



July 16, 2009

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Special Access Rates for Price Cap Local Exchange Carriers*, WC Docket. 05-25
National Broadband Plan for Our Future, GN Docket. 09-51

Dear Ms. Dortch:

The attached letter and report were sent today to Chairman Genachowski and Commissioners Capps and McDowell. Please include these documents in the dockets of the proceedings identified above.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Reynolds".

Glenn T. Reynolds
Vice President, Policy

cc: Priya Aiyer
Scott Deutchman
Jennifer Schneider
Nick Alexander
Austin Schlick
Julie Veach
Don Stockdale
Al Lewis
Deena Shetler
Pam Arluk
Jay Atkinson
Dick Kwiatkowski
Marvin Sacks
Dan Ball
Bill Sharkey
Randy Clarke
Blair Levin
Jim Schlichting
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July 16, 2009

Chairman Julius Genachowski
Commissioner Michael J. Copps
Commissioner Robert M. McDowell
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: USTelecom Report on High-Capacity Services
Special Access Rates for Price Cap Local Exchange Carriers, WC Docket. 05-25
National Broadband Plan for Our Future, GN Docket. 09-51

Dear Chairman and Commissioners:

I am providing to you under cover of this letter a copy of *High-Capacity Services: Abundant, Affordable, and Evolving*, a USTelecom report analyzing publicly available, third-party, and internal information concerning the availability of high-capacity facilities and services competing with incumbent phone companies' special access services. By publishing this carefully researched and sourced report, USTelecom hopes to move the debate about the extent of high-capacity service competition beyond the unsubstantiated rhetoric that has often dominated this proceeding. Simultaneous with this letter, USTelecom is submitting copies of this report into the dockets of related FCC proceedings.

Ten years ago, the Commission under the leadership of Chairman William Kennard granted incumbent local exchange carriers (ILECs) the opportunity to apply for more flexible regulation of their special access services. The Commission allowed ILECs to apply for two levels or "phases" of pricing flexibility based upon the extent of competition that could be demonstrated in a specific Metropolitan Statistical Area (MSA), correctly concluding that price regulation of such services was counterproductive where competition existed. The Government Accountability Office (GAO) reported that, since 1999, some type of Phase II pricing flexibility has been granted in about one-third of MSAs, allowing ILECs to lower or raise special access prices subject to traditional "just and reasonable" regulation. In another one-third of MSAs, ILECs have been granted some degree of Phase I relief, which allows them *only to lower* special access prices. The vast majority of this pricing flexibility relief is limited to transport and entrance facilities; pricing flexibility of channel terminations or "last mile" connections to end users has been granted in far fewer MSAs. In the remaining one-third of MSAs (and more for last-mile facilities) and virtually all non-MSA areas, ILECs remain subject to the same regulatory scheme that existed prior to 1999.

Recently, however, there has been a tremendous amount of rhetoric concerning whether competition truly exists in areas where ILECs have been granted pricing flexibility. There has been much noise on this subject from parties interested in exploiting ILEC investment -- but very few facts. Indeed, on at least four separate occasions, the companies clamoring the most for regulatory price-cutting have, by and large, refused to participate in efforts to develop an accurate picture of the extent of competition in this market. As the GAO emphasized after its most recent examination of this market, it “asked competitive firms to supply prices, however, they did not.” More recently, National Regulatory Research Institute (NRRI), acting at the request of NARUC, solicited data from competitive providers yet received seller data from only one CLEC and acknowledged that “[n]o wireless broadband provider or cable TV provider submitted any seller or buyer data.” Like the GAO study, NRRI’s Report recommended that the Commission collect additional data, including “location data regarding the facilities of competitive providers.”

In an effort to fill some of the vacuum of competitive data, USTelecom, working with Kellogg, Huber, Hansen, Todd, Evans & Figel, PLLC, has researched publicly available information and statements concerning deployment of competitive high-capacity services. The attached report, *High-Capacity Services: Abundant, Affordable, and Evolving*, summarizes the results of this investigation.

This report is not – nor is it intended to be – a substitute for the Commission undertaking a thorough, compulsory data collection on the state of competition for high-capacity services from all participants in this market, which plainly would be necessary before the Commission reasonably could consider imposing additional regulation on ILEC special access services. To the contrary, because the report relies primarily on publicly available information and statements concerning competitive facilities and offerings, the data it catalogues is merely the tip of the iceberg. And like an iceberg, only a fraction of the extensive mass of competition can be ascertained by such a public inspection. Nonetheless, even this level of scrutiny belies claims that purchasers of special access services pay high prices or have few choices of providers. To the contrary, the report reveals that high-capacity services are characterized by significant competition, investment and innovation, and confirms the previous findings of the GAO in 2006 and NRRI in 2009 that prices for special access services have been falling for years and continue to fall.

Among the facts detailed in this report—each of which is sourced so as to be easily confirmed by the Commission — are:

- Fiber Competition: There is an average of six known fiber based-competitors within each of the top 50 MSAs, with a range of between one and 14. These fiber-based competitors have deployed hundreds of thousands of local route miles to connect tens of thousands of office buildings.

- **tw telecom** recently told investors that of 1.9 million target businesses in the cities it serves, nearly one million are within a mile of tw telecom's fiber network.
- **Level 3** recently told investors that there are "over 100,000 enterprise buildings within 500 feet of its U.S. network."
- **Cable Competition:** As the cable industry has stated in recent filings with the Commission, "many cable operators provide high-capacity services that compete with special access services offered by incumbent local exchange carrier. Cable operators offer these services to businesses and to telecommunications providers and in most cases they own the facilities used to provide these services."¹ Moreover, cable companies will be accelerating the marketing of their business services as they roll out DOCSIS 3.0 technology which will allow them to offer speeds up to 100 Mbps.
 - **Comcast** has stated its intent to invest \$3 billion in business services between 2007 and 2012 and to capture 20-25% of the small and medium business market in its footprint.
 - **Cox** is already approaching \$1 billion in annual business revenues.
 - **Cablevision** has invested more than \$1 billion to build out an advanced fiber-optic network. It has stated that it has more fiber in the New York/New Jersey/Connecticut area than any phone company and that it *has fiber service to twice as many buildings in its New York footprint as Verizon.*
- **Fixed Wireless Competition:** There are currently more than a dozen fixed wireless providers offering services throughout the country, including nearly all of the top 50 MSAs. Fixed wireless providers offer high-speed connections ranging from DS-1 to fiber optic speeds.
 - **XO** subsidiary **Nextlink's** fixed wireless network covers 95% of the population in 81 of the top markets. XO is in fact replacing ILEC special access circuits with wireless solutions from Nextlink.
 - **FiberTower** possesses licenses extending over substantially the entire continental United States and has a network that covers approximately 12,000 route miles, 7,000 using fixed wireless and 5,000 using dark fiber. Its network has the ability to access over 100,000 cell towers nationwide, or almost half of the nation's cell towers.

¹ *Ex parte* letter from Steven Morris, NCTA, to Marlene Dortch, FCC, WC Docket No. 05-25 (May 8, 2009).

- **Clearwire**, which is majority-owned by **Sprint Nextel**, states that its WiMax network of over 18,000 cell sites will rely “almost exclusively on microwave backhaul,” bypassing ILEC special access services. Moreover, Clearwire has told analysts that it expects self-provisioned wireless backhaul “*will pay for itself in 10 months.*” Clearwire’s wireless broadband network will reach 75% of the top 50 markets by the end of 2010.
- The former CTO of **Sprint Nextel** (one of the loudest voices for greater regulation of special access rates) has acknowledged that while wireless backhaul is dominant in Europe, it is less prevalent in the United States *because of “relatively abundant and inexpensive” special access.*² Sprint Nextel’s true motivation here is perhaps best evidenced by its slashing nearly 80% of its own investment in new infrastructure in the last year alone.³

This latter statement by Sprint Nextel’s CTO echoes a broader and critically important fact from this report: that forcing lower prices for old-technology DS1 and DS3 services that make up ILEC special access will only serve to discourage continued investment in next generation technology necessary to support rapidly growing future demand for wireline and wireless broadband and home computing. Meeting the bandwidth demand for these services will require the continued deployment of high-capacity fiber and wireless facilities capable of delivering speeds of 100Mbps or more. Heavy rate regulation of TDM-based special access services will undercut the efforts of those providers – wireless, cable, and wireline – currently investing to deploy these next generation facilities.

In short, the rhetoric coming from proponents of special access regulation simply cannot be squared with what competitive high-capacity service providers are telling Wall Street and the Securities and Exchange Commission, or advertising on their own web sites. The Commission, however, has the authority to accomplish what neither GAO nor NRRI could – using its investigative powers to require all companies to provide data concerning the level of competition in the high-capacity/special access services market.

The attached report confirms what the existing record before the Commission already shows—competition for special access and other high-capacity services is thriving, and will continue to grow in response to exploding demand for ever-greater bandwidth in today’s

² S. Lawson, *Sprint Picks Wireless Backhaul for WiMAX*, Industry Standard (July 9, 2008), <http://www.thestandard.com/news/2008/07/09/sprint-picks-wireless-backhaul-wimax> (citing Sprint CTO Barry West).

³ StreetInsider.com, *Sprint Nextel Reports First Quarter 2009 Results*, <http://www.streetinsider.com/Press+Releases/Sprint+Nextel+Reports+First+Quarter+2009+Results/4609667.html>

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broadband world. As a consequence, the Commission could simply reject proposals by Sprint Nextel, tw telecom, and others that would re-impose onerous, rate-of-return regulation on ILEC special access services and simply close this proceeding. If, however, the Commission decides to continue this proceeding, it must ensure that it obtains a complete picture of the market before it reasonably could consider altering course.

USTelecom has previously filed with the Commission a proposal for the types of data that will be necessary and the market participants from whom this data needs to be obtained in order to provide the Commission a full picture of competition for special access services. While some of the companies agitating in this proceeding have also given the Commission proposals, those proposals by and large urge the Commission to obtain data only from the ILECs⁴ while—once again—allowing those companies to level charges based upon unsubstantiated rhetoric. The Commission must reject this approach and, if it chooses not to close this proceeding, move forward by developing a picture of the totality of competitive alternatives to ILEC special access services. If competition is in fact as vibrant as reflected by the “tip of the iceberg” data in this report, there simply exists no basis for the Commission to engage in old fashioned regulatory ratemaking. Indeed, such backward-looking regulatory policies would have the effect of deterring facilities-based investment in these critical high-capacity services.

On behalf of USTelecom and its member companies, we look forward to discussing the results of this report with you and Commission staff.

Sincerely,

A handwritten signature in black ink, reading "Walter B. McCormick, Jr." in a cursive script.

Walter B. McCormick, Jr.

⁴ See *Ex Parte* letter from Thomas Jones, Wilkie Farr & Gallagher, Attorney for TW Telecom Inc., FCC Docket 05-25 (July 9, 2009) (asserting that “any information gathering effort should focus primarily” on the ILECs).

High-Capacity Services: Abundant, Affordable, and Evolving



Patrick Brogan

USTelecom

Evan Leo

Kellogg, Huber, Hansen, Todd, Evans & Figel, P.L.L.C.

July 2009

Introduction

The United States government has established as a national priority the ubiquitous deployment of broadband facilities and services to all Americans. Broadband investment is critical to economic growth and recovery, not only through the creation and preservation of jobs in the communications sector, but through improvements in efficiency and productivity across the economy, as well as through development of innovative consumer products and services. Recognizing the significant policy interest in ubiquitous broadband deployment, some parties have sought to tie to the broadband policy engine their demands for government mandated price reductions in special access, a type of dedicated high-capacity service used by enterprises and communications providers. Given the importance of getting broadband policies right, policy makers evaluating action concerning high-capacity services and potential implications for broadband deployment should have an up-to-date factual record concerning competition, investment, and innovation in high-capacity services.

Report Purpose and Methodology

Because of the significance of this issue, USTelecom has undertaken this report to compile and update factual evidence concerning competition for high-capacity services. This report brings further concrete data to the current debate over the state of competition in this area. The current debate is too often conducted over outdated concepts and unsupported accusations. This report combs through the publicly available data from companies and analysts on competition, investment, and innovation to produce a snapshot of what companies are actually doing today to build, expand and operate high-capacity wired and wireless networks and how they are competing and innovating to meet rapidly growing market needs for higher and higher capacity services to support broadband services. In addition, the report provides information on high-capacity service pricing trends based on data from USTelecom members. While the publicly available data confirm that the market for high-capacity services is vibrantly competitive, the data necessarily are incomplete because alternative providers of such services generally have withheld from public scrutiny data regarding their competitive networks and services. Consequently, a thorough and complete assessment of the competitive dynamics of high-capacity services depends on privately held data on the reach and strength of competitive networks, which likely will become available only through governmental process.

The report reveals that high-capacity services are characterized by growing demand, expanding competition, declining prices, continued investment, and ongoing innovation. This is due, at least in part, to the current regulatory regime set in place by the Federal Communications Commission (FCC) in 1999. Under that regime, while all special access services remain subject to “just and reasonable” pricing requirements and the vast majority of areas remain under strict price controls, the FCC has lifted direct price controls only in certain areas that meet certain triggers establishing that competitors have made irreversible, sunk investments in the facilities needed to provide high-capacity services.



High-capacity services are characterized by growing demand, expanding competition, declining prices, continued investment, and ongoing innovation.

Despite this evidence, some users of high-capacity communications services are calling for new price controls that mandate unjustified price reductions on one component of the broader high-capacity service market known as “special access.” But, for years, most of the competitive providers have refused to supply regulators the data necessary to accurately evaluate the competitiveness of high-capacity services, particularly the location of their high-capacity facilities.

The information compiled in this report, while extensive, is merely the tip of the iceberg. The evidence indicates that competition for high-capacity services is strong and growing, and we are confident that the marketplace is even more competitive than the publicly-available data suggest. For example, traditional analyses do not capture intermodal competition from cable operators and fixed wireless providers. Nonetheless, this report is not a substitute for a comprehensive FCC data collection since a full accounting of competitive facilities and services is not publicly available.

It is therefore essential for the FCC to undertake a comprehensive data collection and analysis that captures *all* sources of competitive supply, including self-supply, before contemplating new price controls. In a market characterized by growth and competition, as the initial evidence in this report suggests, the drastic price controls being proposed would put the brakes on, rather than accelerate, the investment so important to upgrading our nation’s broadband networks and creating jobs and economic growth.

Context: Sorting the Rhetoric from the Facts

Since any change in policy must be based on a complete and accurate assessment of the facts, it is first necessary to address several misconceptions that have been perpetrated about special access and high-capacity services. In particular, certain parties contend that new and expanded price controls on special access are necessary based on several claims that simply are unsupported by the facts.

First, claims that there is a market failure or that the market is broken are inconsistent with the facts laid out in this report. As an initial matter, special access is but one component of a broader high-capacity services market. The high-capacity services market is characterized by growing demand driven by next-generation broadband network upgrades. Growing demand represents a multi-billion dollar opportunity and a wide range of competitors are pursuing this opportunity. Competition has not been decimated. Rather competitors continue to invest and innovate and prices for special access services continue to fall. These are indicators of a dynamic, functioning market, not a failed or broken market. Furthermore, competitors include not only traditional fiber-based competitors, but also cable operators and fixed wireless providers. These new entrants are successfully providing alternatives to special access and are projecting growth; they are not merely fringe competitors. Therefore, static concentration analyses are poor indicators of competitiveness in this dynamic market. Such analyses have focused predominantly on wholesale special access services, under-representing retail competition and self-supply, and they do not account for ongoing technological substitution or the impact of potential competition.



Special access is but one component of a broader high-capacity services market.

Second, regulators have not eliminated protections for consumers and competitors. Interstate special access remains subject to FCC regulatory oversight under Title II of the Communications Act. Rates, terms, and conditions are subject to FCC enforcement action if found to be unjust or unreasonable. Within that framework, typically rates for special access in rural areas are subject to stringent price controls. For the largest carriers serving the great majority of the country, the FCC abandoned the rate-of-return regulatory regime for special access nearly twenty years ago and adopted the current price-cap model as the best way to spur competition. During the Clinton Administration, while under the leadership of Chairman William Kennard, the FCC in 1999 determined that, for price-cap-regulated carriers, price caps for special access could be lifted in certain competitive areas. Under Phase I (partial) pricing flexibility, rates remain under price-cap regulation but discounting is permitted. Under Phase II (full) pricing flexibility, price caps are lifted. Where flexibility is granted, it may be granted to some, but not all, incumbent local exchange carriers (ILECs) that provide special access in the metropolitan statistical area (MSA). The FCC has granted full Phase II pricing flexibility to the largest price-cap carriers in approximately one-third of the MSAs in the United States, Phase I partial pricing flexibility in approximately one-third of the MSAs, and no pricing flexibility in the remaining one-third of MSAs. So, in almost two-thirds of the MSAs special access prices continue to be capped, and in nearly all non-MSAs prices continue to be subject either to price cap or to rate-of-return regulation. Even where the FCC has granted full Phase II pricing flexibility, providers are subject to enforcement action if the FCC finds their rates to be unreasonable, and there has not been even a single instance of such an action during the decade following implementation of pricing flexibility.

