efforts” services suffer from other important deficiencies when compared to Business Broadband Services, with regard to 1) guaranteed speed (bandwidth), 2) symmetrical speed (bandwidth), 3) reliability and repair intervals, and 4) security. As the name “best efforts” connotes, the services lack the guaranteed speed (bandwidth) that businesses demand and that they receive when they purchase dedicated access services. For example, with shared facilities, a user’s download speeds may drop at peak usage times; with ADSL services, maximum speeds vary with the distance between the customer and legacy provider’s central office. “Best efforts” broadband Internet access services typically do not provide the customer with symmetrical bandwidth to carry transmissions in both directions but, rather, offer asymmetrical bandwidth, with faster download than upload capabilities.

In addition, businesses that expect their dedicated business broadband services to be repaired on an expedited basis (and often have specific service level agreements to that effect) will not find equivalent protection in “best efforts” service. Finally, most businesses that purchase dedicated connection services do not want the security exposure that comes with using a shared connection “best efforts” service. The fact that legacy providers and CLECs are able to

¹⁴ For purposes of this discussion, these terms encompasses all last-mile dedicated circuits regardless of whether provisioned as TDM-based DS-0, DS-1, DS-3 (and even higher-bandwidth) or equivalent packetized Ethernet services.

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charge far more for a dedicated access circuit (e.g., T-1) than for roughly equivalent¹⁵ “best efforts” service is further indication that the “best efforts” services are not competing directly – put differently, that “best efforts” services are in a different product market.

Moreover, the cable modem, ADSL and wireless broadband Internet access services generally offer connections only to Internet access service offered by the “best efforts” access service provider or its affiliate (point to Internet). Dedicated Business Broadband Services offer connections from a customer premises to another customer premises or an interconnection that can ultimately route it to any other point (point to any point). Some portion of a dedicated Business Broadband facility may in fact be terminated at an Internet access port – but that is not the only possible option or use for the facility.

Wireless services are similarly not suitable for providing businesses the secure and reliable high-bandwidth dedicated access they require. For business customers, the possibility of “cord-cutting” (except where mobility is the primary objective) is beyond contemplation.¹⁶ Like other broadband services designed primarily for residential users, wireless broadband services are offered with a “best efforts” service commitment and often operate, on average, significantly below the advertised ranges.¹⁷ Moreover, even the fastest mobile wireless services, under optimal conditions, operate more slowly than is required for many business applications. Today most mobile wireless broadband customers have connections with actual download speeds, on a consistent basis, of less than 1 megabit per second (Mbps). Business broadband requirements – for example, for a basic 10 Mbps Ethernet connection – are consistently ten times that fast (and many business locations require reliable service at far greater speeds). Finally, today’s wireless providers do not offer any dedicated access service, a fundamental building block in most business network applications. Rather, wireless providers are themselves highly dependent on wired dedicated connections to transport voice and data traffic from their cell sites to the public switched telecommunications network.

Competition policy shapes the Business Broadband market

Whereas serendipitous technological developments – aided by regulatory policy choices – have enabled consumers to have two choices for basic voice and broadband internet access service in most markets (cable and ILEC), along with several wireless providers, intermodal competition has not made similar inroads with respect to last-mile access used to provide Business Broadband Services. CLECs eagerly embrace the opportunity to replace ILEC-supplied wholesale access services with competitor-owned connections. However, it is not efficient for competitors to deploy new and redundant last-mile facilities to the many business customer locations where the demand for telecommunications services, and the associated revenue opportunities, are relatively limited. Moreover, it is rarely, if ever, the case that *all* (or even most) of a multi-location business customer’s locations that the business wants a

¹⁵ We characterize the services as “roughly equivalent” for the reasons just explained, i.e., that the transmission speed on a “best efforts” service do not match any special access service with respect to guaranteeing bandwidth and offering symmetrical speed, and other service parameters, such as repair intervals, are also different.

¹⁶ Fixed microwave has been around for years and is not widely used.

¹⁷ Federal Communications Commission, Connecting America: The National Broadband Plan (March 2010), <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“National Broadband Plan”) at IV-44.

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competitive provider to serve will have a level of demand that justifies the construction of last-mile transmission facilities. In order to provide the customer with network services, the CLEC needs to be able to serve the customer at *all* of its locations.

The FCC has recognized that market opening wholesale rules are appropriate to foster retail competition for broadband services and that the policies designed to encourage residential broadband competition are not sufficient to ensure a competitive result for Business Broadband Services:

Ensuring robust competition not only for American households but also for American businesses requires particular attention to the role of wholesale markets, through which providers of broadband services secure critical inputs from one another. Because of the economies of scale, scope and density that characterize telecommunications networks, well-functioning wholesale markets can help foster retail competition, as it is not economically or practically feasible for competitors to build facilities in all geographic areas. Therefore, the nation's regulatory policies for wholesale access affect the competitiveness of markets for retail broadband services provided to small businesses, mobile customers and enterprise customers.¹⁸

Yet, despite its express recognition of the importance of wholesale access to enable retail competition for business services, the FCC has not always developed and maintained consistent policies to support the expansion of Business Broadband competition by 1) ensuring competitors' ability to purchase ILEC last-mile facilities at reasonable rates, terms, and conditions, and 2) intervening to lower barriers that adversely affect competitors' ability to deploy their own last-mile facilities.

With respect to the first category – competitors' ability to purchase last-mile facilities at reasonable rates, terms, and conditions as inputs to their own innovative services – there are several Commission policies that have adversely affected competitive growth, including:

- The prolonged delay in restoring meaningful price constraints to special access services (as requested by AT&T in its 2002 Petition), despite evidence of on-going market failure;
- Failure to restrict anticompetitive ILEC “demand lock-up” requirements, which provide lower prices to competitors only if they purchase a high percentage of their special access needs from the ILEC, thus restricting demand for competitive services;
- Reliance upon predictive (and incorrect) judgments in prematurely removing wholesale obligations for packetized last-mile facilities, including Ethernet loops, such that legacy carriers no longer have to lease such facilities, either through special access subject to price constraints or as unbundled network elements, to CLECs; and

¹⁸ National Broadband Plan at 47

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- Failure to preserve the availability of copper loops which are the building blocks of Ethernet over Copper services; those services today provide connections at speeds substantially higher than anything that the legacy providers ever offered over copper.

With respect to the third category – policies that would help to reduce barriers to competitive entry – the Commission has failed to identify and act on some important opportunities for targeted action, including legacy provider exclusionary purchase arrangements (including term and volume discounts) for special access services.

There are also critical policy decisions currently facing the Commission with respect to the development of competition for the packetized transmission services which account for an increasing portion of the Business Broadband market. Nothing about the change in transmission technology (from TDM to packetized) fundamentally alters the economic barriers and market conditions that relate to last-mile facilities. As mentioned, the FCC currently places effectively no regulatory constraints on the ILECs' exercise of market power over Ethernet and other packetized last-mile transmission facilities. Thus, as the FCC observed over two years ago, "Lack of appropriate wholesale access to packet-based facilities in particular serves as a constraint on competition in broadband services, which can typically be provided more efficiently using packet based inputs."¹⁹ Were the Commission to disregard this conclusion and thus fail to apply fundamental pro-competitive frameworks to the packetized environment, even the existing competition for business broadband services would be put in serious jeopardy.

¹⁹ National Broadband Plan, Chapter 4, note 70.

Chapter Three: Innovation Spurred By Competition in the Provision of Business Broadband Services

Much has been written about the role of competition, but one thing is clear: the disruptive presence of new entrants contributes to economic growth and innovation. As competitors enter and expand their participation in the telecommunications market, they make major capital investments, create jobs, and enable their customers to increase productivity through the introduction of innovative products and services. But competition also spurs incumbents to accelerate their investments, create jobs, and offer even more innovative products and services. Since competition was introduced in various segments of the telecommunications industry a virtuous cycle of innovations and efficiencies have made businesses throughout the economy more productive.

CLEC innovations transformed the market for Business Broadband Services

Competitors in the business broadband marketplace have excelled at delivering innovative services and applications to all sectors of the business market and in particular small and medium-sized businesses. CLECs have helped thousands of small and medium businesses step up to more sophisticated IT solutions that integrate voice, data, and video applications and help customers maximize the utility of their telecommunications within their budgets, with such innovative offerings as business Ethernet services, cloud-based (hosted) PBX²⁰ services, MPLS network services²¹, and other customized business services. CLECs have seized the opportunity to make existing facilities better by employing new technology. Competitors have also provided choice and innovation to the large business end of the market, particularly in the offering of Ethernet service that offer scalable, flexible bandwidth growth that supports these customers' sophisticated application requirements.

CLECs have succeeded by driving the development of new technologies and by helping customers maximize their technology spend. CLECs were initial industry leaders in offering customers VoIP solutions for integrated voice, data, and video communications needs, and they continue to excel at developing new services built on the Internet Protocol (IP) platform. The

²⁰ Private branch exchange.

²¹ Multi Protocol Language System (MPLS) is a packet-labeling technique (not a service) that can be used to deliver anything from IP VPNs to Metro Ethernet services.

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relatively recent introduction of cloud PBX services is a prime example. Cbeyond's TotalCloud Phone System allows multi-site businesses that have a mix of on-site office, remote, and mobile employees to route and prioritize their traffic via a private IP-network without the capital outlay and maintenance and upgrade expenses associated with traditional PBX systems.²² Similarly, XO's "Hosted PBX" and "Concentric Cloud Contact Center" services won Internet Telephony Product of the Year awards for the innovative benefits they brought to business telecom users.²³

Given their reliance on wholesale inputs, CLECs must maximize the value of existing network facilities in order to offer business customers competitive value. To distinguish their services, CLECs have sought out ways to offer customers a more efficient way of using dedicated access facilities and to provide the businesses they serve with customized solutions. Whereas ILEC providers had little incentive to give customers the option to select flexible bandwidths (if they could, instead, simply migrate the customer from, say, a DS-1 to a DS-3 service), CLECs embraced the efficiencies of packetized Ethernet-based²⁴ services as a way to bring their network services to a broader business market. Among other advantages, Ethernet services enable businesses to purchase scalable, flexible bandwidth. When any particular location in a business's network grows and needs to support expanded IT applications, it is easy to expand the capacity to serve that location. Through the offering of packetized Ethernet-based services, CLECs have become industry leaders in offering businesses more efficient and affordable managed network services. The ability to offer Ethernet-based network services is, however, dependent of the availability of Ethernet loops – for which competitors must frequently depend on access to ILEC last-mile infrastructure.²⁵

In seeking to expand the availability of Ethernet services, CLECs have innovated in the use of copper loops to provide Ethernet services. To be sure, copper loops are not available or are not suitable for Business Broadband Services in many business customer locations. Nevertheless, in the locations where copper loops are available, CLECs have been extraordinarily innovative in developing technologies to provide valuable services over these facilities. For example, XO's Ethernet over Copper (EoC) service, which the company first deployed in 2006, could initially provide speeds of up to 10 Mbps – and in 2012 XO announced that it had figured out how to boost EoC connection speeds to 100 Mbps.²⁶ But, in order for

²² www.fiercetelecom.com/story/cbeyond-introduces-new-cloud-based-pbx-service-2012-12-11.

²³ Press Release, XO Communications Receives 2012 INTERNET TELEPHONY Product of the Year Award, <http://www.xo.com/about/news/Pages/551.aspx>.

²⁴ Ethernet is a routing protocol that governs the transmission of voice and data over an IP-enabled network. The IP/Ethernet routing protocol is a means of transmission that breaks up data into small packets, finds the optimal path of transmission from one point on the network to any other and then reassembles the data at the final destination. As a service, Ethernet access is typically provided at data transmission speeds of 10, 100, and 1000 Mbps.

²⁵ An Ethernet loop is, fundamentally, a last-mile facility (that is, a physical transmission medium linking the customer premises to the ILEC's local wire center) with the addition of specialized electronics, to permit transmission to occur on a packetized basis, using Ethernet protocol. From an economic perspective, the barriers preventing CLECs from building last-mile Ethernet loops are identical to the barriers that affect any other last-mile facilities. See, Selwyn, Lee L., Non-duplicability of Wholesale Ethernet Services, prepared on behalf of MTS Allstream (March 2009).

²⁶ Press Release, XO Communications Extends its Ethernet Services Leadership with New Speeds and Expanded Nationwide Coverage, November 7, 2012, <http://www.xo.com/about/news/Pages/546.aspx>.

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CLECs to offer these innovative services, the FCC needs to take affirmative steps to protect the continued availability of copper loops.