Third, special access is not generating 100 percent-plus profit margins, as many proponents of increased regulation claim. Such claims are distortions, based on outdated allocations as reported in the FCC's Automated Reporting Management Information System (ARMIS). ARMIS category allocations between special access and other services provided over the same network are inherently arbitrary and the current set of data is long outdated, reflecting pre-broadband-era allocations. Proponents of new price controls cite these exaggerated profit margins for special access based on ARMIS data, despite the fact that the data are widely known to make profit margins appear substantially inflated. In fact, the data have been repeatedly discredited by independent third parties, such as the FCC and the National Regulatory Research Institute (NRRI).

Fourth, it is highly unlikely that new price controls on special access would provide any significant economic stimulus or consumer benefit. The claim that consumers are being harmed by the cost of special access inputs is unsupported. First, the report confirms what independent third parties, the U.S. Government Accountability Office (GAO) in 2006 and the NRRI in 2009, have already found, that prices for special access have been falling for years and continue to fall. Second, mandating price cuts is not an economically sound way to encourage competition and investment and create jobs. The broadband industry has seen annual capital investment in networks increase by more than 30 percent from 2002 to 2008, reaching \$64 billion. Consumers have already received significant benefits from the rapid and widespread deployment of broadband services under the existing regulatory regime for special access. Wireless carriers, for example, are rapidly deploying broadband services



The drastic price controls being proposed would put the brakes on rather than accelerate investment.

throughout their radio networks but need major investment to create new, much higher-capacity fiber and microwave backhaul connections. Wired broadband providers are upgrading networks to deliver a growing array of bandwidth-intensive applications, such as video. New price controls for special access rates will slow down the deployment of these new, higher-capacity connections, delaying deployment of new broadband technologies and broadband services in rural areas. Such rate reductions will make investments in new broadband technologies more risky and less profitable for competitors and ILECs alike.

Key Competitive Findings

1. *There is significant and rapid entry from intermodal competitors such as cable operators and fixed wireless providers*

- Like competitive fiber providers, cable and fixed wireless providers have continued to invest in expanding their networks in the last year-and-a-half despite the worsening economy.
- Cable operators already offer a full range of voice, video, and high-speed data services. Next-generation cable broadband using DOCSIS 3.0 technology, which is already being deployed and will be available throughout the country by 2013, will enable cable operators to provide speeds up to 100 megabits per second.
- The top five cable operators have announced plans to invest several billion dollars to expand business services, including high-capacity offerings. They already report annual revenues of approximately \$3 billion, with those totals growing 15-20 percent per year. For example:
 - Cox is already approaching \$1 billion in annual business revenues.
 - Comcast doubled capital investment in business services in 2008 and stated that it intends to invest \$3 billion between 2007 and 2012.
 - Comcast is targeting 20-25 percent penetration of the small and medium business market, which it sees as a \$12-\$15 billion opportunity.
 - Comcast told investors that in Baltimore, Md., the majority of small and medium businesses are within 100-200 feet of its network.
- Fixed wireless technology provides an additional and rapidly growing alternative to wireline high-capacity services, including the ILECs' special access services. Providers offer high-speed connections ranging from DS-1 to fiber optic speeds. Some specifically offer speeds (such as 8 Mbps) that are in between the standard DS-1 and DS-3 special access offerings.
- There are now more than a dozen fixed wireless providers offering service in areas throughout the country, including almost all of the top 50 MSAs. Some fixed wireless

providers focus exclusively on providing wholesale service, others on business customers, and still others on both.

- XO subsidiary Nextlink's fixed wireless network covers 95 percent of the population in 81 of the top markets. XO is in fact bypassing the ILECs and replacing leased circuits in its network infrastructure with wireless solutions from Nextlink.
- FiberTower possesses licenses extending over substantially all of the continental U.S. Its network covers approximately 12,000 route miles, 7,000 using fixed wireless and 5,000 using dark fiber and it has the ability to access over 100,000 towers – nearly half of all towers – nationwide.

2. Demand for special access and other high-capacity substitutes is heavily concentrated geographically, and therefore readily targeted by competitive fiber providers

- There already is an average of six known fiber-based competitors within each of the top 50 MSAs, with a range of between one and 14 per MSA.
- Competitive providers have deployed over a hundred thousand local route miles of fiber that already connect to tens of thousands of office buildings, providing a full range of services, from wholesale to retail, and from the lowest-capacity to the highest-capacity services available.
- Competitive fiber providers have deployed broadly in the areas in which demand is concentrated. For example, in May 2009:
 - tw telecom told investors that of 1.9 million target businesses in the cities it serves, nearly one million are within a mile of tw telecom's fiber.
 - Level 3 told investors that there are over 100,000 enterprise buildings within 500 feet of its U.S. network.
- Competing carriers are willing and able to extend their networks as demand warrants. In fact, many competitors continued to deploy new networks and add lit buildings to their networks since 2008 despite the worsening economy.

3. Wireless backhaul is a competitive growth opportunity for a variety of competitive providers

- There are more than 242,000 wireless cell sites spread throughout the country that must be connected to transport networks. With increased wireless data usage, analysts estimate the wireless backhaul market to grow from \$3 billion today to \$8 billion to \$10 billion in the next two to four years.

- Dozens of competitive fiber suppliers, cable operators, and fixed wireless providers either already serve this market or are targeting growth opportunities.
- The Boston MSA illustrates the competitive opportunity: 66 percent of cell sites are within a tenth of a mile of cable plant and 87 percent of cell sites are within a half mile of cable plant; 83 percent of cell sites are within a half mile of competitive fiber; and 18 percent of cell sites are currently served by point-to-point wireless backhaul circuits.
- Self-supply is also an option available to wireless carriers. Clearwire, of which Sprint Nextel owns approximately 51 percent, states that its WiMAX network, which will reach 120 million people, including 75 percent of the top 50 markets by the end of 2010, has over 18,000 cell sites under development and plans to rely on “almost exclusively microwave backhaul.”
- Fixed wireless backhaul has dominated in Europe; however, fixed wireless is not more prevalent in the United States because, as Sprint’s former Chief Technology Officer noted, “relatively abundant and inexpensive T-1 lines” have provided an attractive alternative here.

4. *Special access prices have been falling and continue to fall since pricing flexibility was implemented*

- Previous independent studies (GAO, 2006 and NRRI, 2009) confirm that prices of special access declined from 2001 through 2007.
- More recent data supplied by participants in this report show that special access channel termination prices for major ILECs declined by 11 percent to 23 percent in inflation-adjusted terms from 2005 to 2008.

5. *High-capacity services are characterized by growing output, innovation, and competition in related retail services*

- Output of high-capacity services continues to grow despite declining prices.
- Suppliers are deploying innovative solutions, such as Carrier Ethernet and wireless broadband, to more efficiently transport the exploding volume of communications traffic.
- Retail services that utilize high-capacity services, such as enterprise communications and wireless broadband, are robustly competitive, providing further evidence that the underlying high-capacity services are themselves competitive.

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High-Capacity Services: Abundant, Affordable, and Evolving

I. Overview of Special Access and High-Capacity Services

A. Background on Special Access

Incumbent local exchange carrier (ILEC) special access services are dedicated high-capacity transmission services that are used to transport voice and data traffic. Special access is only one part of a broader market for dedicated high-capacity services. Such high-capacity services are sold by wireline, cable, and fixed wireless companies directly to businesses and other communications services providers that need to transport large volumes of voice and data traffic. Special access was one of the first communications services to be opened to competition in the 1980s and, like many other communications services, multiple providers using innovative technologies are now providing high-capacity services that compete vigorously with ILEC special access.

1. Special access provides broadband connectivity for carriers and businesses

Special access, as used here, refers to a dedicated, point-to-point transport service provided to carrier or end-user customers, whether provided by an ILEC or a competitive carrier.¹ Traditionally, special access – also referred to as “private lines” or “leased lines” – was used to provide connections between an end user and an interexchange carrier’s (IXC’s) point-of-presence (POP).² Today, special access and other high-capacity services are also used to provide connections directly between two end-user locations, between end users and competitive local exchange carrier (CLEC) networks and Internet service providers (ISPs), and by various types of carriers, including wireless providers, to make connections within their own networks (*e.g.*, from cell towers to mobile switch centers) and to connect their networks to other carriers.³ For all of these different kinds of carriers, special access provides a conduit through which they may provide other types of services, including voice and data services of all varieties.

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1. See *Investigation of Special Access Tariffs of Local Exchange Carriers*, Memorandum Opinion and Order, 8 FCC Rcd 4712, ¶ 2 (1993) (Special access “primarily involves the provisioning of so-called ‘private lines,’ that is, facilities or network transmission capacity dedicated to the use of an individual customer.”).
 2. See *Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers*, Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221, ¶ 8 (1999) (“Pricing Flexibility Order”), *aff’d*, *WorldCom, Inc. v. FCC*, 238 F.3d 449 (D.C. Cir. 2001) (“Special access services do not use local switches; instead they employ dedicated facilities that run directly between the end user and the IXC’s point of presence (POP).”).
 3. See *Special Access Rates for Price Cap Local Exchange Carriers*, Order and Notice of Proposed Rulemaking, WC Docket No. 05-25, FCC 05-18, ¶ 3 (rel. Jan. 31, 2005) (“Special Access NPRM”) (“[B]usiness customers, commercial mobile radio service (CMRS) providers, interexchange carriers (IXCs), and competitive LECs all use special access as a key input in many of their respective service offerings.”).

■ ■ ■

By the early 1990s, the FCC was already proclaiming that competitive access providers serve large business customers in the central business districts of many major cities and that many customers “do not use LEC facilities at all.”

2. Special access is one of the first telecom services to be opened to competition, and remains highly competitive today

As a result of both market factors and regulatory history, competition for special access began much earlier than competition for other types of local exchange services.⁴ Following initiatives by key states, the Federal Communications Commission (FCC) opened special access to competition in the 1980s, a full decade before passage of the Telecommunications Act of 1996.⁵ The first “competitive access providers” or “CAPs” were formed in the mid-1980s, shortly after the breakup of the Bell System. As one would expect, competition arose first in markets where demand for high-capacity services was greatest, *i.e.*, major metropolitan areas and downtown business districts, and expanded from there. By the early 1990s, the FCC was already proclaiming that CAPs “now offer access services to large business customers in the central business districts of many major cities” and that many customers “do not use LEC facilities at all.”⁶ Today, cable and fixed wireless providers of high-capacity services have emerged as successful competitors, further expanding the geographic reach of competitive high-capacity services. In rural areas, competition is emerging not only from these competitors but also from small ILECs that build into neighboring exchanges of other ILECs.

3. The FCC has pursued a bipartisan policy of gradually reducing regulation in areas where competition thrives, while retaining greater regulation in areas where competition is more limited

Under the leadership of Chairman William Kennard, the Clinton Administration FCC determined that price caps for special access could be lifted in certain competitive areas.⁷ The FCC nevertheless has not granted full pricing flexibility in most of the country, which means local exchange carriers cannot increase their rates above the price caps set in those areas. According to GAO, Phase II pricing flexibility, which is necessary to remove price caps, was granted to 112 of 369 metropolitan statistical areas (MSAs) for the top carriers.⁸ In another one-third of MSAs, the FCC has granted Phase I pricing flexibility, which allows a carrier to lower, but not raise, rates from their price-cap levels. Even where the FCC has granted full pricing flexibility, providers are subject to enforcement

4. See, e.g., *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, ¶¶ 44, 45 (2003) (“*Triennial Review Order*”) (“Within the enterprise market for telecommunications services, new entrants began competing with the incumbent LECs in the mid-1980s.”).

5. See *Cox Cable Communications, Inc.*, Memorandum Opinion, 102 FCC2d 110, ¶ 40 (1985), *vacated as moot*, 61 Rad. Reg. 967 (1986).

6. *Expanded Interconnection with Local Telephone Company Facilities*, Notice of Proposed Rulemaking and Notice of Inquiry, 6 FCC Rcd 3259, ¶ 2 (1991); Richard M. Firestone, Chief, Common Carrier Bureau, FCC, remarks before the Mid-America Regulatory Conference (June 4, 1991).

7. See *Pricing Flexibility Order* ¶ 74. This pricing flexibility regime establishes two tiers of regulatory relief. “Phase I” relief, which permits an ILEC to offer contract tariffs and volume and term discounts, is available for both transport facilities within an ILEC’s network and the entrance facilities that connect the ILEC’s network to another carrier’s network in MSAs where other carriers have established fiber-based collocation in 15 percent of the wire centers in the MSA, or in wire centers accounting for 30 percent of an ILEC’s revenues for special access transport in that MSA. See 47 C.F.R. § 69.709(b). Phase I relief is available for channel terminations, which are the facilities that form the “last-mile” connection to an end-user customer’s premises, in those MSAs where other carriers have established fiber-based collocation in 50 percent of the wire centers in the MSA, or in wire centers accounting for 65 percent of an ILEC’s revenues for special access channel terminations in the MSA. 47 C.F.R. § 69.711(b). “Phase II” relief, which permits ILECs to offer special access prices without regard to the FCC’s price cap rules, requires an ILEC to satisfy higher thresholds of fiber-based collocation. 47 C.F.R. §§ 69.709(c) & 69.711(c).

8. See U.S. Government Accountability Office (GAO), *FCC Needs To Improve Its Ability To Monitor and Determine the Extent of Competition in Dedicated Access Services*, GAO-07-80, at 6 (Nov. 2006), <http://www.gao.gov/new.items/d0780.pdf> (“GAO Report”).

action if the FCC finds their rates to be unreasonable. Despite the success of the pricing flexibility regime in promoting competition and investment, certain companies are now advocating for the adoption of new, lower price caps, claiming that special access prices remain too high. Our research and analysis suggest that such claims are unsubstantiated. To the contrary, competition is strong and growing and special access prices are falling.

B. High-Capacity Services, Including Special Access, Are Well-Suited to Competitive Supply

There are many reasons why high-capacity services like special access have historically attracted competitive suppliers. These factors are as pertinent today as they have ever been.

1. There is large and rapidly growing demand for high-capacity circuits

Continued growth in corporate data and both wireline and wireless broadband services will drive ongoing demand for the underlying high-capacity services, such as special access. New technologies such as Dedicated Internet Access, Carrier Ethernet, and Internet Protocol Virtual Private Networks (IP-VPN) are replacing traditional services, such as special access, and are leading corporate data growth. Annual revenues for these new technologies are projected to grow from \$17.8 billion in 2008 to \$27.0 billion in 2012, an 11-percent compounded annual growth rate.⁹

Mobile carrier demand for wireless backhaul, which connects cell sites and mobile switch centers to voice and data networks, will grow to meet the exploding end-user demand for wireless data and media-rich mobile broadband services. Mobile cell sites are projected to grow from more than 242,000 supporting an average backhaul capacity of 5 Mbps – 10 Mbps in 2008 to 300,000 supporting an average backhaul capacity of 50 Mbps – 100 Mbps in 2012.¹⁰ Bandwidth demand for wireless broadband is projected to grow at a compounded annual rate of 130 percent from 2008 through 2012¹¹ and “double each year for the foreseeable future.”¹²

Likewise, wired broadband providers must enhance capacity to deliver a growing array of bandwidth-intensive content and applications. For example, North American consumer Internet traffic, driven predominantly by video, is expected to more than quintuple from 2008 to 2013, growing at an average annual rate of 41 percent.¹³ Corporate data networks and backhaul networks are being upgraded to new technologies, such as Carrier Ethernet, to accommodate exploding demand. The growth in corporate data and broadband, as well as the transition toward newer technologies, represent a multi-billion dollar opportunity over the next several years for competitive suppliers of high-capacity services.



Bandwidth demand for wireless broadband is projected to double each year for the foreseeable future.