As leaders in Ethernet services, CLECs have also made Ethernet a core component of their national networks, with an emphasis on giving customers the ability to manage their telecommunications network requirements in the most flexible and efficient manner. Each CLEC tailors its IP network solutions to the needs of its diverse customer base. In 2012, tw telecom earned an Internet Telephony Product of the Year award for introducing “Dynamic Capacity” on its new Intelligent Network. With Dynamic Capacity, “enterprise customers can double or triple their network capacity in seconds to meet immediate business demands or to schedule increased bandwidth for business applications or a certain ad-hoc need” – and then “restore their original committed information rate in seconds.”²⁷ Additionally, XO became the first carrier in America to provide coast-to-coast speeds of 100 Gigabits per second, which earned it the “Best New Service” award in the Telecom category by Light Reading’s “Leading Lights” award program.²⁸

Thus, CLECs have become a driving force in the delivery of innovative and efficient services to all segments of the enterprise market, and have invested heavily in their own facilities – including intelligent switches, metropolitan fiber rings, intercity fiber transport, and, of course, human capital – in order to produce these competitive offerings. And, they continue to deploy last-mile broadband to select locations where it is economically feasible. However, in most locations their ability to offer diverse, competitive and innovative services is still dependent on access to legacy providers’ last-mile facilities. To the extent that legacy providers are permitted to exercise market power with respect to access and pricing for last-mile facilities or to withhold these essential inputs or impose unreasonable terms and conditions on their use, the viability of CLEC services is seriously undermined.

²⁷ <http://business-ethernet.tmcnet.com/articles/319687-tw-telecoms-dynamic-capacity-e-access-w-2012.htm>. Dynamic Capacity also earned 2012 North America Carrier Ethernet award for Best Ethernet Business Application; the award recognizes partnerships between service providers and their clients in the delivery of carrier Ethernet services for application verticals. *Id.*

²⁸ <http://www.lightreading.com/ip-convergence/light-reading-names-2012-leading-lights-winners/240143104>. Primarily used as a carrier backbone service at present, 100 Gig coast-to-coast service introduces the opportunity for greater economy for carriers that should allow competitors to develop and offer additional economical services to business subscribers.

Chapter Four: Growth in Investment and Jobs Flowing from Competition

The previous chapter discussed the benefits from innovation brought to customers by competition in the market for wired Business Broadband Services. But focusing exclusively on innovation leaves out a very important component of the story. The markets for Business Broadband Services, and, of course, the telecommunications sector generally, are a large, growing, and strategically important part of the overall economy – and competition has played and continues to play a major role in their expansion. In particular, the existence of competition has had positive impacts upon the overall level of investment and the number of jobs in the wireline telecom industry. Competitors build networks, buy equipment and employ workers that would not be needed in a telecom market that included only the incumbent wireline providers. In response to the enhanced offerings of their competitors, to protect their existing customer base and meet the challenge of new competitive technology and services, incumbents invest substantially in networks and equipment upgrades and in the growth and quality of their workforce. The result is a greater level of investment and jobs in this sector than would exist if the legacy providers were the only operators in the market.²⁹

Competitive-response network investment by providers of Business Broadband Services

Competitors and competition have produced substantial economic growth within the telecommunications sector of the economy. Over the last five years (2008 to 2012), the wireline exchange companies that offer Business Broadband Services invested almost \$200 billion in long-term capital in network and equipment into their wireline networks and the U.S. economy.³⁰ Table 4-1 below provides details.

²⁹ In this paper, we describe a correlation between the level of competitive activity in the local service / broadband market and the level of investment and job creation in the telecommunications industry. Without more data than is actually available, a purely statistical analysis regarding causality is not feasible. Thus, we rely on a combination of observed correlations and our extensive experience with observing and analyzing the conduct of legacy providers and new entrants in the telecommunications industry as the basis for linking observed correlations with any attributions of causality.

³⁰ This number necessarily understates the true magnitude of such investment, since financial data is unavailable for many competitors due to the fact that they have always been privately held and, as such, have never been subject to Securities and Exchange Commission financial accounting rules.

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Table 4-1 Billions of \$s in Capital Investment in U.S. Wireline Telecom Facilities: 2008 - 2012						
	2008	2009	2010	2011	2012	TOTAL
<i>Traditional LECs*</i>	\$ 26.3	\$ 22.6	\$ 21.5	\$ 20.9	\$ 19.2	\$ 110.5
<i>Cable and CLEC Competitors*</i>	16.7	15.7	14.4	14.2	14.5	74.4
TOTAL	43.0	37.3	35.9	35.0	33.7	184.9

*Source: Cable investment from NCTA Fact Sheet, ILEC and CLEC investment from 10k filings. 2012 Cable investment not yet available – 2011 investment used as surrogate.

The data above contains results for carriers that offer Business Broadband Services as well as for carriers that provide a broader base of wireline services and shows that competition is yielding at least some investment among the providers of wireline Business Broadband Services. As explained below, however, this level of investment would almost certainly be significantly higher if the Commission were to fix the flaws in its current competition policies.

More competitive activity equals more capital investment and more jobs

An examination of the empirical data reveals that investment levels in the wireline telecom market (of which Business Broadband Service is a piece) are higher in periods with the greatest levels of competitive activity.³¹ Not surprisingly, competitive activity is highest during periods when market rules that reduce the most durable and least surmountable entry barriers are in place. While there is insufficient data to test this assertion relative to Business Broadband Services alone, data from the broader telecom sector supports the conclusion that greater competition yields greater job creation and investment. Consider the evidence. Table 4-2 below demonstrates that during the five-year period immediately following the passage of the 1996 Act, growth in both employment and capital investment by wireline telecom carriers outpaced the U.S. economy generally by a substantial margin. During this period, when effective market-opening rules were developed and implemented, the number of competitors in the wireline markets soared – by our counts there were more than 20 publicly listed competitive providers by year-end 2000. The U.S. Census Bureau reported that the “Information” Segment of the economy (of which telecom is a major component) accounted for 14.9% of the overall U.S. investment for the year 2000.³² Wired Telecom alone accounted for more than \$74 billion in investments equal to 6.8% of the total investment made across the entire U.S. economy in the year 2000.³³

³¹ As is discussed earlier, wireless services are not substitutes for business broadband services, and as such, in those areas where the analysis that follows is able to delve below the entire “telecom” sector, the focus is upon employment and investment in the wireline segment of the market.

³² U.S. Census Bureau, *Annual Capital Expenditures: 2000*, issued February, 2002, at vii.