9. Yankee Group Research, *Global ConnectedView Technology Forecast* (March 2009).

10. See p.34 & n.105, *infra*; J. Pigg, Yankee Group, *Mobile Backhaul: Will the Levees Hold?*, at 4 (June 2009).

11. See *id.* at 1.

12. See P. Marshall, Yankee Group, *The Inevitable Transformation of the Mobile Internet*, at 1 (Apr. 2009).

13. See Cisco Systems, Inc., *Cisco Visual Networking Index: Forecast and Methodology, 2008-2013*, at 6 (2009).

2. Many customers tend to be highly concentrated geographically

As one would expect, the greatest demand for high-capacity communications is concentrated in densely populated MSAs, and within those metro areas, it is further concentrated in downtown business districts, office parks, and network aggregation points such as data centers. Approximately half of ILEC special access revenue is concentrated in the top 25 largest MSAs. Within these top MSAs, demand is concentrated further still, in the wire center serving areas with the highest concentration of business customers. In the case of two major ILECs, for example, 80 percent of their special access revenues in the top 50 MSAs nationwide are concentrated in just 20 percent and 17 percent of their respective wire centers within those MSAs.

3. Special access is purchased by sophisticated buyers through an intensely competitive bidding process

The majority of the purchasers of high-capacity services are larger telecommunications providers and business customers that are highly sophisticated. These large customers have the ability to negotiate effectively with any number of suppliers. Furthermore, many purchasers of high-capacity services require customized network solutions that integrate with their on-premises information technology at multiple locations over global, national, or regional geographies. Therefore, competitive bidders for high-capacity services such as special access include not only global, national, and regional service providers, but also system integrators and equipment providers. There are also many outside consultants who help large customers design and issue proposals and negotiate with suppliers who respond to such proposals. Many customers also rely on consulting firms to perform periodic reviews of their existing contracts and service arrangements to ensure they receive competitive rates across all of their telecommunications purchases. The sophistication of customers, the breadth of suppliers bidding for contracts, and the availability of outside consultants bring multiple dimensions of competitive discipline to the bidding process.

4. High-capacity services can be supplied by multiple technologies, including intermodal ones

In addition to the established, fiber-based competitors who have provided special access services for more than two decades, there is rapid new entry from intermodal competitors such as cable operators and fixed wireless providers. Our analysis shows that cable and fixed wireless providers are successfully providing high-capacity services in many locations today and are steadily expanding their competitive footprints. The emergence of intermodal competition is inconsistent with the notion that special access is subject to “market failure,” as proponents of special access regulation have claimed, and it makes any static market share analysis unreliable. This is particularly true given the success of wireless and cable providers in transforming competition for other services, such as mass-market voice and broadband.

5. Even in areas where competitors have not yet deployed facilities, prices are constrained by cross-market competitive discipline and regulatory backstops

First, special access is often bought and sold as part of a package of services that span multiple geographic areas. As a result, competition in one area disciplines rates in another. Under FCC rules, price-cap regulated rates may vary across “density zones” to reflect the different characteristics of urban, suburban, and rural geographies. As one would expect, in some (not all) cases, pricing by zones persists under pricing flexibility. Regardless, customers frequently demand that in order to win their business anywhere, providers must offer discounted pricing across all of the customer’s geographies. As a result, competition in the most competitive areas disciplines rates in other areas.

Second, special access is contestable.¹⁴ Competitors will deploy new facilities wherever there is appreciable demand. Where competitors have deployed local metropolitan area network facilities but have not built facilities to a particular customer premises, existing providers’ prices are nonetheless constrained by the fact that competitors can add customer premises to their metropolitan area networks. If existing providers were to charge excessive rates, those rates would induce new entrants to offer lower rates and build facilities to that particular customer premises. This is especially true where there already are sunk investments in network facilities. Competitive fiber suppliers have already deployed fiber rings in the areas in which demand for high-capacity services is most concentrated. Once a ring is deployed, the competitors can serve new customers by building “lateral” fiber from their rings. Cable operators have deployed nearly ubiquitous fiber transport networks to carry video and broadband services to mass-market customers. Cable operators are successfully using these same networks to provide high-capacity services to small, medium, and large business customers in many of these same areas and are now poised to serve even more business customers. Fixed wireless providers have acquired wireless spectrum blanketing the country. They assert their entry costs are relatively low compared to new fiber builds and they can use their facilities for a wide range of services, including mobile wireless backhaul and large business services.¹⁵

Third, and finally, regulatory protections remain in place to constrain special access rates. In rural areas, where carriers have not sought or attained pricing flexibility, price caps remain in place; in areas that have attained only Phase I pricing flexibility, price caps also remain in place. Furthermore, in areas that have attained full Phase II pricing flexibility and price caps have been lifted, carriers remain subject to common carriage obligations like tariff requirements and FCC enforcement action if rates are not found to be just and reasonable.

14. See William J. Baumol, John C. Panzar & Robert D. Willig, *Contestable Markets and the Theory of Industry Structure* 351-56 (1988).

15. See Ravi Potharlanka, COO, FiberTower Corp., Written Testimony before the House Energy and Commerce Committee, Subcommittee on Communications, Technology, and the Internet, Hearing on Competition in the Wireless Industry (May 7, 2009), http://energycommerce.house.gov/Press_111/20090507/testimony_potharlanka.pdf.



The growth in corporate data and broadband, as well as the transition toward newer technologies, represent a multi-billion dollar opportunity over the next several years for competitive suppliers of high-capacity services.

6. Regulators have previously acknowledged all of these facts, which are even truer today than in the past

The FCC has acknowledged the maturation of facilities-based competition for high-capacity services since it emerged over two decades ago.¹⁶ In recent years, traditional competitive fiber providers have consolidated, creating larger and stronger competitors with broader service footprints capable of serving a wider range of customer locations, whether regionally or nationally. Also in recent years, as discussed above, fixed wireless and cable providers have begun to compete successfully for high-capacity services using innovative technologies. As a result, users of high-capacity services, including mobile wireless carriers, have an expanding array of competitive and technological choices.

C. Objective of This Report

This report is intended to compile key facts concerning competition in the high-capacity services market. It bears emphasis that special access is but one component of a much broader high-capacity services market, which includes self-supply by wired and wireless communications providers. Given the data regarding growing demand, the extent of competitive facilities deployment, ongoing competitive investment, and burgeoning intermodal competition and innovation, there must be a very high burden of proof for policymakers to change course.

1. Data on the record show significant competitive availability

In the course of various independent inquiries by federal and state regulators and the U.S. Congress,¹⁷ providers of special access have submitted data demonstrating the extent of competition for high-capacity services, including, for example:

- Data showing concentration and growth of demand;
- Third-party maps showing the presence of competitive fiber by metro area;
- Reams of publicly available information from competitors themselves, such as financial statements, press releases, and websites, indicating their expanding capabilities in the high-capacity services market;
- Evidence of the explosive growth of intermodal competition from cable and fixed wireless providers;
- Testimony of business unit officials who sell special access describing the growing competitive and pricing pressures of the contract bidding process;

16. See, e.g., *Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers*, Order, 5 FCC Rcd 7507, ¶ 210 (1990) (“New facilities-based competition has emerged in the high capacity special access market.”); *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Supplemental Order Clarification, 15 FCC Rcd 9587, ¶ 18 (2000) (“Competitive access, which originated in the mid-1980s, is a mature source of competition in telecommunications.”).

17. See *Special Access NPRM*, FCC Public Notice, *Parties Asked To Refresh Record in the Special Access Notice of Proposed Rulemaking*, WC Docket No. 05-25, RM-10593, FCC 07-123 (July 9, 2007); GAO Report; Peter Bluhm & Dr. Robert Loube, National Regulatory Research Institute, *Competitive Issues in Special Access Markets*, 09-02 (Jan. 21, 2009) (“NRRI Report”).

- Testimony of business unit officials who purchase special access describing the alternatives available to them;
- Evidence showing extensive competition for each of the retail services that use special access as an input;
- Analyses demonstrating deep discounts and declining average revenues per unit (*i.e.*, declining prices); and
- Critiques demonstrating the fatal flaws of regulatory accounting data as an indicator of service-level profitability.

2. *The trend of competition and innovation continues*

This report provides extensive evidence of competitive investment and success in serving customers of high-capacity services. It also shows that growing demand, driven by corporate data, video, and wireless broadband, presents a multi-billion dollar opportunity for all competitors. So far, competitors have been responding to this opportunity – investing, deploying, and innovating to address exploding demand. Policymakers must encourage continued investment in innovative technologies. Proponents of greater special access regulation face a high hurdle to demonstrate that new, artificial reductions in special access prices will not alter the trend and suppress investment in new technologies that can more efficiently address the growing demand.



Competitors have been responding to this opportunity – investing, deploying, and innovating to address exploding demand.

II. Competition for High-Capacity and Special Access Services

By every key measure, there is extensive competition for high-capacity services, including special access. There is rapid new entry from intermodal competitors such as cable and fixed wireless providers (§ II.A); competitive fiber networks have been deployed in virtually all areas where there is significant high-capacity demand (§ II.B); prices for special access – the particular type of high-capacity services targeted by competitors’ complaints – have been steadily declining (§ II.D); output and innovation have been increasing (§ II.E); and there is extensive competition for the retail voice and data services that use high-capacity services, including special access, as an input (§ III). Competition for high-capacity services is particularly robust with respect to the so-called backhaul that wireless carriers use to connect cell towers to their transport networks (§ II.C).



Today the most significant form of new entry is from intermodal competitors such as cable operators and fixed wireless providers.

The evidence set forth below was compiled from a number of sources. The participants in this study supplied internal data. Material also has been drawn from public sources, including the trade press, industry reports, company disclosures to the investment community, and databases compiled by independent analysts. Although these data show significant competition for high-capacity services, any review of publicly available data is necessarily incomplete because many competing carriers fail to make available information regarding the extent of their network facilities, service offerings, and customers.¹⁸ The competitive showing here is therefore conservative, and the actual extent of competition for high-capacity services is very likely to be even greater than the data below demonstrate.

A. Intermodal Competition

While established fiber-based competitors have provided high-capacity services for more than two decades, today the most significant form of new entry is from intermodal competitors such as cable operators and fixed wireless providers. The emergence of this intermodal competition is significant on several levels. First, the fact that new entry for high-capacity services is occurring on a wide scale demonstrates that competitors see significant opportunities in the marketplace, which is inconsistent with the notion that ILEC special access services are subject to “market failure” as proponents of new special access price controls have claimed.¹⁹ Second, this new competitive entry makes any static market share analysis – particularly one focused solely on competitive fiber – even

18. On April 27, 2009, USTelecom submitted a proposed data request on high-capacity services to the Commission. Obtaining responsive information to this data request would present a far more complete understanding of the extent of competitive choices for high-capacity services.

19. Michael E. Porter, *How Competitive Forces Shape Strategy* at 137 & 141, Exhibit, Harvard Bus. Rev. (Mar./Apr. 1979) (“The state of competition in an industry depends on five basic forces” including the “[t]hreat of new entrants.”); *id.* at 138 (“New entrants to an industry bring new capacity, the desire to gain market share, and often substantial resources. Companies diversifying through acquisition into the industry from other markets often leverage their resources to cause a shake-up, as Philip Morris did with Miller beer.”); *see also* NRRI Report at iv (“Cable television and fixed wireless have low entry and exit costs where their networks are currently established, and each can provide substitutable dedicated services for many customers.”).

less reliable.²⁰ This is particularly true given the success of intermodal cable and wireless providers in transforming competition for other telecommunications services, such as mass-market voice and broadband services.

1. Cable operators

Following their incredible success in the mass-market – where they now serve 56 percent of broadband subscribers and 25 percent and growing of voice subscribers²¹ – cable companies have begun focusing their attention more seriously on business customers. As every major cable operator has stated, business services represent a key opportunity for future revenue growth.²² In the past few years, the top five²³ cable operators have announced plans to invest several billion dollars specifically on expanding their business services, including their high-capacity offerings. See Table 1. These five cable operators already report business revenues of approximately \$3 billion, with those totals growing by approximately 15-20 percent or more per year. See *id.* These cable companies also claim to collectively serve nearly one million business customers, and in the next few years expect to achieve penetration of as high as 20-25 percent of business customers in the markets they serve. See *id.*



The top five cable operators report business revenues of approximately three billion dollars and have announced plans to invest several billion dollars specifically on expanding their business services, including their high-capacity offerings.

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20. See, e.g., *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853, ¶ 50 (2005) (rejecting “arguments... premised on data that are both limited and static” because they “fail to recognize the dynamic nature of the marketplace forces,” including growth of and investment in “existing and developing platforms”); *Petition on Behalf of the State of Hawaii, Public Utility Commission, for Authority To Extend Its Rate Regulation of Commercial Mobile Radio Services in the State of Hawaii*, Report and Order, 10 FCC Rcd 7872, ¶ 26 (1995) (“evidence concerning dynamic factors” such as “[g]rowth and investment” is a “more persuasive market indicator than evidence concerning static factors” such as “prices or rates of return”); *MTS-WATS Market Structure Inquiry*, Second Report and Order, 92 FCC2d 787, ¶ 133 (1982) (“Regulatory policy must take cognizance of the dynamic factors existing in the marketplace. It should not be based solely on static conditions existing today.”).
 21. See, e.g., S. Flannery et al., Morgan Stanley, *Broadband Outlook: 1Q Subscriber Growth “Less Bad”, Pricing Watch On*, at 19, Exhibit 38 (Apr. 17, 2009) (1Q09 residential broadband estimates); J. Reif Cohen et al., Bank of America/Merrill Lynch, *Battle for the Bundle: Something in the “Over-the-Air”*, at 8, Table 7 & 12, Table 12 (May 19, 2009) (1Q09 broadband estimates and 1Q09 cable/telco telephony estimates).
 22. See *Cablevision Systems Corp. at Merrill Lynch Media Fall Preview – Final*, FD (Fair Disclosure) Wire, Transcript 091008a1944671.771 (Sept. 10, 2008) (Cablevision COO Tom Rutledge told analysts that he sees an opportunity for Cablevision to “go capture” the small and large sized business markets – which he estimates at “\$5.8 billion being spent” in Cablevision’s service area); *Q1 2009 Comcast Corporation Earnings Conference Call – Final*, FD (Fair Disclosure) Wire, Transcript 043009a2137312.712 (Apr. 30, 2009) (Comcast President and COO Steve Burke: “We are currently growing 45% revenue growth or 50% revenue growth if you look in our [commercial] performance right now. And you keep growing at that rate, that \$500 million is going to go up real fast.... I do think there is a huge business there and we just want to keep growing at the kind of ramps we are at right now.”); *Q1 2009 Time Warner Cable, Inc. Earnings Conference Call – Final*, FD (Fair Disclosure) Wire, Transcript 042909a2134103.703 (Apr. 29, 2009) (Time Warner Cable Chairman, President, and CEO Glen Britt: “Our biggest near-term opportunity is commercial services.”); *Taking Care of Business*, CT Reports (May 18, 2007) (At a cable industry convention in Las Vegas, Time Warner Cable Business Senior Vice President Ken Fitzpatrick remarked that cable has a “strategic opportunity to go after” commercial customers and “hurt” the incumbent telcos); Cox Communications Press Release, *Cox’s Networks Enhancements Enable New Services and Power Second Quarter Growth* (July 28, 2008) (Cox believes its base of nearly 250,000 business customers represents less than 20 percent penetration in its footprint, and there “significant upside potential to capture additional market share from competitors as well as new business growth.”); *Charter at Deutsche Bank Securities Leveraged Finance Conference – Final*, FD (Fair Disclosure) Wire, Transcript 092508ak.717 (Sept. 25, 2008) (Charter CEO Neil Smit stated Charter’s CEO stated that “[o]n Charter Business, it’s nice because we’ve got this infrastructure in place already.... [W]e’re seeing increased growth in that business. We’re seeing great demand for that product offering as we’ve launched a telephone product.... [W]e see great growth opportunity there going forward.”).
 23. The top five cable operators have networks that pass more than 75 percent of U.S. homes and that serve more than 80 percent of all cable subscribers. See S. Flannery et al., Morgan Stanley, *Broadband Outlook: 1Q Subscriber Growth “Less Bad”, Pricing Watch On*, at 21-22, Exhibits 40-41 (Apr. 17, 2009) (2008 cable subscribers and total U.S. households); I. Berlinsky, IDC, *U.S. Triple-Play Connection 3Q08 Service Provider Analysis*, at 6, Table 2 (Feb. 2009) (3Q08 homes passed).