³³ *Id.*

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Table 4-2 Employment and Investment Trends Immediately Following the Passage of the 1996 Telecom Act		
	U.S. Economy-wide	Wireline Telecom Industry
Employment growth: 1996 – 2000*	9.5%	30.7%
Investment growth: 1996 – 2000**	55.6%	134.0%
<p>* U.S. Economy-wide employment measured as “Total Non-Farm” Employees, Wireline employment measured as “Wireline Employees”, NAICS -5171. ** Growth in U.S. Economy-wide investment calculated from the U.S. Census Bureau “Survey of Capital Investment,” Wireline Telecom Industry investment measured through use of data reported in carrier financial reports filed with the Securities and Exchange Commission, available at http://www.sec.gov/edgar/searchedgar/companysearch.html.</p>		

Contrast this data with those from the subsequent five-year period – a period when competitive telecom providers were forced from the market in droves.³⁴ During this later period, there was less employment and investment by competitors (and far fewer competitors); consequently, there was also less pressure on incumbents to respond to competitive pressure (see Table 4-3 below).³⁵ The result was negative growth in employment and investment levels for wireline telecom providers, despite continued positive growth throughout the U.S. Economy as a whole. By the end of 2005, the U.S. Census Bureau reported that the “Information” Segment comprised 8.6% of the overall U.S. investment³⁶ – down from 14.9% in the year 2000. By 2005, annual Wired Telecom investment was down by almost 66% or two thirds compared to five years earlier – to \$28.2 billion (vs. 74 billion), making it a mere 2.7% of total U.S. investment, rather than the 6.8% it accounted for in 2000.

³⁴ The cause of the dramatic drop-off in the numbers of competitors and overall competitive activity in the telecom sector is likely a combination of deregulatory initiatives that began to be implemented at this time and the so-called “bursting” of the “tech-bubble” in 2000/2001. But while the bursting of the “tech-bubble” contributed to the dramatic drop in employment and investment that occurred between 2000 and 2001, it cannot be used as an explanation for the continued shedding of competitors in the telecom segment throughout this period. A discussion of what were described as “Competition Unfriendly” changes in the regulations affecting both incumbents and competitors that occurred during this period can be found in *Regulation, Investment and Jobs: How Regulation of Wholesale Markets Can Stimulate Private Sector Broadband Investment and Create Jobs*, February, 2010 by Susan M. Gately, Helen E. Golding, Lee L. Selwyn and Colin B. Weir, submitted as an attachment to the ex parte letter submitted on behalf of Public Knowledge, CBeyond, Inc., Covad Communications Company, Integra Telecom Inc., PAETEC Holding Corp, and tw telecom inc. on February 11, 2010 in GN Docket No. 09-51, WC Docket Nos. 05-25, 06-172, 07-97, 09-135, 09-222, 09-223.

³⁵ Our analysis reveals that approximately half of the publically-listed competitive providers had ceased to exist by year-end 2005.

³⁶ U.S. Census Bureau *Annual Capital Spending Report*, released June 12, 2012. Table 3A, accessed at www.census.gov/econ/aces/report/2012/csr.html

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Table 4-3 Employment and Investment Trends During the 2001 – 2005 Period When Wireline Competitors Were Weakened		
	U.S. Economy-wide	Wireline Telecom Industry
Employment growth: 2001 - 2005*	+3.1%	-24.7 %
Investment growth: 2001 - 2005**	+1.0%	-45.6%

* U.S. Economy-wide employment measured as “Total Non-Farm” Employees, Wireline employment measured as “Wireline Employees”, NAICS -5171.
** Growth in U.S. Economy-wide investment calculated from the U.S. Census Bureau “Survey of Capital Investment,” Wireline Telecom Industry investment measured through use of data reported in carrier financial reports filed with the Securities and Exchange Commission, available at <http://www.sec.gov/edgar/searchedgar/companysearch.html>.

The ability of competitors to enter and operate profitably in the markets for wireline business services has not improved much since 2005, and as Figures 4-1 and 4-2 below reveal, neither have the corresponding trends in employment and investment vis-à-vis the rest of the economy. Whereas past experience shows that this sector has the potential to far outpace much of the economy in terms of investment and employment growth, with the less than optimal wholesale rules presently in place acting as a roadblock to competitors efforts, this sector has not lived up to that potential – nor has it kept up with the rest of the economy.

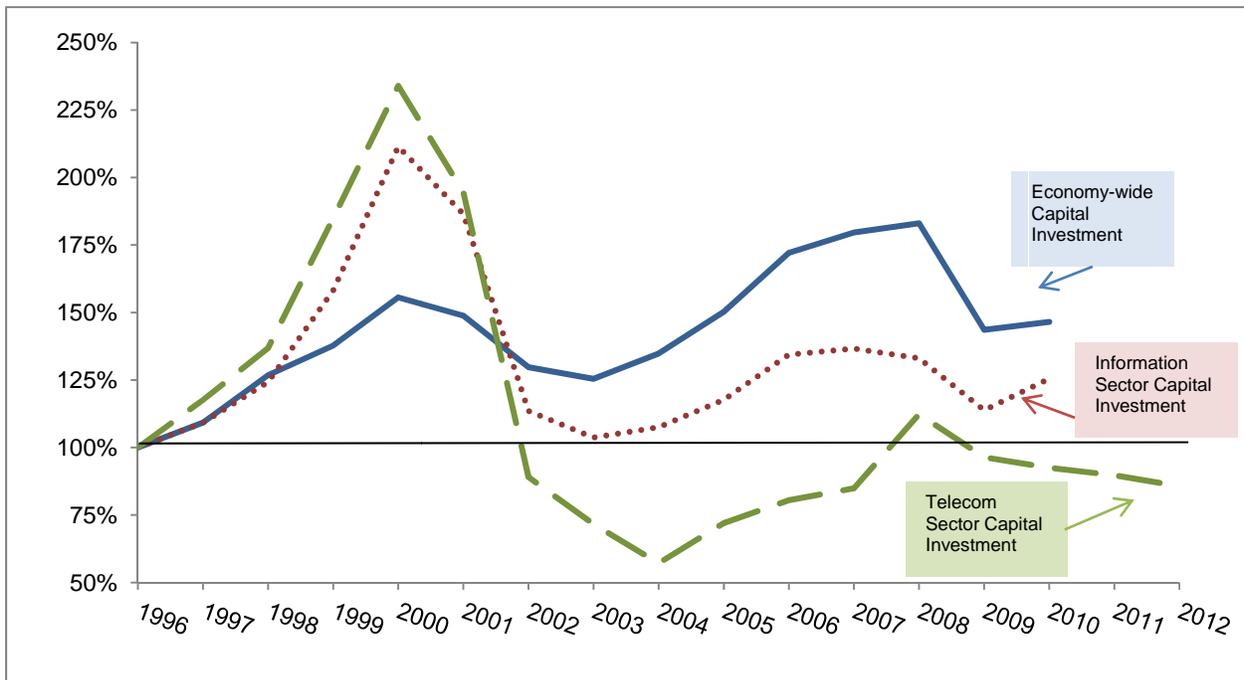


Figure 4-1: Changes in Capital Investment Levels – 1996 – 2012 (Indexed to 1996)

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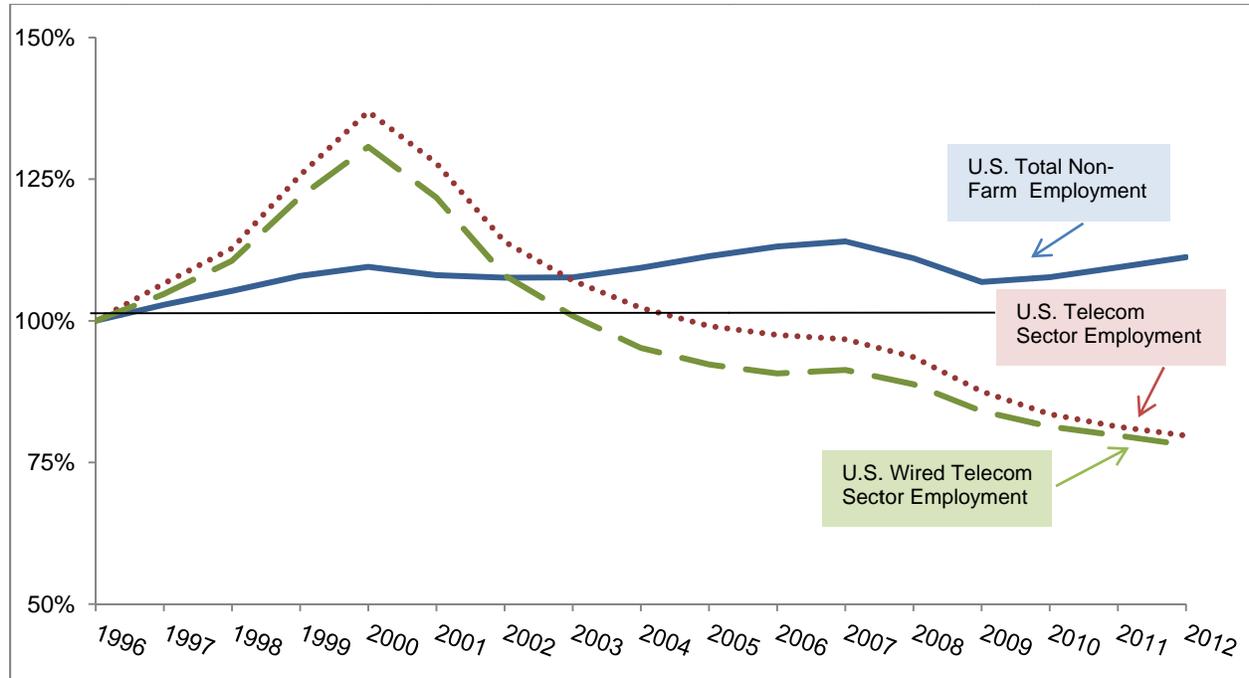


Figure 4-2: Changes in Employment Levels - 1996 - 2012 (Indexed to 1996)

Moreover, if wireline investment levels are holding at relatively steady, albeit suboptimal levels, the same is not true of employment. Rather than growing their human capital, incumbents have frequently chosen to focus on cost-cutting in the area of employment. The significant consolidation that has occurred throughout the telecom industry over the past several years has also impacted competitive activity and offers some explanation as to why employment losses have been steeper than investment losses. The “synergies” projected and eventually effected by mergers in this sector (particularly the merger of AT&T and MCI/Worldcom into SBC and Verizon, respectively) have primarily taken the form of reductions in workforce – and have had the additional benefit for incumbents of removing some major competitors from the marketplace. The overall result of this consolidation: fewer competitors, less investment, and substantially fewer jobs. With more competitive pressure, incumbent providers would have had strong incentives to forgo cost cutting measures and invest more heavily in their networks and increased employment. As Table 4-4 below illustrates, during this period the incumbents maintained strong earnings levels and did not increase their spending – a strong indication that they felt insulated from the pressure of competitive entry and expansion.

Table 4-4		
Despite Steady Profits Legacy Provider Capital Expenditures on Wireline Services Has Remained Constant		
	Legacy Provider Gross Annual Profits	Legacy Provider Gross Wireline CAPEX
2009	\$147.8 billion	\$ 22.4 billion
2010	\$148.1 billion	\$21.1 billion
2011	\$148.0 billion	\$20.2 billion

Includes AT&T, Verizon, CenturyLink (with Qwest), Frontier and Fairpoint. Data from Annual Reports.

Increased competitive opportunities will facilitate more capital investment and more jobs going forward

As discussed earlier, despite competitors' strong interest in making their own network investments, steep entry barriers in telecommunications preclude universal duplication of business last-mile access facilities. The result is that competition for Business Broadband Services relies upon access to wholesale inputs.³⁷ Few would argue that the market for Business Broadband Services is as competitive as it could be or as competitive as other segments of the telecom universe where conditions have allowed competition to develop more fully.³⁸ While steep entry barriers are likely to persist, improvements in the competitive "rules of the road" for competitors willing to make investments compatible with those barriers could dramatically improve the overall level of competition and in turn increase capital investment and employment levels. Capital investment and job growth, as a consequence of increased competition, could be substantially increased over the next five years (and likely beyond) simply by restoring and updating the policy framework originally adopted by the FCC to implement the pro-competitive mandates of the 1996 Act.

The modeling of potential impacts to investment and employment levels below was conducted using two separate methods. The first method (the "ratio" method) assumed that if wholesale rules that permitted telecom sector growth in the five years immediately following the passage of the 1996 Act were replicated going forward, capital investment and employment over the next five years would be stimulated to the point that, by the end of the period (2017), they would account for the *same relative proportion* of economy-wide activity as they did in that earlier period. The second method (the "trended growth rate" method) assumed that re-introduction of reasonable wholesale requirements would stimulate capital investment and employment levels to *grow at the same relative levels* as each did for the five year period immediately following the initial passage of the 1996 Act (1996 – 2000). The results of this modeling are displayed on Table 4-5.

Using the "ratio" method – growing "information sector" capital investments to the point where they comprise 14.9% of the economy-wide level – there would be additional annual capital investment of \$66 billion by 2017 (resulting in cumulative *additional* capital investment of \$184 billion for a total of \$671 billion in total telecom capital expenditures for the period 2013 - 2017). Modeling the impact of improved wholesale conditions on annual capital investment levels using the "trended growth method" results in an additional \$151 billion in annual capital investment by 2017 (with cumulative *additional* capital investment of \$322 billion for a total of approximately \$982 billion over the period that same period).