Table 1 – Overview of Cable’s Commercial Services

MSO	Revenue	Investment	Customers
Comcast	<ul style="list-style-type: none"> ▶ \$558M in 2008 (41% YoY growth) ▶ \$176M in 1Q09 (47% YoY growth), >\$700M annualized ▶ “[R]ight on track to hit [] \$2.5 billion” in revenue by 2011, representing 20-25% penetration of the enterprise market 	<ul style="list-style-type: none"> ▶ Has invested “hundreds of millions of dollars” ▶ “Doubled our capital investment in business services [in 2008] to \$231 million.” ▶ Plans to spend more than \$3B between 2007-2012 	
Cablevision/Lightpath	<ul style="list-style-type: none"> ▶ \$248.8M in 2008 (15.5% YoY growth) for Lightpath ▶ \$64.2M in 1Q09 (8% YoY growth) for Lightpath 	<ul style="list-style-type: none"> ▶ “[H]as invested more than \$1 billion” 	<ul style="list-style-type: none"> ▶ >128,000
Time Warner Cable	<ul style="list-style-type: none"> ▶ \$800M in 2008 (20% growth) ▶ \$213M in 1Q09 (17% YoY growth) 		<ul style="list-style-type: none"> ▶ 283,000 HSD (1Q09) ▶ 38,000 voice (1Q09)
Cox	<ul style="list-style-type: none"> ▶ ~\$855M in 2008 (16% growth) ▶ “[W]ill realize \$1 billion... in 2010” 		<ul style="list-style-type: none"> ▶ ~250,000 customers ▶ 19% customer growth in 2008 ▶ >650,000 phone lines
Charter	<ul style="list-style-type: none"> ▶ \$392M in 2008 (15% YoY growth) ▶ \$107M in 1Q09 (16% YoY growth) 	<ul style="list-style-type: none"> ▶ Reportedly spent \$1B in 2007 	<ul style="list-style-type: none"> ▶ ~14,000 customers ▶ 133% increase in voice customers in 2008

Sources: See Appendix C.

As the National Cable & Telecommunications Association (NCTA) recently stated, “many cable operators provide high-capacity services that compete with special access services offered by incumbent local exchange carriers.... Cable operators offer these services to businesses and to telecommunications providers and in most cases they own the facilities used to provide these services.”²⁴ Cable operators provide high-capacity services that substitute for special access using two main approaches. First, each of the major cable companies has been deploying fiber networks through affiliates or business units that are devoted to serving enterprise customers. See Table 2. As these cable operators recognize, their extensive cable networks and operations give them a considerable advantage in deploying fiber to business locations. See *id.* Moreover, several of the top cable operators have formed joint ventures to combine their fiber networks in order to be able to offer fiber connectivity to businesses with multiple dispersed locations.²⁵

24. Letter from Steven Morris, NCTA, to Marlene Dortch, FCC, WC Docket No. 05-25 (May 8, 2009).

25. See, e.g., Cox Business Press Release, *Cox and Charter Team To Provide Telecommunications Links for Business Customers* (Mar. 19, 2008).

Table 2 – Cable’s Claims Regarding Deploying Fiber to Business Customers

Comcast	<ul style="list-style-type: none"> ▶ Has invested “hundreds of millions of dollars” to deploy an “advanced fiber-optic network” “deep into where our customers are present, either in the residential side or along where the commercial businesses are” ▶ Plans to spend more than \$3 billion between 2007 and 2012 on an even “more fiber intensive buildout that could support higher margins” ▶ More than 145,000 miles of fiber – the “first and largest 40G backbone in the world” – currently serving “18 of the top markets, delivering a multi-tier broadband service with scalable solutions to fit your business”
Cablevision/ Lightpath	<ul style="list-style-type: none"> ▶ “[H]as invested more than \$1 billion in the technology and infrastructure needed to build Optimum Lightpath’s most significant asset: our fiber optic network” ▶ Has “more fiber in the [New York/New Jersey/Connecticut] tri-state area” “than any phone company” ▶ Already has fiber service to twice as many buildings in its metropolitan New York footprint as Verizon does ▶ Acquired 4Connections LLC in October 2008, and since then has created a “scalable fiber-to-the-business-premise network extending more than 3,700 route miles connecting more than 3,300 buildings”
Time Warner Cable	<ul style="list-style-type: none"> ▶ Operates a “high-capacity fiber network” with a “national presence” that offers “connectivity speeds ranging from 1 Mbps to 10 Gbps”
Cox	<ul style="list-style-type: none"> ▶ “Our own fiber-based metropolitan networks” provide “dedicated access to our network with flexible tiered bandwidth options scalable to OC-12 or higher.... Cox Optical Internet has multiple bandwidths available from the popular 1.5 Mb (T-1) to 10 mg to OC-12 or higher” ▶ Believes its overall revenue opportunity is roughly \$5 billion
Charter	<ul style="list-style-type: none"> ▶ Its “state-of-the-art, fiber-based network” gives it the “flexibility to accommodate any industry,” including the healthcare, education and government sectors ▶ Provides “symmetrical access service with speeds from 2Mbps up to 1Gbps” over a “single fiber connection”

Sources: See Appendix C.

Second, in addition to deploying fiber, cable companies are increasingly using their near-ubiquitous cable networks to provide business customers a range of services that substitute for the services that are typically provided over special access. As these cable operators recognize, a significant number of business customers – particularly smaller and medium-sized businesses – already are passed by cable, which means that relatively minimal new investment is required to add these customers to the network. For example, Cablevision has “identified over 600,000 businesses inside our footprint that we passed with cable that were serviceable today,” using Cablevision’s *existing* plant that was originally deployed to serve residential customers.²⁶ Comcast has identified “5 million small- and medium-sized businesses that we think are in our footprint.”²⁷ Time Warner Cable believes there are two million business customers that fall within a quarter mile of each side of its plant.²⁸ Charter states that “[w]e’ve got about \$5.5 billion of business Telecom spend within 600 feet of our network, so it’s accessible.”²⁹

26. Thomson StreetEvents, *CVC – Cablevision Systems Corp. at Banc of America Media, Telecommunications & Entertainment Conference*, Transcript at 7 (Mar. 28, 2007). Cablevision determined this by “build[ing] a database” by “collect[ing] various business databases and... physically walk[ing] out [its] plant and identify[ing] all the small businesses inside [its] footprint and cross-referenc[ing] them against all the various databases.” *Id.*

27. *Comcast Corporation at Merrill Lynch U.S. Media Conference – Final*, FD (Fair Disclosure) Wire, Transcript 060508ap.737 (June 5, 2008) (statement by Comcast Senior Vice President of Investor Relations Marlene Dooner).

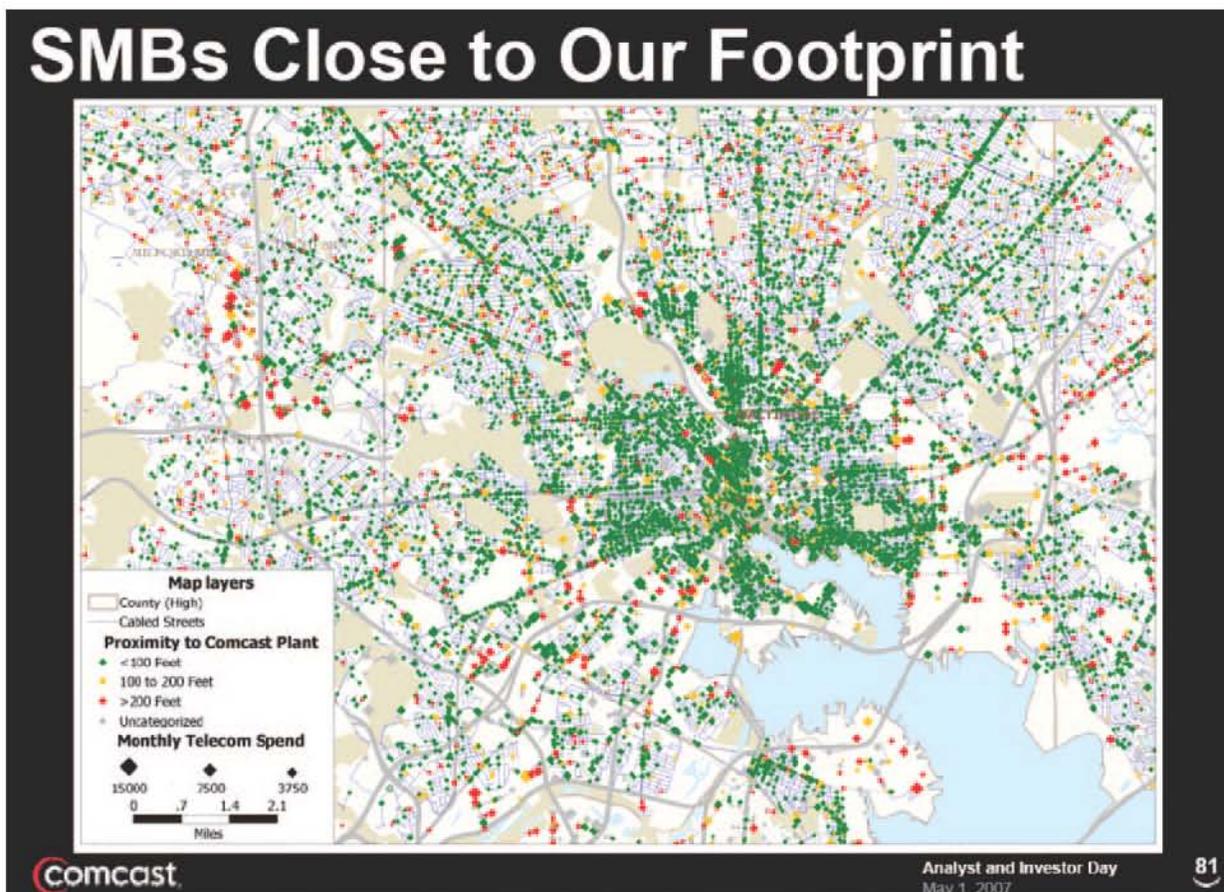
28. See P. Caranicas, *Business Services: Cable’s Last Frontier?*, Cable360.net (May 1, 2006), <http://www.cable360.net/cablefaxmag/wireless/18756.html>.

29. *Charter at Deutsche Bank Securities Leveraged Finance Conference – Final*, FD (Fair Disclosure) Wire, Transcript 092508ak.717 (Sept. 25, 2008) (statement by Charter CEO Neil Smit).

In Baltimore, Comcast claims that a great majority of small and medium businesses are within one hundred to two hundred feet of its cable plant.

The map below further illustrates this point. See Figure 1. It is from a presentation that Bill Stemper, President of Comcast Business Services, gave to analysts in 2007.³⁰ The map depicts Small and Medium Businesses – which Comcast defines as those with fewer than 50 employees – that are “close” to Comcast’s footprint in the Baltimore metropolitan area. The map depicts Comcast’s cable plant as well as the small businesses that are less than 100 feet, 100-200 feet, and more than 200 feet from that plant. The map indicates that the vast majority of SMB locations are less than the 100 feet from Comcast’s existing network (the green dots on the map). Although this map indicates that cable operators have the clear capability to determine the proximity of businesses to their networks, these companies have generally not provided such data in regulatory proceedings or in response to the requests of NRRI. Nonetheless, it is reasonable to assume that Baltimore is in no way unique, and that cable networks are currently capable of serving the vast majority of SMB locations in other parts of the country as well.

Figure 1 – Comcast Presentation Shows Most Businesses within Close Proximity to Cable Network



30. Bill Stemper, President, Comcast Business Services, Analyst and Investor Day (May 1, 2007).

Cable operators are using their near-ubiquitous networks to provide the same full range of data and voice services for which special access services also are used. First, cable operators use their fiber facilities to provide high-speed data services ranging from DS-1 equivalent (1.544 Mbps)³¹ services all the way up to OCn and Ethernet services. See Table 3. Second, cable operators are using their cable network to provide cable modem services, which may provide an adequate substitute for ILEC special access service for many customers, particularly smaller businesses.³² As shown in Table 3, each of the major cable companies offers high-speed Internet access service ranging in speeds from 15 to 50 Mbps downstream and as much as 2 to 10 Mbps upstream. With the deployment of DOCSIS 3.0 – which a number of the major cable operators have already begun – cable operators will be able to offer maximum speeds up to 100 Mbps downstream and more than 30 Mbps upstream.³³ Third, each of the major cable operators also provides voice services over its cable networks to business customers, including everything from single-line services to multi-line and virtual PBX services. See Table 3. With technological advances in the past several years, a single coaxial cable can now be used to provide high-speed data services as well as voice services for multiple lines, which is comparable to what can be provided over a single DS-1.

31. DS-1 (1.544 Mbps) and DS-3 (44.736 Mbps) are often used interchangeably with the terms T1 and T3, respectively.

32. See The Insight Research Corporation, *Private Line and Wavelength Services 2008 – 2013*, at 4, 47, 72 (Sept. 2008) (“For small and medium businesses with a single location, DSL and cable modems are viable alternatives to private lines for high-speed Internet access. Both of these access methods can achieve transmission speeds comparable to a T1.”); Greg Gum, Chief Marketing Officer, ANDA Networks, *Greg Gum Discusses the Role of Ethernet in the Cable Operator’s Changing Business*, Cable & Satellite International Inc. (Jan.-Feb. 2009), http://www.cable-satellite.com/features_jan-feb-2009_Cable-Ethernet-In-pursuit-new%20business-opportunities.php (“In general, the cable companies run their business services over separate fiber networks and the operators are now deploying Carrier Ethernet technology to maximize network performance and provide business customers with competitive access to advanced service level agreements (SLAs) and operations, administration, and maintenance (OAM) capabilities, with feature-rich intelligent demarcation capabilities between provider and the business customer’s network.”).

33. See Pike & Fischer, Broadband Advisory Services, *DOCSIS 3.0 Deployment Forecast* (2009) (“We conclude that the top cable operators will have DOCSIS 3.0 covering nearly 100% of homes passed by the end of 2013, and that MSOs can significantly shorten the time to achieve a return on their DOCSIS 3.0 investments by aggressively targeting business customers.”).

Table 3 – Cable’s Claims Regarding Their Commercial Service Offerings

Company	Fiber and Ethernet	Cable Modem	Voice
Comcast	<ul style="list-style-type: none"> ▶ Comcast offers enterprise customers “a very rich fiber experience” ▶ Ethernet Private Line service offers “[d]edicated layer-2 capacity between your locations,” and “[b]andwidth scalable up to 1 Gbps with multiple QoS options” ▶ Ethernet Dedicated Internet offers “[s]ymmetrical dedicated Internet bandwidth configurable from 10 Mbps to 1 Gbps in 1 Mbps increments” 	<ul style="list-style-type: none"> ▶ Comcast Business Class Internet includes “[d]ownloads up to 16Mbps, uploads up to 2Mbps” ▶ Extreme 50 Mbps High Speed Internet provides speeds up to 50 Mbps downstream/10 Mbps upstream 	<ul style="list-style-type: none"> ▶ Business Class Voice is an “efficient and innovative voice service” which gives small- and medium-sized business owners access to “features that have traditionally only been available to large companies”
Cablevision/ Lightpath	<ul style="list-style-type: none"> ▶ Lightpath offers “[a] suite of Ethernet-based data services designed to move data between two or more locations. Available in a range of flexible bandwidth options” 	<ul style="list-style-type: none"> ▶ Optimum Online for Business provides service with “up to 15 Mbps downstream” and “up to 2 Mbps upstream” ▶ Optimum Online services are “up to 5 times faster than phone company High Speed Internet” ▶ Lightpath Internet services “range from single dedicated Internet access, Voice and Internet all-inclusive packages as well as managed and unmanaged Internet services” 	<ul style="list-style-type: none"> ▶ Optimum Voice for Business offers “[m]ultiple lines... for your business” and allows customers to “save as much as 60 percent over the phone company” ▶ Lightpath Voice “is available as an IP-based solution with managed premise-based and hosted service options, or as an unmanaged IP-based or traditional voice solution”
Time Warner Cable	<ul style="list-style-type: none"> ▶ Dedicated Internet Access offers “connectivity speeds ranging from 1 Mbps to 10 Gbps” over the company’s “high-capacity fiber network” with a “national presence” ▶ With Business Class Ethernet services, small and “[m]id-sized businesses no longer have to settle for inflexible frame relay or T1 services,” and can instead opt for “bandwidth versatility” for “point-to-point and point-to-multipoint functionality” 	<ul style="list-style-type: none"> ▶ Business Class service provides speeds up to 15 Mbps downstream/2 Mbps upstream, for the “performance and reliability every business needs” 	<ul style="list-style-type: none"> ▶ Business Class Phone service is a “multi-line, crystal-clear, reliable phone service,” and “[e]ach line can be configured to meet your specific business feature and call restriction requirements”
Cox	<ul style="list-style-type: none"> ▶ “Backed by our own fiber-based metropolitan networks and nationwide fiber-optic IP backbone, . . . Cox Optical Internet has multiple bandwidths available from the popular 1.5 Mb (T-1) to 10 mg to OC-12 or higher” ▶ Cox Private Line service “is the ideal solution for high-capacity, quick-connecting communications for any business or organization experiencing increasingly high demands on its network for stand-alone or integrated voice and data communications” 	<ul style="list-style-type: none"> ▶ Cox Business Internet services are offered at “[s]peeds to fit all your needs,” “[w]hether you’re a small, growing business or a large, established enterprise.” ▶ “Download speeds up to 15.0Mbps and upload speeds up to 2.0Mbps” 	<ul style="list-style-type: none"> ▶ “Cox Digital Telephone can provide a customized, cost-effective solution, whatever the size of your business or the scope of your needs – from a small, growing business that wants only a few lines without the capital expenses . . . to a medium-sized operation requiring phone, fax and voice mail . . . to a large, established enterprise with a full range of needs”