The effects of wholesale conditions on levels of employment are likewise impacted by conditions in the underlying wholesale markets. Use of the "ratio method" described above (growing "telecom sector" employment to a level of 1.1% of the economy-wide non-farm

³⁷ The impacts of entry barriers in telecom markets and the impediment to competition from premature deregulation of wholesale markets are subjects that have been well documented in other literature and are not explored further herein.

³⁸ For example, competition is more vibrant in the markets for CPE and long distance services...

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employment by 2017) would add a total of 640,000 additional jobs annually (more than 1,457,000 additional man-years of employment during 2013 through 2017). Analyzing future employment levels in the telecom sector using the “trended growth rate” method results in an additional 372,000 jobs annually in the telecom sector (and the economy as a whole) by the end of 2017 (more than 877,000 additional man-years of employment by the end of 2017).

Table 4-5 Potential Growth in Telecom Investment and Jobs from an Improvement in Wholesale Rules³⁹		
	Capital Investment	Employment
Inputs		
Historic Growth Rate 1996 – 2000	134%	30%
Annual growth rate necessary to achieve growth during period	21%	7.5%
Telecom as % of Economy-wide Measure	14.9%	1.1%
Total U.S. Investment / Employment - 2012	\$1,036 billion	134,668,000 jobs
Telecom Sector – 2012	\$97 billion	850,000 jobs
Projections		
“Ratio” Method:		
Annual Investment / Job Growth by 2017	\$66 billion	640,000 jobs
Cumulative Investment / Job Growth by 2017	\$184 billion	1,457,000 man years
“Trended Growth Rate” Method:		
Annual Investment / Job Growth by 2017	\$151 billion	372,000 jobs
Cumulative Investment / Man years of employment by 2017	\$322 billion	876,000 man years
Sources for Inputs: <u>Employment</u> inputs, ratios and growth rates calculated using data reported by the U.S. Bureau of Labor Statistics <i>Employment, Hours, and Earnings from the Current Employment Statistics survey (National)</i> measurements of seasonally adjusted “Total Non-Farm” Employees and “Wireline Employees”, NAICS -5171. <u>Investment</u> inputs, ratios and growth rates for Total U.S. calculated using the U.S. Census Bureau’s <i>Annual Capital Spending Report</i> , released June 12, 2012. Table 3A, accessed at www.census.gov/econ/aces/report/2012/csr.html , and <i>Annual Capital Expenditures: 1998</i> , and <i>Annual Capital Expenditures: 2000</i> accessed at http://www.census.gov/econ/aces/historic_releases_ace.html# . <u>Investment</u> inputs, ratios and growth rates for the Wireline Telecom Industry investment measured through use of data reported in carrier financial reports filed with the Securities and Exchange Commission, available at http://www.sec.gov/edgar/searchedgar/companysearch.html		

³⁹ The variations in the historic growth rates in employment and investment levels during the both the base period (1996 – 2000) and the period since then impacts the end-state results of application of both the “ratio” and “trended growth” methodologies to the 2012 investment and employment levels used for the forecasts.

Chapter Five: Quantifying the Risks and Consequences of Further Weakening or Elimination of Wholesale Requirements

Standing in stark contrast to the positive economic impacts modeled in the previous chapter (as a result of affirmative steps to improve wholesale market conditions) are the negative economic consequences that can be expected from continued inaction on known wholesale market problems or, worse yet, further degradation of the remaining rules in this segment. Inaction relative to the weakened competitive policies currently in place – or further weakening of them in the areas of interconnection and access to last-mile services for current and next generation services– will have economic consequences that reach far beyond the financial health of individual competitors. If the FCC fails to update its last-mile access and interconnection policies for packetized IP networks, the foundations for wholesale access necessary to sustain competition will crumble as carrier networks transition to new transmission protocols. In this chapter, we focus on quantifying the serious economic risk that these policies pose for employment and investment. Again, while we do not have access to the data needed to conduct this analysis for the Business Broadband Services markets alone, we are able to conduct this analysis for the telecom sector generally and there is every reason to think that the Business Broadband Services sector would experience consequences similar to those found in the sector-wide analysis. Those consequences include the following:

- Loss of the potential gains in telecom sector jobs and investment that a return to robust market-opening rules would yield, as quantified in Chapter 4;
- Continued workforce reductions (job losses) and diminished investment, consistent with the downward trajectory that has been experienced in the telecom sector over the past decade if the current policies are maintained; and
- Exacerbated job losses and reductions in investment, exceeding those experienced under the current regulatory regime, if further deregulation (i.e., failure to enforce and update interconnection and last-mile access rules) is adopted.

Less prone to quantification, but equally important, are the following consequences:

- A slow-down in the rate of technological innovation (both in terms of development and deployment) of the Business Broadband Services that are bringing the kinds of efficiencies to small and medium-sized business across the U.S. discussed in Chapter 3;

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- Further leveraging of monopoly market power over last-mile facilities into adjacent markets – such as wireless telecommunications and Internet services – making it harder for smaller competitors to survive in the Business Broadband Services market and, in all likelihood, reducing capital investment and employment gains in those related businesses as a result of lessened competitive activity.

Emboldened by the FCC’s inaction, the legacy providers are now pressing the Commission to go further in the wrong direction with respect to its competition policies concerning last-mile access and interconnection. In a recent petition, AT&T proposes that the ILECs be given discretion to abandon service over “legacy” infrastructure – including those used by competitors – as a *quid pro quo* for promised expansion of AT&T’s IP network. Since current FCC policies do not effectively constrain legacy provider market power for packetized services, the decommissioning of non-packetized facilities would leave them free to deny access or to provide it at rates, terms and conditions that have the equivalent effect.

Risking jobs and recovery in the wireline telecom sector

In the preceding chapter, we quantified the potential for the addition of as many as 650,000 new jobs above the current baseline in the wired telecom sector over the next five years – jobs that will not materialize unless competitive conditions improve. (See Table 4-5) Indeed, these estimates suggest that a failure to fix the identified problems in the wholesale market would wipe out what could be almost a half a percentage point reduction in the current unemployment rate.⁴⁰ Still, even that estimate of foregone job growth substantially understates the full extent of job losses that can be expected in the telecom sector if the FCC chooses to maintain the status quo rather than strengthening existing wholesale requirements in a manner that extends those wholesale requirements to the packetized IP-based last-mile access services and technologies that are increasingly required by competitors for their continued operation.⁴¹ The projection of the addition of as many as 650,000 jobs per year is premised upon maintaining the existing baseline level of jobs in the telecom sector (2012 levels) – but absent changes to fully restore the access and interconnection underpinnings of competition and apply them across the full range of dedicated last-mile broadband access alternatives, there is no doubt that there will be a retreat from current employment levels, rather than the projected expansion.