Table 3 – Cable’s Claims Regarding Their Commercial Service Offerings

Company	Fiber and Ethernet	Cable Modem	Voice
Charter	<ul style="list-style-type: none"> ▶ Charter Business Fiber Internet “provides symmetrical access speeds from 2Mbps up to 1Gbps, scalable in increments as little as 1 Mbps” over a “single fiber connection” ▶ Charter Business Optical Ethernet “provides speeds of 10Mbps to 10Gbps, scalable in 10 Mbps increments. Transparently connecting multiple business locations, it allows you to adjust bandwidth up to full capacity as needed” ▶ Charter Business Optical Transport is a “secure private connection designed for routing encrypted files between two or more sites” 	<ul style="list-style-type: none"> ▶ Charter Business Internet Plus provides “download speeds of up to 20Mbps and upload speeds of up to 2Mbps” ▶ “Charter Business Internet Plus is more affordable than a dedicated T1 connection” ▶ The company’s “flexible and powerful network” allows it to “offer broadband internet services that fit the needs of any size business” 	<ul style="list-style-type: none"> ▶ Charter Business Telephone is “a reliable and cost-effective choice for small businesses” ▶ Voice Trunk is “[d]esigned to support call centers, large businesses with high call volume and companies with many employees,” and is “scalable to handle the most demanding inbound and outbound needs”

Sources: See Appendix C.

Because of the proximity of their networks to business customers and the types of services they are able to offer over their networks, cable operators are competing particularly aggressively for the small and medium-sized businesses that are the primary retail consumers for the ILECs’ DS-1 and DS-3 special access services. Cablevision’s COO, Tom Rutledge, stated in September 2008 that he sees an opportunity for Cablevision to “go capture” the small and large sized business markets – which he estimates at “\$5.8 billion being spent” inside Cablevision markets.³⁴ Analysts report that “Cox [] estimated in an interview that they now control as much as 25% of the SME market in much of their footprint.”³⁵ Comcast estimates five million businesses with fewer than 20 employees within its footprint, accounting for \$12-\$15 billion of annual spending.³⁶ Time Warner Cable is undergoing a system-wide rollout of Business Class Ethernet services, “designed primarily for small- to medium-sized businesses, or those without access to fiber networks,” provided over Time Warner Cable’s HFC network.³⁷ With this new service, Time Warner Cable claims that “[m]id-sized businesses no longer have to settle for inflexible frame relay or T1 services,” and can instead opt for “bandwidth versatility” for “point-to-point and point-to-multipoint functionality.”³⁸ Charter sees an opportunity in the “SME business spend ~\$5.5B across footprint; primarily targeting 2-12 telephone lines.”³⁹



Cox estimated that it now controls as much as 25% of the small and medium business market in much of its footprint.

34. *Cablevision Systems Corp. at Merrill Lynch Media Fall Preview – Final*, FD (Fair Disclosure) Wire, Transcript 091008a1944671.771 (Sept. 10, 2008) (statement by Cablevision Systems Corp. COO Tom Rutledge). “About \$3.4 billion of that is small business, and \$2.4 billion large business.” *Id.*

35. C. Moffett et al., Bernstein Research, *U.S. Telecom: Enterprise Services... Time for a Star Turn?*, at 18 (Mar. 25, 2008).

36. Comcast Cable, Presentation at the UBS Global Media and Communications Conference, at 13 (Dec. 8, 2008), http://library.corporate-ir.net/library/11/118/118591/items/317921/{CEA0EE70-783A-4507-9E1F-7072DDDEE2C9}_UBS2008Slides_FINAL.pdf.

37. *Time Warner Cable Business Class Launches New Ethernet Service*, Business Wire (Oct. 27, 2008).

38. *Id.* (quoting Time Warner Cable Business Services Senior Vice President Ken Fitzpatrick).

39. Charter Communications, *Second Quarter 2008 Earnings Call Presentation*, at 10 (Aug. 5, 2008).

Independent analysts also agree that cable operators are well-positioned to rapidly gain share of business customers of all sizes.⁴⁰

Notwithstanding this evidence, the National Regulatory Research Institute (NRRI), under contract with the National Association of [State] Regulatory Utility Commissioners (NARUC), issued a report in January 2009 examining certain competitive issues in high-capacity and special access services. The NRRI Report concludes that cable operators are “still acting on the fringes of special access markets” and that these “technologies have had only a minimal effect on the behavior of existing special access markets.”⁴¹ But to the limited extent the NRRI Report considers competition from cable, its specific findings actually provide support that cable competition meaningfully constrains ILEC special access prices today. For example, the NRRI Report recognizes that “[d]igital cable television systems can be modified to offer substitutes for special access”; that both entry and exit costs for cable operators is “low”; that “cable television systems today pass the majority of American... businesses”; that “in some locations [cable’s] market shares appear to be growing” and “are increasingly constraining ILEC behavior.”⁴² As a matter of textbook economics, these criteria establish that cable competition is sufficiently advanced to discipline market incumbents.⁴³ The NRRI Report provides no support, by contrast, for its conclusion that cable is still a “fringe” competitor that is not capable of disciplining ILEC pricing behavior. Indeed, the NRRI Report provides no survey of cable operators or their competitive activities, and concedes that “[n]o... cable TV provider submitted any seller or buyer data.”⁴⁴

2. Fixed wireless providers

Fixed wireless technology provides an additional and rapidly growing alternative to wireline high-capacity services, including the ILECs’ special access services. Business customers can use fixed

40. See, e.g., F. Louthan, IV et al., Raymond James & Associates, Inc., *Examining the Convergence of the Telecom and Cable Sectors*, at 3 (Aug. 18, 2008) (Raymond James: “[T]he low-end enterprise space... is potentially a very lucrative part of the market, and we view small business as a great area to invest in... We estimate there are millions of these SOHO customers already attached to the cable network, and they can drive highly profitable business, in our opinion, with little incremental investment.”); Craig Moffett et al., Bernstein Research, *U.S. Telecom: Enterprise Services... Time for a Star Turn?*, at 17 (Mar. 25, 2008) (Cable operators “already have facilities that are fully built and economically supported by an existing business (residential video). The *marginal* investment required to compete in the SME segment is very small. At the same time, the potential margins are very high, as a consequence of three generations of legacy pricing decisions in the TelCo. Once they had entered the data services businesses for consumers, and later the voice business for consumers, it became an obvious next step to target the far more lucrative business services market... Not surprisingly, the cable operators have made SMB their primary growth initiative.”); V. Jayant et al., Barclays Capital, *Recession-Resistant, Not Recession Proof*, at 6 (Jan. 20, 2009) (“cable operators now have the technology to pursue larger voice customers (12 lines or more”).

41. NRRI Report at iv, 83.

42. *Id.* at iv, 56.

43. See, e.g., Gregory N. Mankiw, *Principles of Economics*, 4th ed., at 290 (2007) (a competitive market has many buyers and sellers, similar goods, and free entry and exit); Jerry Ellig, ed., *Dynamic Competition and Public Policy: Technology, Innovation, and Antitrust Issues* at 2 (2001) (“But how do we know whether a firm in an innovative industry faces competition? In textbook economic theory, numerous competitors with access to the same technology and resources compete on price. In a growing number of real industries, competitors with different technologies and resources compete on the basis of product attributes and performance as well as price.”); Michael E. Porter, *The Competitive Advantage of Nations: With a New Introduction* at 35 (1998) (“The five competitive forces determine industry profitability because they shape the prices firms can charge, the costs they have to bear, and the investment required to compete in the industry. The threat of new entrants limits the overall profit potential in the industry, because new entrants bring new capacity and seek market share, pushing down margins. Powerful buyers or suppliers bargain away the profits for themselves. Fierce competitive rivalry erodes profits by requiring higher costs of competing... or by passing on profits to customers in the form of lower prices. The presence of close substitute products limits the price competitors can charge without inducing substitution and eroding industry volume.”).

44. NRRI Report at 37.

wireless to obtain access to voice and high-speed data services, and other carriers can often use fixed wireless to extend their existing fiber networks quickly and efficiently.⁴⁵ Fixed wireless is a particularly attractive substitute for the ILECs' DS-1 and DS-3 special access services, and can be found in areas where demand tends to be less concentrated.

There are now more than a dozen fixed wireless providers offering service in areas throughout the country using spectrum in the 2 GHz, 3.6 GHz, 5.8 GHz, 11 GHz, 18 GHz, 23-24 GHz, 28-31 GHz, and 80 GHz bands. *See* Table 4. These providers now serve almost all of the top 50 MSAs. *See id.* These totals are growing rapidly, as numerous fixed wireless providers are in the process of deploying service to new markets – including outside of the top 50 MSAs – and expanding service within existing markets.⁴⁶ *See* Table 5. Clearwire, for example, states it is on track to “significantly extend [its] wireless 4G network enabling [it] to potentially cover as many as 120 million people with true broadband mobility across 80 cities by the end of 2010.”⁴⁷

Fixed wireless providers have already acquired significant amounts of spectrum across the country. *See* Table 4. For example, FiberTower provides service in the top 77 metro areas as well as many “suburban and rural markets,”⁴⁸ and hold spectrum that covers 99 percent of the United States.⁴⁹ Nextlink’s fixed wireless spectrum covers “95% of the population in 81 of the top markets in the United States.”⁵⁰ Clearwire “now has 100 MHz or more of optimal 4G spectrum in most markets across the U.S.”⁵¹ Moreover, new entrants without their own spectrum can buy or lease it from other providers. SpecEx is an online marketplace that has been established precisely for this purpose.⁵² FiberTower announced that it is listing its nationwide 39 GHz spectrum on SpecEx.⁵³



There are now more than a dozen fixed wireless providers offering service in areas throughout the country, including almost all of the top 50 MSAs.

45. *See Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, 22 FCC Rcd 5901, ¶ 14 (2007) (fixed wireless networks “typically have a reach of one to five miles” and merely require that customers “have a rooftop antenna that can establish a line-of-sight connection with the network transmitter”); *AT&T Inc. and BellSouth Corporation Application for Transfer of Control*, Memorandum Opinion and Order, 22 FCC Rcd 5662, ¶ 48 (2007) (“*AT&T/BellSouth Order*”) (“fixed wireless offers the potential of being a cost-effective substitute for fiber as a last-mile connection to commercial buildings”).

46. Sparkplug Press Release, *High Bandwidth-Demanding Chicago Businesses Turn to Expanded Sparkplug Network for Service* (May 28, 2008) (In May 2008, Sparkplug “significantly expanded the reach and capacity of its Chicago network,” making its service available to more than 19,000 additional businesses, for a total of more than 63,000 Chicago businesses); Sparkplug Press Release, *Sparkplug Expands Network To Meet Rapidly Growing Bandwidth Demand in Arizona* (June 23, 2008) (In June 2008, Sparkplug expanded its Phoenix metropolitan area network, making its service available to more than 35,000 additional Arizona businesses, for a total of approximately 80,000 businesses in the area).

47. Clearwire Press Release, *Clearwire Reports First Quarter 2009 Results* (May 13, 2009).

48. FiberTower, *Spectrum Assets*, <http://www.fibertower.com/corp/company-spectrum-assets.shtml>.

49. *Id.*

50. Nextlink, *About Nextlink*, <http://mail.nextlink.com/about-nextlink.html>.

51. Clearwire News Release, *Clearwire Completes Transaction with Sprint Nextel and \$3.2 Billion Investment To Launch 4G Mobile Internet Company* (Dec. 1, 2008).

52. *See* SpecEx, <http://www.specex.com>.

53. *FiberTower Lists Nationwide 39 GHz Microwave Spectrum Portfolio on SpecEx, Spectrum Bridge's Online Marketplace*, Business Wire (Apr. 2, 2009) (“Our nationwide 39 GHz licenses can provide market-based fiber extensions to wire-line and wireless carriers, businesses, local and federal government entities and others seeking exclusive-use, high-capacity backhaul solutions. We believe that marketing these licenses through Spectrum Bridge is an efficient way for FiberTower to leverage this valuable asset and assist in bringing it to its highest and best use.”).

Table 4 – Examples of Fixed Wireless Availability in Top 50 MSAs

Company	# of Top 50 MSAs	Fixed Wireless Providers' Claims Regarding Spectrum Holdings/Geographic Reach
PAETEC	46	▶ "Fixed Wireless solutions are available to customers in all PAETEC markets"
FiberTower	15	▶ "566 [39 GHz] licenses, coupled with 103 licenses for 24 GHz spectrum, allow FiberTower's hybrid radio/fiber network to expand to virtually the entire continental U.S." ▶ "FiberTower's 39 GHz spectrum licenses covers 99 percent of the United States, delivering the coverage, capacity and quality that carriers, enterprises and government agencies need to handle rapidly rising broadband data demand from their clients" ▶ "24 & 39 GHz wide-area licenses, 3000+ Point-to-Point 6, 11, 18, 23 & 39 GHz licensees"
Airband	11	▶ "both licensed and licensed-exempt spectrums"
Towerstream	8	▶ "transmissions over both regulated and unregulated radio spectrum" ▶ "operates using unlicensed spectrum in the 5.8 GHz band"
Nextlink (XO)	6+	▶ 28-31 GHz and 39 GHz spectrum which "covers 95% of the population in 81 of the top markets in the United States"
Clearwire/Sprint	6	▶ "100 MHz or more of optimal 4G spectrum in most markets across the U.S."
Rapid Link	6	▶ "the licensed-only 3650 MHz spectrum"
Covad Wireless	5	▶ "utilizes licensed and unlicensed wireless technology to bypass the local telco infrastructure" and claims to be "the largest fixed wireless Internet service provider (WISP) for business operating in California, Nevada and Illinois" ▶ "service area encompasses over 220 cities across more than 3,000 square miles and covers more than 50,000 small and medium-sized enterprises (SMEs) in population centers that include more than 25 million households."
Alpheus	4	
Sparkplug	4	
Business Only Broadband	2	▶ Licensed spectrum in the 11 GHz, 18 GHz, 23 GHz, and 80 GHz ranges
Tower Cloud		▶ "licensed microwave technologies" ▶ Can deliver "[f]ast network expansion to serve new cell sites and new markets," and "[c]apacity can quickly and easily be increased to meet the carriers growing traffic demands"

Table 5 – Known Fixed Wireless Expansion Since the Beginning of 2008

Jan. 2008	Airband	“As part of its national expansion strategy, the company has increased the market reach and service area in the Houston market by 50%”
	Rapid Link	Signed a long-term agreement to deploy Internet access points atop the Wallace District water tower and announced plans to construct approximately 20 towers in Calveras County, CA over the next year
Mar. 2008	Covad Wireless	Partnered with IDT Spectrum to provide “enterprise-class wireless Ethernet services in the San Francisco Bay Area over IDT’s licensed 28-31 GHz [LMDS] spectrum”
Apr. 2008	Towerstream	Launched fixed WiMAX service in the Dallas-Fort Worth metropolitan area
	Towerstream	Announced the installation of a new PoP to expand its New York City network
May 2008	Sparkplug	“[S]ignificantly expanded the reach and capacity of its Chicago network,” “bringing the total number of businesses in Sparkplug’s service area in the metropolitan area to more than 63,000, a more than 43% increase”
June 2008	Rapid Link	Launched WiMAX service in the Atlanta metropolitan area
	Nextlink	Launched broadband wireless services in the New York City metro area
	Sparkplug	“[S]ignificantly expanded the reach and capacity of its Phoenix metropolitan area network,” “bringing the total number of businesses in Sparkplug’s service area to approximately 80,000, almost doubling the number of businesses within the company’s coverage area”
	Airband	“[S]ignificantly increased its market reach and service area” “in the Greater Phoenix area including Scottsdale, Tempe, Deer Valley, Chandler and Mesa”
Aug. 2008	Sparkplug	Upgraded and expanded its Des Moines-area network, making it “available to thousands of businesses in the metropolitan area”
Oct. 2008	Towerstream	Installed a new PoP to expand its Miami network
Dec. 2008	Rapid Link	Opened a 3,000 square-foot data facility in Atlanta
Jan. 2009	Towerstream	Installed two new PoPs to expand its Los Angeles network
Feb. 2009	Airband	Expanded service throughout the Atlanta area
	Towerstream	Installed a new PoP to expand its Miami network
Mar. 2009	PAETEC	Began providing fixed wireless transport solutions across its wireline serving area
May 2009	Towerstream	Extended Chicago network to Evanston, Ill., providing access to more than 31,000 additional businesses
June 2009	Towerstream	Extended Chicago network to Oakbrook, Ill., providing access to more than 42,400 additional businesses

Sources: See Appendix C.

Fixed wireless service providers assert that their offerings can be deployed quickly and cost efficiently. Fixed wireless companies first deploy one or more wireless base stations in a metropolitan area, which can offer service over a large metropolitan area at a relatively low cost. For example, FiberTower has stated that with fixed wireless “[y]ou can literally cover over a hundred miles and you’re talking less than \$100,000 in equipment rather than millions to put in fiber.”⁵⁴ Lemko, a fixed wireless company founded by former Motorola executives, recently introduced fixed wireless technology that it claims

54. See *Pressure Grows on FCC to Release Wireless Backhaul Notice*, Communications Daily (Apr. 7, 2009) (quoting FiberTower Senior VP of Government and Regulatory Affairs Joseph Sandri).

reduces operational expenditures “by 65%” and has a “breakeven end user density [of] one user per two square miles.”⁵⁵

Moreover, apart from the tower and the underlying spectrum, the principal remaining costs of deploying fixed wireless are variable, and therefore may be incurred only after a revenue-generating customer is obtained. Fixed wireless providers install antennas, radios, and masts on rooftops, and then connect that equipment to an office within the building using Ethernet cabling.⁵⁶ Fixed wireless providers also need to backhaul traffic between base stations and centralized network locations, but this can be done using the same fixed wireless technology. Clearwire, which trumpets its “pioneering use of almost exclusively microwave backhaul,” describes the operating costs as “negligible.”⁵⁷

Once deployed, a fixed wireless network may be used to serve a variety of customers, from small businesses, to large carriers, to public safety organizations. Fixed wireless providers have accordingly adopted a range of business models – some focus exclusively on providing wholesale service, others on business customers, and still others on both. *See* Table 6. Fixed wireless may also be used to provide a wide variety of services. Fixed wireless providers offer high-speed connections ranging from DS-1 to Gigabit Ethernet to OCn. *See* Table 6. Some specifically offer speeds (such as 8 Mbps) that are in between the standard DS-1 and DS-3 offerings specifically to appeal to businesses whose needs fall in between this range.⁵⁸ Fixed wireless providers also may offer high-level service guarantees – such as “government-grade access,”⁵⁹ “99.99% uptime”⁶⁰ and “less than a 50ms delay on the last mile,”⁶¹ “scalable bandwidth,” and “carrier-class Service Level Agreements”⁶² – that are typically associated with the ILECs’ DS-1 and DS-3 special access services. Fixed wireless connections may also support the same data and voice services otherwise provided over wireline facilities.⁶³

55. Comments of Lemko Corporation at 2, *Joint Request for Information*, Docket No. 09039298-9299-0 (NTIA filed 2009). *See also* Lemko Corp. Press Release, *Lemko Delivers Cellular’s Lowest Total Cost of Ownership* (Mar. 31, 2009).

56. *See, e.g.*, B.W. Stuck & M. Weingarten, *Fixed Wireless Carrier Economics: Has Its Time Come?* (Mar. 9, 2007) 1 J. of Telecommunications Management 12 (2008) (“As more customers sign up, the service provider can simply add more cells.”); D. Sweeney, *WiMax Operator’s Manual: Building 802.16 Wireless Networks*, at 22 (2005) (“Instead of providing a subscriber terminal to every subscriber – which is a prohibitively expensive proposition because subscriber terminals for these frequencies are nearly as expensive as base equipment – the operator strives to put up a single terminal on the roof and then connect customers scattered through the building via internal hardwired Ethernet, though a wireless LAN could conceivably be used as well.”).

57. *Q4 2008 Clearwire Corporation Earnings Conference Call – Final*, FD (Fair Disclosure) Wire, Transcript 030509a2078472.772 (Mar. 5, 2009) (quoting Clearwire Corp. COO Perry Satterlee).

58. Towerstream’s CEO stated that the company offers the “speed and price [to] fill a gap” that larger competitors such as AT&T and Verizon are unable to fill because they only offer slower speeds of 1.5 Mbps speeds or the more expensive 45 Mbps service. W. Hamilton, *Towerstream Growing Despite Economic Downturn*, Providence Business News (Jan. 12, 2009), <http://www.pbn.com/private/cca508d711be.html> (quoting Towerstream President and CEO Jeff Thompson).

59. FiberTower, *Primary & Redundancy Access for Government*, <http://www.fibertower.com/corp/solutions-government.shtml>.

60. Towerstream, *Overview*, <http://www.towerstream.com/index.asp?ref=company>.

61. Towerstream, *Speed*, <http://www.towerstream.com/index.asp?ref=speed>.

62. Conterra Telecom Services, *Company*, <http://www.conterra.com/corporate/index.php>.

63. Nextlink, *About Nextlink*, <http://mail.nextlink.com/about-nextlink.html> (Nextlink’s services support “next-generation mobile and wireline voice, data and video applications.”).

Table 6 – Selected Fixed Wireless Service Offerings

Company	Customers Served	High-Capacity Services
FiberTower	<p>“major wireless carriers, enterprises and government agencies”</p> <p>“Est. US Market Share: ~1.5%”</p>	<p>“[M]ission and business critical transport solutions, including backhaul and premise access services”</p> <p>“[N]ationwide, government-grade access services over its licensed wireless spectrum, including Government Connection, Diversity and Redundancy, and Dedicated Transmission Services”</p> <p>FiberTower’s “plan for government agencies and suppliers, provid[es] wireless equivalents of up to 16xT1, DS-3, OC-3 and 100 Mbps Carrier Ethernet”</p>
Tower Cloud	Wireless carriers	<p>“Tower Cloud is focused on providing reliable and cost efficient mobile backhaul services”</p> <p>“Network equipment is capable of providing SONet based services including T1, DS3, and OCn. Ethernet services are also available to serve the customer’s emerging high speed data services (i.e. 3G and 4G)”</p>
Towerstream	Small and medium-sized businesses, enterprises	<p>Small business: Fractional T (512Kbps) to 3 Mbps</p> <p>Medium-sized business: 6-12 Mbps</p> <p>Enterprise: 10-1000 Mbps</p>
Conterra Telecom Services	“mobile communication carriers, school districts and government entities”	<p>“[P]rovides high quality, high capacity backhaul and wide area network transport services”</p> <p>“Conterra’s turnkey Ethernet and SONET transport services offer scalable bandwidth availability, from 1.5 Mbs to 1 Gbs, to support mission critical transmission of data, video and voice through leased T-1, T-3, OC-3, and Ethernet circuits”</p>
Covad Wireless	Small, medium, and large businesses	<p>“[B]usiness-grade fixed broadband wireless services” at “speeds of up to 9.0 megabits per second downstream and upstream using unlicensed spectrum and up to 100 megabits per second downstream and upstream”</p>
Nextlink (XO)	“the leading provider of broadband wireless services to fixed and mobile communications providers, businesses and government agencies”	<p>“Nextlink delivers high-quality, carrier-grade broadband wireless solutions that scale to meet the demands of today’s converged world of communications – supporting next-generation mobile and wireless voice, data and video applications”</p>
Clearwire/Sprint	“small businesses, medium and large enterprises, public safety organizations and educational institutions”	<p>Intends to provide “legacy educational video,” “backhaul services,” “in-building services,” “enterprise operations,” and “wide-area networking”</p>
Sparkplug	“business, carrier, government and education customers”	<p>“Affordable high capacity service from 2 Mbps... up to 1 Gbps”</p> <p>“[F]lexible delivery options including scalable 10/100/1000 Mbps Ethernet, DS-n and OC-n”</p>
Airband	“proud to serve more than 3,500 businesses nationwide”	Dedicated bandwidth “from 3 Mbps up to GigE speeds”
Rapid Link	<p>Small and medium business, enterprise, and carrier customers</p> <p>Surpassed 4,000 billing T-1 equivalents in Dallas and Atlanta and “reached [its] target goals ahead of projections”</p>	<p>“Rapid Link has built an extensive, high-speed fixed wireless network that offers both carrier and physical diversity for fiber and traditional copper connection” with speeds ranging from 1.5 Mbps to 1000 Mbps</p>

Table 6 – Selected Fixed Wireless Service Offerings

Company	Customers Served	High-Capacity Services
Alpheus	“Service providers, businesses, and the public sector”	“core product offerings include Hubbed and Point-to-Point Service, at bandwidth speeds ranging from DS-1 to OC-192, Gigabit Ethernet and Managed Wavelengths” Its “Waves” service “is the ideal solution for companies who need large amounts of bandwidth and want a cost-effective alternative to building, lighting, and managing dark fiber. Our 2.5 Gbps managed waves are well-suited for customers who need reliable and scalable high-capacity transport and prefer to manage their own bandwidth”
Business Only Broadband	The financial sector and large enterprises	Offers scalable bandwidth ranging from 1 Mbps to 1 Gbps

Sources: See Appendix C.

A number of fixed wireless providers market their services to competitive fiber carriers who can use fixed wireless to expand their networks to enterprise locations. For example, FiberTower provides service to both Verizon Business and Qwest.⁶⁴ Conterra states that its wireless technology may be used “to augment and extend seamlessly existing fiber backbones and rings in locations where the economics of deploying fixed-wire media for last-mile broadband connections are unfavorable.”⁶⁵ XO’s Nextlink subsidiary “allow[s] competitive carriers to bypass the ILEC and market their services to customers directly through high capacity, wireless connections.”⁶⁶ XO is in fact “replacing leased circuits in [its] network infrastructure with wireless solutions from [its Nextlink subsidiary].”⁶⁷

Fixed wireless providers are rapidly adding new customers and locations. FiberTower reported that, as of the end of the first quarter of 2009, it had increased the number of installed sites by 19 percent and the number of billing customer locations by 39 percent over the previous year.⁶⁸ Towerstream has stated that “[r]ecent customer wins include high profile companies such as Intel, Netflix and ESPN – and [] existing customers continue to upgrade to higher bandwidth products, increasing ARPU.”⁶⁹ Conterra reports that it “operate[s] nearly one thousand locations across sixteen states.”⁷⁰ Covad Wireless “serves approximately 4,000 small and medium-sized businesses” throughout its major market areas, and claims to “operate[] California’s largest broadband fixed wireless network to serve businesses.”⁷¹ Airband states that “3,500 businesses in 15 major markets nationwide already count

64. FiberTower Press Release, *FiberTower Reports First Quarter 2007 Results* (May 8, 2007) (Verizon Business and Qwest selected FiberTower as a prime fixed-wireless services partner for their respective Network Universal awards, which were granted by the U.S. General Services Administration on March 29, 2007. FiberTower’s Network awards allowed it to “operate under a fixed-wireless subcontract agreement with each carrier as they compete for telecommunications business from government agencies.”).

65. Conterra Telecom Services, *Company*, <http://www.conterra.com/corporate/index.php>.

66. XO Communications Inc., Form 10-K at 4 (SEC filed Mar. 16, 2007).

67. XO Holdings, Inc., Form 10-K, at 3 (SEC filed Mar. 17, 2008).

68. FiberTower Press Release, *FiberTower Reports 2009 First Quarter Results* (May 7, 2009).

69. Towerstream Press Release, *Towerstream Announces Record Revenues for the Second Quarter of 2008 with Sequential Growth of 20% and Year Over Year Growth of 53%* (Aug. 11, 2008) (quoting Towerstream President and CEO Jeff Thompson).

70. Conterra Telecom Services, *Carrier Backhaul*, <http://www.conterra.com/products/carrier.php>.

71. Covad Wireless Press Release, *Covad Wireless Increases Capacity, Reliability of Business-Class Network with New Fiber Backbone* (Mar. 25, 2009).

on Airband for their broadband service.”⁷² Rapid Link serves more than 4,000 T-1 equivalents in its primary market regions of Dallas and Atlanta.⁷³ Towerstream claims “[m]any Fortune 500 companies, cities, hospitals and universities are using Towerstream’s super high-speed Internet connections for business continuity and disaster mitigation.”⁷⁴

The NRRI Report makes largely the same observations about fixed wireless as it did with respect to cable, labeling it a “fringe” competitor based on limited evidence that actually supports the opposite conclusion. NRRI finds, for example, that fixed wireless services “can... provide a substitute for special access service” and that fixed wireless providers enjoy “relatively low entry costs even in low-density areas” and can serve additional customer with “little financial risk.”⁷⁵ The NRRI does not survey fixed wireless providers and concedes that “[n]o wireless broadband provider... submitted any seller or buyer data.”⁷⁶

B. Competitive Fiber Networks

Over the past two decades, competing providers have invested heavily to deploy fiber networks to serve virtually all areas where demand for high-capacity services is concentrated. These fiber networks are capable of providing high-capacity service to every type of customer (whether a large enterprise, small business, or another carrier) and at every level of capacity from DS-1 (1.544 Mbps) to OCn (51.84 Mbps to 39.81 Gbps) to Ethernet (10 Mbps to 10 Gbps).

Competitive carriers most often deploy their fiber rings in the areas where demand for high-capacity services is most heavily concentrated – typically the downtown core of cities or in certain suburban areas and office parks in which there are large numbers of customers in communications-intensive industries.⁷⁷ When a competing carrier deploys fiber in a given area, it first deploys a fiber “ring” that connects to the major points of traffic concentration in that area – such as carrier POPs, central offices, carrier hotels, and large office buildings.⁷⁸ Once the ring is deployed, the competitor seeks out customers to serve on or in proximity to the ring. As new customers are obtained, the carrier may serve these customers by extending its fiber to that location by deploying a “lateral” fiber from

72. Airband Communications Press Release, *Southern California Companies Rapidly Adopting Airband’s WiMAX –based Broadband Services* (Oct. 6, 2008).

73. Rapid Link Press Release, *Rapid Link Reaches Growth Goals Ahead of Schedule* (Oct. 20, 2008).

74. Towerstream, *Venti - 25Mbps and Faster Solutions*, <http://www.towerstream.com/index.asp?ref=enterprise>.

75. NRRI Report at 57.

76. *Id.* at 37.

77. See, e.g., *Unbundled Access to Network Elements; Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Order on Remand, 20 FCC Rcd 2533, ¶ 154 (2005) (“*Triennial Review Remand Order*”) (stating that when competitive LECs are deciding whether and where to build their own facilities, they “target areas that offer the greatest demand for high-capacity offerings (i.e., that maximize potential revenues) and that are close to their current fiber rings (i.e., that minimize the costs of deployment). The evidence in the record shows that the highest concentration of competitive LEC deployment of loops in the central business districts of large metropolitan areas is near where competitors have already deployed fiber rings.”); J. Kraushaar, Ind., Anal. Div., Common Carrier Bureau, FCC, *Fiber Deployment Update*, at 22, 39 (Sept. 1999) (“[E]conomies of scale can be realized where facilities are provided to large business customers or to other customers concentrated in large buildings.” Competitive access providers “own fiber and have typically provided access services to large business customers, for example, IXCs and financial institutions”).

78. See *Triennial Review Remand Order* ¶ 69.



Approximately half of ILEC special access revenue is concentrated in the top 25 largest MSAs.



For large ILECs, approximately 80% of special access revenues are concentrated in about 20% or less of wire centers.

its ring.⁷⁹ Alternatively, the competitive carrier might choose to lease a facility or purchase a service from a third party, such as – but not limited to – ILEC special access, to connect that location to the CLEC’s ring.