First, the total number of jobs in the telecom sector has been steadily declining while the current regulatory policies have remained in place. Since 2001, jobs in the telecom sector have dropped by a compound rate of 4.4% per year (jobs in “wired telecom” sector have declined by 4.2% per year) and the picture for the most recent five year period, 2008 to 2012, is little better – with annual job losses running at 3.9% for both the overarching “telecom” and the “wired telecom” sectors. Moreover, job losses in the telecom sector have been greater and more persistent than in other parts of the economy and have not been reversed as the economy as a

⁴⁰ BLS reported year-end (December) 2012 total U.S. economy-wide non-farm employment at 134 million.

⁴¹ Moreover, the very real risk of incumbents discontinuing the offering of the traditional last-mile access facilities that are subject to wholesale regulation (albeit sub-optimal wholesale regulation) makes the need for the FCC to extend its wholesale requirements to last-mile facilities using packetized transmission protocols even greater.

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whole began to recover. The Bureau of Labor Statistics reported 2.4% fewer jobs at year-end 2012 compared to year 2007 (peak employment) for the total “non-farm” category, but 17.6% fewer jobs in the telecom sector. This is despite the fact that unlike much of the economy most of the telecom sector sailed through the recession with increasing revenue levels and healthy profits, as is discussed earlier in Chapter 4.

If the status quo is maintained, rather than a return to the earlier successful regime of the interconnection and wholesale access rules (allowing competition to grow as it had during the pre-2001 period), there is no reason to expect an end to the workforce reductions that have been occurring in this sector for the past decade. Having correctly identified that existing policies maintain barriers to a competitive Business Broadband Services market, but then choosing to drag their heels when it comes to changing these rules, telecom policymakers not only make it impossible for telecom to regain its momentum as a job-creating sector, but in fact risk exposing the recovering U.S. economy to the blow of continued sustained job losses in this sector.⁴² Without improvements to the competitive environment in this sector, the economy will have lost the cumulative benefit of more than half a million man-years of employment.

Second, worsening wholesale conditions (failure to recognize and adapt to evidence of legacy provider market power in the provision of packetized, IP-based last-mile services) in this segment will have even more dire consequences for overall employment levels. This is because elimination of even the existing, suboptimal policies (e.g., existing regulations that govern a subset of legacy provider last-mile facilities) will hobble the competition that such policies have made possible. The result will be the loss of most existing competition in the Business Broadband Services markets and some competition in other telecom sectors. Jobs in the sector would decline accordingly.

⁴² If one projects forward using the historic rate of job losses in the telecom sector (4% per year, on average, whether one uses the longer (base year 2001) or the shorter (base year 2007) time horizons), the result from maintaining the competition-stifling policies is 165,000 fewer telecom workers than today

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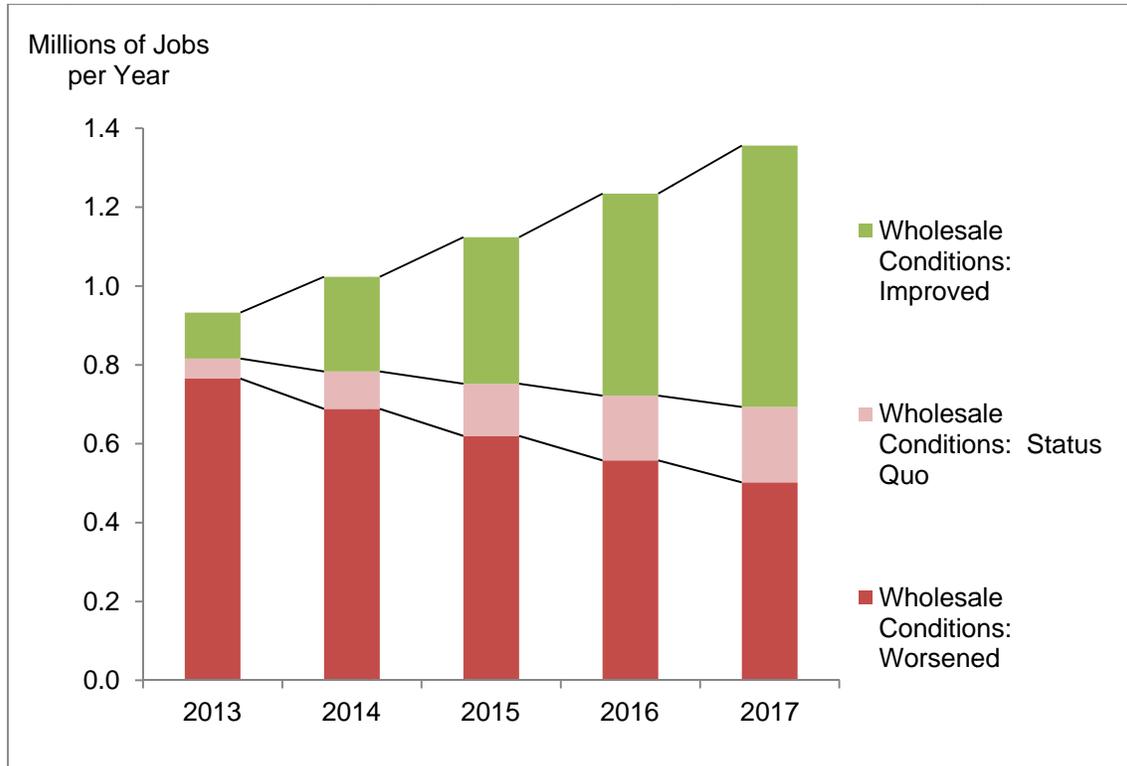


Figure 5- 1: Projected Changes in Telecom Sector Employment Levels - 2013 to 2017

Figure 5-1 above shows the combined impact of the forgone job growth and projected additional job losses that would occur if the current policies remained in place and those that would occur if further deregulation were adopted. The choice is clear: with improved wholesale conditions, there is the opportunity to stimulate the growth of up to 650,000 new jobs in this sector over the next five years, but with a perpetuation of the current policies (maintenance of the status quo) or a worsening of wholesale conditions, over the same period, the sector can be expected to lose an additional 300,000 jobs – meaning that one in three workers employed in the telecom industry today is likely to be unemployed in five years.