Data from the ILECs demonstrate that demand for their special access services is heavily concentrated geographically,⁸⁰ and therefore readily targeted by competitive fiber. For example, approximately half of ILEC special access revenue is concentrated in the top 25 largest MSAs.⁸¹ In the case of one major ILEC, 63 percent of its company-wide special access revenues (and 73 percent and 66 percent of DS-1 and DS-3 volumes, respectively) are concentrated in the 50 largest MSAs⁸² nationwide. In the case of another major ILEC, 79 percent of its company-wide special access revenues are concentrated in the 25 largest MSAs it serves.

Within these top MSAs, demand for ILECs’ special access services is concentrated further still, in the wire center serving areas⁸³ with the highest concentration of business customers. For example, in the case of one major ILEC, 80 percent of its special access revenues in the top 50 MSAs nationwide are concentrated in just 20 percent of the wire centers within those MSAs, while 50 percent of such revenues are concentrated in only 5 percent of the wire centers. In the case of another major ILEC, 80 percent of its company-wide special access revenue is generated in just 17 percent of its wire centers.

Competitive fiber has been deployed broadly in the areas in which demand for high-capacity services is concentrated. As shown in Table 1, there are at least 28 different competitors who have deployed fiber within the top 50 MSAs. *See* Table 7 & Appendix A. There is an average of six known fiber-based providers within each of these MSAs, with a range of between one and 14 providers per MSA. *See* Figure 2. There are at least three known providers in 45 MSAs, at least five known providers in 38 MSAs, and at least 10 known providers in five MSAs. *See* Appendix A. These competitive providers have deployed over a hundred thousand local route miles of fiber that already connect to tens of thousands of the office buildings where high-capacity customers reside.

79. *See id.* ¶¶ 69, 154 & n.430.

80. *See also Triennial Review Order* ¶¶ 205, 375 (recognizing that customers of high-capacity services tend to be highly concentrated geographically).

81. Based on data from AT&T, Verizon, Qwest, and Windstream.

82. This paper refers to Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget, not the MSAs for which pricing flexibility is granted. *See* 47 C.F.R. § 69.707; 47 C.F.R. § 22.909(a). The list of “top 50 MSAs” is based on 2008 population estimates, *see* <http://www.census.gov/popest/counties/files/CO-EST2008-ALLDATA.csv>, and differ slightly from the 50 MSAs identified by NRR1: Salt Lake City, Utah and Raleigh-Cary, N.C. are used in lieu of San Juan, P.R. and Rochester, N.Y.

83. A “wire center” is where loops and transport facilities attach to a switch. “Wire center” is also used to refer to the geographic area a particular switch serves (*i.e.*, a wire center serving area).

Table 7 – Selected Competitive Telecom Providers (Excluding Cable and Fixed Wireless)

Competitor	# of Top 50 MSAs	Metro Network Miles	Lit Buildings	Competitor	# of Top 50 MSAs	Metro Network Miles	Lit Buildings
Level 3	46	26,000+	7,500+	American Fiber Systems	7		500+
tw telecom	35	27,000 (metro & regional)	~9,700	Integra Telecom	5	2,200	600+
XO	34	9,000+	3,000+	US Signal	4	700	
Verizon	30	~9,750	~4,275	FPL Fibernet	4	840+	244
Qwest	27	5,200+		Lightower	3	4,000 (metro & regional)	1,100+
ITC^DeltaCom	16	15,900 (metro & regional)		Edison Carrier Solutions	2	3,600+	140+
AboveNet	16	~5,000 (incl. London)	1,800+ (incl. London)	AGL Networks	2	671	255
AT&T	15	15,750+	5,175+	SureWest	2	403	
One Communications	13	11,000+ (metro & regional)		Southern Light Fiber	1	1,000+	~800
Cavalier/Intellifiber Networks	12	3,000	700+	DQE Communications	1	1,000+	600+
Zayo Bandwidth	11	18,895 (metro & regional)	1,858	SRP Telecom	1	950	70
RCN Metro	8	7,100 (metro & regional)	1,290+	Long Island Fiber Exchange	1	700+	350
Fibertech Networks	8	4,200+		IP Networks	1	400	40+
FiberLight	8			Lexent Metro Connect	1	100+	99

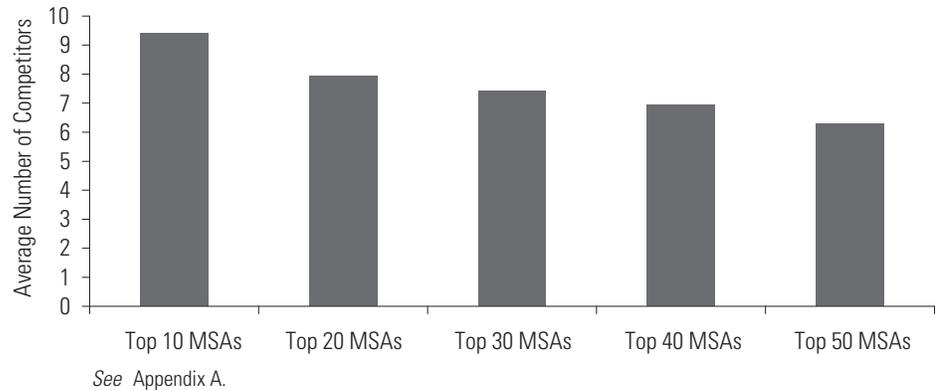
Figures for Verizon, AT&T, and Qwest reflect competitive (non-ILEC) operations: this approach is conservative because it generally excludes MSAs where these companies are both the ILEC in parts of the MSA and compete with another ILEC in other parts of the same MSA.

Sources: See Appendix C.



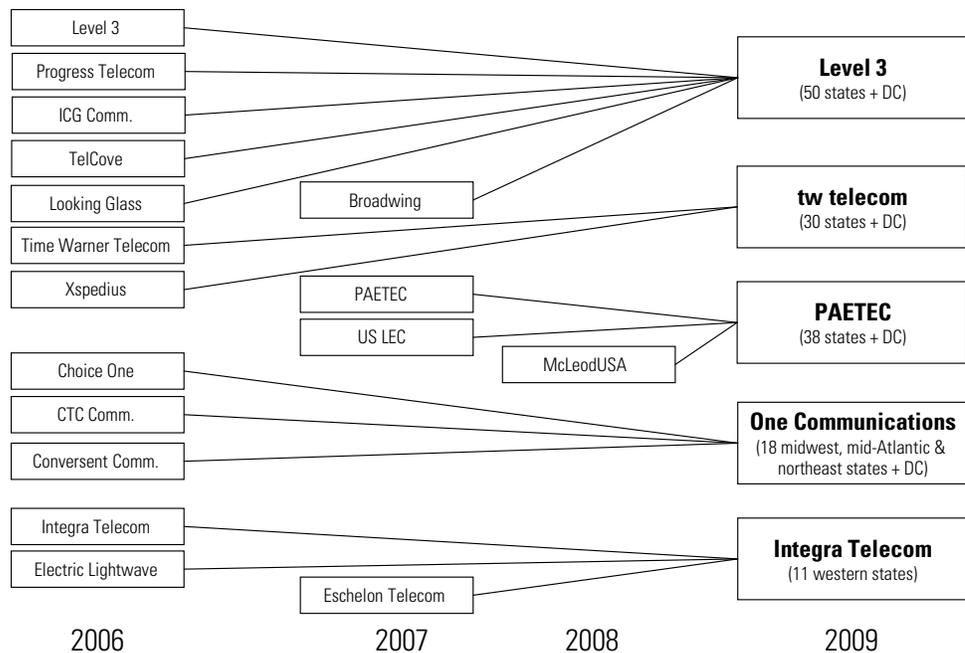
There is an average of six known fiber based providers in each of the top 50 MSAs, with a range of between one and 14 alternative providers per MSA.

Figure 2 – Average Number of Known Competitive Fiber Providers in Top 50 MSAs



As these data illustrate, the universe of competitive fiber providers includes a wide variety of firms. AT&T, Verizon, and Qwest have competitive fiber networks in each other's regions. A number of CLECs such as tw telecom, Level 3, and XO also compete on a nationwide scale, having grown significantly in the past several years through a wave of consolidation and expansion. See Figure 3. In addition, there is a large number of CLECs who operate on a more regional scale, some of which (e.g., AboveNet, Edison Carrier Services) focus mainly on the provision of wholesale services to other carriers, while others (e.g., One Communications, ITC^DeltaCom) provide both enterprise and wholesale services.

Figure 3 – Examples of Competitors That Have Grown Significantly Through Consolidation



The public statements of competitive fiber providers confirm that they are capable of reaching a significant amount of the ILECs' special access demand with their existing networks. For example:

- In a May 2009 investor presentation, tw telecom estimated that of the approximately 1.9 million "target" businesses (*i.e.*, sites with 2 or more DS-1s of bandwidth) in the cities it serves, nearly one million are within one mile of tw telecom's fiber.⁸⁴
- Level 3 told investors in May 2009 that there are "[o]ver 100,000 enterprise buildings within 500 ft of [Level 3's] US network."⁸⁵ Later that month, Level 3 announced that it was expanding its operations in the Washington D.C. area, where Level 3's "fiber-optic footprint... already passes more than 20,000 business locations" to serve "mid-market business customers throughout the area."⁸⁶
- Fibertech Networks stated that it has "built metro-area networks strategically connecting local Telco central offices, carrier hotels, data centers, office parks and other high traffic locations."⁸⁷
- Integra, which has deployed networks in 11 Western and Midwestern states, has stated that it serves "an average of 20 percent of the businesses in the metropolitan areas in which it operates."⁸⁸
- Cablevision Lightpath stated in October 2008 that the 3,000 buildings connected to its fiber network in New York, New Jersey, and Connecticut contain "more than 33,000 businesses."⁸⁹ As of May 2009, its network connects more than 3,300 buildings, "representing an 80% growth in on-net buildings since 2005."⁹⁰ Cablevision's CEO claims that Cablevision already has fiber service to twice as many buildings in its metropolitan New York footprint as Verizon does.⁹¹
- XO has made "significant enhancements to its Ethernet infrastructure" and is "currently capable of delivering Ethernet services to nearly four million commercial buildings."⁹²

84. tw telecom, *Investor Presentation*, at 8 (May 2009), http://www.twtelecom.com/Documents/Investors/Presentations/2009/TWTC_May_09_Investor_Presentation_.pdf.

85. Level 3, *Informational Investor Presentation*, at 7 (May 7, 2009), http://files.shareholder.com/downloads/LVLT/410073203x0x296047/425b109c-bb88-4e29-82be-95e94218b23c/Investor%20Presentation_Mid%20May%202009.pdf.

86. Level 3 Press Release, *Level 3 Increasing Presence in D.C. Area; Committed to Providing Competitive Alternative for Businesses* (May 11, 2009).

87. Fibertech Networks, *About Fibertech: Fact Sheet*, http://www.fibertech.com/about_factsheet.cfm.

88. Integra Telecom News Release, *Integra Telecom, Inc. To Purchase Eschelon Telecom, Inc.* (Mar. 20, 2007).

89. Optimum Lightpath Press Release, *Optimum Lightpath Surpasses 3,000th Building Milestone* (Oct. 14, 2008).

90. Optimum Lightpath Press Release, *Dave Pistacchio Named President, Optimum Lightpath* (May 28, 2009).

91. See M. Farrell, *Cablevision Revs Up for Business Blitz*, Multichannel News (Sept. 25, 2006), <http://www.multichannel.com/article/CA6374465.html>.

92. XO Press Release, *XO Communications Enhances Ethernet Infrastructure To Deliver New Speeds, Ethernet Reach and Enable Next Generation Service Offerings* (Aug. 18, 2008). See also XO, *XO Hub Service*, <http://www.xo.com/carrier/transport/Pages/hub.aspx>.

- Cavalier stated that its 3,000 route miles of metro fiber reach “more than 1.5 million businesses.”⁹³

These statements further demonstrate that when competing carriers evaluate their own competitive significance in the marketplace (as opposed to in legal and regulatory pleadings) they focus on the “reach” of their network, and not on the number of buildings to which they are actually connected. That is because competing carriers are willing and able to extend their networks as demand warrants. Indeed, many competitors – both large and small – continue to deploy new fiber even despite the worsening economy. As shown in Table 8, in some cases, carriers are adding lit buildings to their existing metropolitan networks while in other cases they are deploying networks in new areas.

Table 8 – Known Competitive Fiber Deployment Since the Beginning of 2008

Feb. 2008	FiberLight	Completed a 106.51 mile expansion of its fiber-optic network throughout the Lakeland, St. Petersburg, Largo, and Clearwater area of Tampa
	XO	Began building new metro network facilities in Charlotte
	Level 3	“[E]mbarked on a strategy to expand its current metro presence” so that it can “terminate traffic over its owned metro facilities rather than paying third parties to terminate the traffic”
Mar. 2008	Fibertech	Announced plans to build two new networks in New Jersey: a 150-mile network in Newark and northern New Jersey, and a 135-mile network in the South New Jersey/Philadelphia area
Spring 2008	FiberLight	Added 130 miles of fiber to its network in Baltimore, Southern Maryland, Washington, DC, and Northern Virginia
May 2008	FiberNet	Announced “national network expansion” plans that include: adding approximately 40 Gb of network capacity, 36 optical wavelengths, and “hundreds of strands of vertical dark fiber to its core network in the New York/New Jersey market;” adding 10 Gb of core network capacity in Los Angeles; deploying “multiple 2.5 Gigabit wavelengths to extend its network reach to the Chicago, San Francisco and Miami markets;” and adding “approximately 68 Gigabits of core switching capacity to its metro, native Ethernet network”
	AGL Networks	Completed expansions of its dark-fiber footprint, adding 29 route miles in Mesa, Ariz. and 24 route miles in Scottsdale, Ariz.
July 2008	AGL Networks	Completed an 8-route-mile expansion of its dark-fiber footprint around the Scottsdale, Ariz. airpark
Aug. 2008	XO	“Despite a weakening economy and ongoing industry consolidation,” it has “routinely added customers” to its local networks and “continue[s] to see market opportunity to invest [its] capital”
Sept. 2008	FiberLight	Began constructing “130 miles of state-of-the-art diversely routed fiber from Chantilly to Culpeper, Virginia. The metro fiber network will extend the network reach of the greater Washington, D.C. area in which FiberLight serves [] metro optical transport”
Nov. 2008	FiberNet	“[E]xtended its network reach to Chicago and Miami”
Dec. 2008	tw telecom	“[Has] been connecting an average of about 1,000 enterprise buildings to our network each year and we will continue to add enterprise buildings to our network in 2009”
2008	Zayo Bandwidth	“Zayo is actively adding buildings via fiber laterals to our network. In 2008, Zayo added over 600 buildings to the network”

93. Cavalier Telephone & TV Press Release, *Cavalier Finalizes Partnership with Telarus* (Oct. 24, 2008) (quoting Telarus, Inc. CEO Adam Edwards).

Table 8 – Known Competitive Fiber Deployment Since the Beginning of 2008

Jan. 2009	AboveNet	Deployed a fiber network in Austin, Texas
	ITC^DeltaCom	Announced the extension of its GigE, 2.5 Gbps, and 10 Gbps wavelength services to 18 new cities in Alabama, Georgia, Florida, South Carolina, and North Carolina; the company expects to build out a number of additional markets by mid-year 2009
Feb. 2009	American Fiber Systems	Completed the addition of managed wavelength services in Atlanta
Mar. 2009	US Signal	Announced the addition of Toledo, Ohio as a new metro market on its network, adding 274 route miles to the US Signal network
	tw telecom	Extended its Portland, Ore.-area network into the Tualatin and Lake Oswego business districts, which “allows more than 1000 businesses along the south I-5 corridor easier access to tw telecom’s more than 250-mile Portland-area network”
May 2009	Level 3	Announced the expansion of operations in the Washington, DC area: “Level 3 will continue to expand its fiber-optic footprint, which already passes more than 20,000 business locations throughout the D.C., northern Virginia and southern Maryland”
	Level 3	Announced the expansion of operations in the Nashville area: “Level 3 will continue to expand its fiber-optic footprint, which already passes more than 3,000 business locations in middle Tennessee, including Davidson, Robertson and Williamson Counties”
June 2009	Level 3	Announced the expansion of operations in Seattle: “Level 3 will continue to expand its fiber-optic footprint, which already passes nearly 7,000 locations in the Seattle area”
	Level 3	Announced the expansion of operations in upstate New York: “Level 3 will continue to expand its fiber-optic footprint, which already passes nearly 3,000 business locations in upstate New York, including Buffalo, Syracuse, and Rome/Utica”
	Lexent Metro Connect	Constructed a dark-fiber network to Yankee Stadium for Atlantic Metro Connections; began construction of an ultra-low latency metro fiber ring between its New York City carrier hotel POPs and “strategic datacenters and collocation facilities housing key Financial Exchanges located in Weehawken, North Bergen, Secaucus, and Newark, New Jersey”

Sources: See Appendix C.

As the above evidence demonstrates, the provision of competitive high capacity services is far more prevalent than proponents of new special access price controls have claimed. Notwithstanding this evidence, the NRRI Report claims that “ILECs still have strong market power in most geographic areas” based on an HHI analysis⁹⁴ of only some of the high-capacity and special access service suppliers in each of the top 50 MSAs. But even putting aside the general objections to the use of an HHI analysis to gauge market power,⁹⁵ NRRI’s analysis is flawed in multiple respects. As an initial matter, the HHI analysis is based on line-count data obtained from only four purchasers of high-capacity and special access services,⁹⁶ and therefore it is very likely to exclude a great many

94. The HHI – or Herfindahl-Hirschman Index – is simply an arithmetic calculation, summing the squares of the market shares of the various firms in the market. Thus, for example, if there is only one firm in the market, with a 100 percent market share by definition, the HHI is 10,000 (100 x 100); if there are five equal-sized firms, the HHI is 2000 (20 x 20 x 5); if there are five firms, one with 40 percent and four each with fifteen percent, the HHI is 2500 ((40 x 40) + (15 x 15 x 4)).

95. As the leading antitrust treatise explains, “the HHI should always be used tentatively,” because “although the HHI appears to give definitive answers to how markets respond to increasing variations in the number and size disparities among firms, such responses are in fact far more complex and depend on” a variety of other factors. P. Areeda et al., *IV Antitrust Law* ¶ 930b at 136-37 (1998). The HHI does not capture all aspects of market structure, and market structure is only one of many factors that affect the likelihood of anticompetitive behavior. Thus, the treatise says, “use of purely structural information to justify government intervention such as... the prohibition of mergers might do considerably more harm than good by preventing firms from developing to their most efficient size.” *Id.* ¶ 930c at 138.

96. The four purchasers whose data NRRI analyzed were Covad, Sprint, T-Mobile, and tw telecom. XO supplied buyer data but it was excluded from the analysis. See NRRI Report at 36-37 and fn.159.

suppliers.⁹⁷ While the NRRI Report does not identify which suppliers the four purchasers use, it is highly unlikely that the buyers in the sample purchase from the full range of existing suppliers. As shown in Appendix A, there are a total of at least 28 known competitive fiber suppliers in the top 50 MSAs, and an average of six known competitive fiber suppliers in each of those MSAs. See Figure 2 & Appendix A. And, as shown in Table 9, most competitive fiber suppliers do in fact offer service on a wholesale basis.

The NRRI Report also adopts an overly narrow and distorted view of the provision of high-capacity services. First, the report looks primarily at special access sold on a wholesale basis to other carriers, largely ignoring special access and other high-capacity services sold directly to retail customers.⁹⁸ Although competitive high-capacity facilities are often being made available on a wholesale basis, many competitors are providing high-capacity services to themselves, and it is well-established that this “self-supply” must be included in any proper competitive analysis.⁹⁹ But the sample of buyers is heavily weighted toward two large wireless providers who have been more disposed to lease circuits for wireless backhaul (Sprint Nextel and T-Mobile), plus two wireline providers (Sprint wireline and Covad), who heavily favor leasing to self-supply. By combining these entities with a single enterprise provider (tw telecom) that is *relatively* more likely to self-supply, the sample is dramatically skewed against self-supply and retail enterprise services.

Further compounding this problem, the NRRI excludes from its sample not merely smaller competitors, but some of the very largest. For example, NRRI’s HHI analysis does not include large competitive suppliers such as Qwest, Level 3, XO, One Communications, and AT&T’s and Verizon’s out-of-region operations.¹⁰⁰ And, as described in greater detail above (§ II.A), NRRI further excludes intermodal competitors such as cable operators and fixed wireless providers. As a result, the sample effectively excludes the largest, most readily-provided, and fastest-growing sources of self-supply in the industry.

97. Indeed, even some (Sprint, XO) of the competing carriers who provided buyer data for NARUC refused to provide seller data, even though these carriers state on their websites that they provide competitive fiber on a wholesale basis to other carriers. See NRRI Report at 36-37.

98. It appears that the NRRI analysis may capture a small portion of retail services only to the extent it is self-provided by tw telecom and Sprint’s wireline division. But as discussed above, self-supply is vastly underweighted in the sample. NRRI compounds its error by assuming that all special access purchased from competitors are purchased from a single firm, even though there are potentially many competitive providers offering special access in each market, as Appendix A demonstrates. See NRRI Report at 40 n.157.

99. See, e.g., U.S. Dep’t of Justice/Federal Trade Comm’n, *Horizontal Merger Guidelines* §§ 1.31-1.32 (rev. 1997); 2A *Areeda* ¶ 535e, at 225-26 (“[T]he integrated firm’s... output belongs in the market.”); *United States v. Aluminum Co. of Am.*, 148 F.2d 416, 424-25 (2d Cir. 1945); *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 389 (1999) (faulting the Commission for failing to consider carriers that self-provide facilities in evaluating competitive alternatives).

100. See *Verizon Communications Inc. and MCI Inc., Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18433, ¶ 54 (2005) (“*Verizon/MCI Order*”) (rejecting allegations that the Verizon/MCI merger will likely result in anticompetitive effects in SBC’s region, because “Verizon is spending billions of dollars to buy MCI’s nationwide network and global enterprise and business reach, including facilities in SBC’s region. In light of this investment, it is reasonable to expect Verizon to have strong incentives to utilize fully its assets in SBC’s territory.”); see also *SBC Communications Inc. and AT&T Corp., Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18290, ¶ 54 (2005) (“*SBC/AT&T Order*”).

Table 9 – Competitive Fiber Suppliers Acknowledge They Provide Wholesale Service

Level 3	“Level 3 Wholesale Markets serves national and global service providers with integrated data, voice, and video services across one of the world’s largest, most-modern networks.”
tw telecom	<p>“tw telecom integrates data, dedicated Internet access, and local and long distance voice services for long distance carriers, wireless communications companies, incumbent local exchange carriers, and enterprise organizations in healthcare, finance, higher education, manufacturing, and hospitality industries, as well as for military, state and local government.”</p> <p>“tw telecom Carrier Services provide wholesale Ethernet, IP, and transport services for national and regional carriers, mobile wireless, ISPs, cable companies and content providers” with services such as Metro & Long Haul, Transport (DS1-OC192), Carrier Ethernet (2 Mbps-10G), Wavelengths (2.5G and 10G), Internet Services, 8XX Origination, Inbound PRI and Voice Services, and Co Location Services in 75 Cities.</p>
AboveNet	<p>AboveNet “provides high bandwidth connectivity solutions for business and carriers. Its private optical network delivers key network and IP services in and among 15 top U.S. metro markets and London.”</p> <p>AboveNet is “[r]elied upon by the world’s most demanding customers” including “[m]ajor telecommunication and wireless carriers.”</p>
AGL Networks	“Provides high capacity dark fiber transport services to Institutional wireline and wireless carriers as well as enterprise companies, government, health care and educational institutions”
American Fiber Systems	“American Fiber Systems (AFS) provides metropolitan fiber optical networking infrastructure, dark fiber and transport services to carriers and large enterprises.”
Edison Carrier Solutions	“Edison Carrier Solutions (ECS), a business unit of Southern California Edison Company, is a Competitive Local Exchange Carrier focused on providing high capacity special access services, starting at DS-3 and above. Our customers are all types of local telecommunications service providers, Internet service providers and application service providers in the Southern California area. We also provide infrastructure to wireless service providers for wireless site development.”
Fibertech Networks	<p>“Fibertech serves a number of U.S. long distance providers and regional CLECs, as well as other local and wireless carriers.”</p> <p>“As carriers and enterprises continue to place a greater interest in redundant and diverse network connections, Fibertech Networks is helping to develop their IT networks with increased security and flexibility built in. . . . Carriers can take advantage of lit metro access services or dark fiber optic connections for faster revenue realization, greater control of both operational and financial performance, and reduced dependency on the LEC.”</p> <p>“Some 40 percent of Fibertech’s annual recurring revenues come from telephone companies, with that business spread among incumbent and competitive local exchange carriers and wireless providers.”</p>
FPL Fibernet	“The company was launched in early 2000 to sell fiber-optic network capacity and dark fiber on a wholesale basis to local and long-distance telephone companies, Internet service providers and other telecommunications companies in Florida.”
Integra Telecom (Electric Lightwave)	“Electric Lightwave is one of the most recognized carrier services brands in the country providing communications network services, including transport, internet access, and voice services, to telecom carriers in the west. Through Electric Lightwave, carriers gain access to Integra Telecom’s 23 metropolitan access networks in eight Western states, nationally acclaimed tier one internet and data network, and high speed long-haul fiber-optic network that interconnects major markets in the West.”
ITC^DeltaCom (Interstate FiberNet)	“Interstate FiberNet (IFN), a Deltacom company, is the premier, Southeast, facilities-based wholesale telecommunications provider to Inter-Exchange Carriers, Wireless Carriers, CLECs, LECs, ISPs, ESPs, Wi-Max and Wi-Fi Providers, Content Providers, and Cable companies. ”
Lexent Metro Connect	“If you are a leading global carrier, service provider, CLEC, ISP or content delivery network provider that requires dark fiber connectivity in the New York metro area, Lexent Metro Connect can offer you: Dark Fiber, Fractional Dark Fiber, Interconnection between Carrier Hotel Facilities.” Lexent operates “the largest, privately held dark fiber network in New York City.”
Lightower	“Lightower delivers custom solutions designed to meet the unique needs of our carrier and enterprise customers” and “provides mission critical connectivity solutions to a wide range of industries including international and domestic telecom carriers. ”

Table 9 – Competitive Fiber Suppliers Acknowledge They Provide Wholesale Service

Long Island Fiber Exchange	Long Island Fiber Exchange (LIFE) “provides dark fiber, lit solutions, and wireless solutions.” “LIFE’s solutions are for... K-12 School Districts, Colleges and Universities, Businesses, Hospitals and Medical Centers, Government and Municipalities, Local Exchange and Long Distance Carriers , Financial Institutions”
One Communications	“ [I]deal carrier partner ” offering “a robust, diverse product portfolio over our facilities-based network.” One Communications considers itself “the premier provider of carrier products and services. ” With Metro Private Line service, for example, “ [IXCs] can benefit from reduced backhaul charges,” “ CLECs and IXCs can augment their Direct End Office Trunking,” and “ CLECs can utilize this service for Inter-Office Facility transport.”
RCN Metro	“ [D]edicated to serving the communications needs of carriers , enterprise customers, and governmental agencies.”
Southern Light Fiber	“Southern Light provides the largest last-mile bandwidth pipe, local co-access, and economical service to IXCs, LECs, MSO, as well as Cellular and PCS providers. ”
SRP Telecom	“We literally have fiber from one end of metropolitan Phoenix to the other... Our network also reaches 20 central offices, switches and other carrier points-of-presence. These serve as a fundamental access and transport network for some of our carrier customers. ”
SureWest	“SureWest offers access to competitive, wholesale, long-haul Carriers. ” SureWest wholesale carrier services “provides competitive access to the Greater Sacramento area, offering reliable and affordable telephone rates.”
US Signal	“US Signal is the leading provider of transport throughout the midwest for wireless, Internet, long haul and voice carriers. ”
XO	“XO Carrier Services provides high-performance data, IP, and network transport services for national and international telecommunications carriers, cable companies, content providers, and mobile wireless companies. ”
Zayo Bandwidth	“Zayo Bandwidth collaborates with its carrier and enterprise customers to develop bandwidth solutions that meet their specific requirements. Carrier customers include telecom, wireless, cable TV, satellite customers and Internet service providers. ” “Zayo delivers fiber-based bandwidth services to our carrier customers. Our transport products are designed to transport voice, video, storage and data traffic for regional, national, and international telecommunications service providers. ”

Sources: See Appendix C.

Second, the NRRI Report looks only at a subset of high-capacity services – stand-alone DS-1 and DS-3 circuits. These services represent the low end of the high-capacity services spectrum. Regulators have already determined that higher-capacity services and facilities – those provided at the OCn level – face significant competition.¹⁰¹ This is significant because the same fiber facilities used to provide these higher-capacity services are capable of and are being used to provide lower-capacity services such as DS-1 and DS-3 services. See Table 10. Thus, wherever competitive fiber is deployed – and as demonstrated above, it has been deployed in all areas where special access demand is concentrated – it can be used to provide services at every level of capacity.

101. See *Triennial Review Order ¶ 202* (“With regard to the highest capacity loop facilities, *i.e.*, OCn loops, we conclude that no impairment exists on a nationwide basis. At the OCn level, requesting carriers have the ability to economically self-provision their own loops or are able to obtain unbundled dark fiber and light it at the OCn level.”).

Table 10 – Competitive Fiber Suppliers Acknowledge They Provide Lower Capacity Services

Level 3	Metro Private Line speeds “include DS-1, DS-3 , OC-3/3c & STM-1, OC-12/12c & STM-4/4c, OC-48/48c & STM-16/16c, and OC-192.”
tw telecom	“tw telecom’s Dedicated High Capacity Services offer a complete range of transmission speeds from 1.5 Mbps to 10 Gbps .”
American Fiber Systems	Private line services offered with “[a] wide selection of speeds, including DS-1, DS-3 , OC-3/3c & STM-1, OC-12/12c & STM-4/4c, OC-48/48c & STM-16/16c and OC-192.”
Cavalier/Intellifiber Networks	Private line metro transport offering from “ DS1 to OC-48.”
Fibertech Networks	“To support your growing need for connectivity between remote business locations, Fibertech offers you fiber-based private line connections ranging in speeds from T1 to OC-192.”
FPL Fibernet	FPL FiberNet Private Line Services feature “[s]calable capacities... : DS-1, DS-3 , OC-3/3c, OC-12/12c, OC-48/48c, OC-192, E-1, STM-1, STM-4, STM-16, STM-64.”
Integra Telecom	“Looking for the most secure and stable circuit to ensure connectivity between locations? Integra Telecom’s point-to-point solution provides you with bandwidth options ranging from DS1 to OC-48.”
ITC^DeltaCom	“Deltacom’s Private Line service provides end-to-end digital transmission” in a “[w]ide range of available speeds from DS-1 to OC-48 & 2.5Gbps and 10Gbps.”
One Communications	“One Communications can provide a fully protected, dedicated DS1, DS3 , or OCxN circuit with full channel, point-to-point capacity.”
Southern Light Fiber	“Full array of traditional TDM services from DS-1 to OC-192 as well as Ethernet services from 1 Mbps to 10 Gbps”
US Signal	Private line services are “[a]vailable with a wide range of bandwidth and hand-off options, from DS1 to OC-192, Fast Ethernet and Gigabit Ethernet.”
Zayo Bandwidth	“Zayo’s private line service delivers fiber-based (DS3-OC192) metro and regional transport between major aggregation points.”

Sources: See Appendix C.

Finally, the NRRI Report wrongly assumes that buyers purchase from ILECs only because there is no other alternative.¹⁰² The reality is far more complex. For one thing, high-capacity service is not simply an undifferentiated commodity; the service is typically sold with service level guarantees, and customers look for carriers who provide the best and most and reliable guarantees, not just the lowest price. At the same time, and as discussed further below (§ II.D), ILEC special access service is not only widely available but reasonably priced, and therefore suits the needs of many purchasers. For example, Sprint’s Chief Technology Officer admitted that the only reason alternative high-capacity technologies such as fixed wireless are not already as prevalent in the United States as in the rest of the world is because “relatively abundant and inexpensive T-1 lines have stifled the technology here.”¹⁰³ The NRRI Report provides additional evidence that many purchasers choose the ILEC not because they have to (due to a lack of alternatives), but because they want to. For example, one of the five purchasers who provided data to NRRI acknowledged that it relies on non-ILEC suppliers for 65 percent of its DS-1 transport and 99 percent of its DS-3 transport.¹⁰⁴

102. NRRI Report at 41-42.

103. S. Lawson, *Sprint Picks Wireless Backhaul for WiMAX*, Industry Standard (July 9, 2008), <http://www.thestandard.com/news/2008/07/09/sprint-picks-wireless-backhaul-wimax> (citing Sprint CTO Barry West).

104. NRRI Report at 43; *see also id.* (“[S]