Dampening the incentive to invest in the telecom sector

A similar analysis follows with respect to the opportunity to increase investment – or the risk of falling further behind. In the preceding chapter, we quantified the potential for the addition of between \$184 and \$322 billion in cumulative, additional private capital investment in the telecom sector over the next five years, from the baseline of 2010 investment levels. (See Table 4-5) The projected growth depends, however, on re-tooling the wholesale market conditions to support competition in the market for Business Broadband Services. To achieve the addition of *between \$66 billion and \$151 billion in annual investment* relative to current levels requires policies that support competition throughout this sector – policies that at present

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do not exist.⁴³ Acknowledging the foregone *additional* capital investment by telecom providers is just the start. Equally devastating would be:

- the suppression of competition that would result from maintaining the status quo, i.e., today’s flawed policies, and the resulting continued decline in investment at rates consistent with the decline since 2001, and
- the further suppression of competition that would result from additional pro-incumbent regulatory action (i.e., if the existing market-opening rules were eliminated and wholesale conditions worsened) and the resulting reduction in telecom sector investment at an even faster from the current baseline.

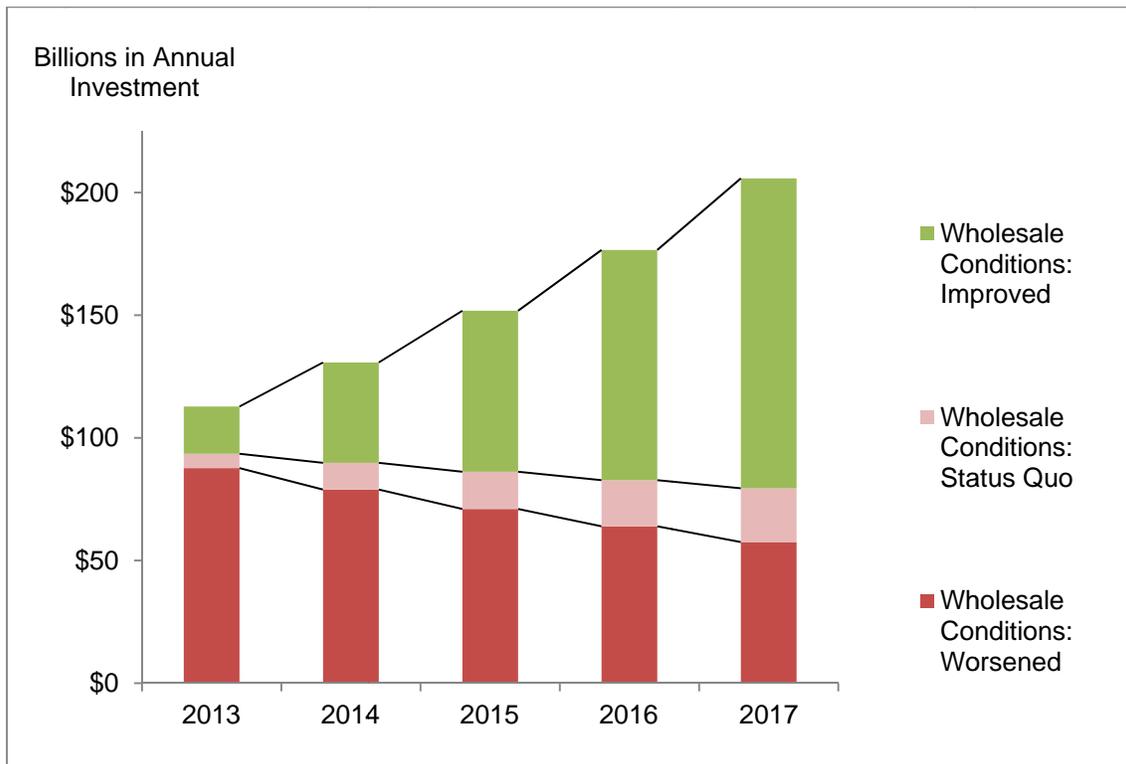


Figure 5-2: Projected Changes in Information Sector Capital Investment Levels – 2013 to 2017.

While capital expenditure levels economy-wide were approximately the same for the year ending 2010 (\$1.1 trillion) as the 2001 investment levels from the beginning of the decade (\$1.1 trillion), in the “Information” sector investment was down by a full third. Looking even more narrowly at just the wireline sector, analysis of wireline carrier financial reports for the period beginning in 2001 and ending in 2012 reveals the curtailment of investment to have been even more significant with two out of every three dollars of annual wireline investment having dried up. Maintaining the existing, flawed competition policies will likely cause investment to

⁴³ 2010 is the last year for which BLS has published its annual capital investment summary. Analysis of financial data filed by publicly-traded telecommunications carriers in operating in both the wireline and wireless space (comprising the bulk of the information sector) reveal that capital investment by these carriers was lower in both 2011 and 2012 than in 2010.

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continue at a similar pace going forward. Moreover, worsened wholesale conditions for dedicated last-mile facilities (either through explicit action or failure to apply even the existing market opening rules to all dedicated last-mile facilities regardless of transmission protocol) can and should be expected to accelerate the rate of that decline in investment. Figure 5-2 above illustrates the reduction in investment from current baseline levels that can be expected if the FCC does not act quickly to implement rules that will result in a well-functioning wholesale market for the inputs needed by competitive suppliers of Business Broadband Services.

Chapter Six: Conclusion

As businesses throughout all sectors of the U.S. economy are striving to restore their economic vitality, competing against foreign entities that rely increasingly on technology for their competitive edge, this is not time to delay the reforms necessary for U.S. telecom competitors to create innovative telecommunications and IT products and services for America's small, medium, and large businesses. Nor is it a time to throw away potential economic expansion within the telecom sector (in terms of jobs and investment) and instead implement deregulatory initiatives that will result in contraction in both employment and investment levels.

In FCC proceedings, for a decade or more, the evidence clearly demonstrates that dedicated last-mile physical access cannot be duplicated by competitors at the majority of commercial buildings. This has been repeatedly shown to be true regardless of the physical transmission medium used for the last-mile connection (copper or fiber) and regardless of whether the information transmitted over this connection goes by a "legacy" format, such as TDM, or a packetized one, such as IP or Ethernet. Yet the FCC has adopted and maintained several policies that continue to impede competitor access to last-mile facilities and, thus, prevent them from obtaining the wholesale inputs necessary to supply the competitive services that are so vital to our economic expansion.

The choice by policymakers to allow the pro-competition wholesale rules to wither or be eliminated, rather than be improved, would have a dire impact on the level of employment and investment in the telecom sector of the economy: approximately 850 million man-years of employment are on the line by the end of 2017. Policymakers face a stark choice between the job growth that can be expected in this segment if wholesale rules are improved and the job losses that can be expected under degraded wholesale conditions. The impact, going forward, upon investment by telecommunications carriers (both legacy and competitive provider) is equally stark: \$150 billion per year of network investment are at risk if wholesale dedicated last-mile facilities are deregulated.

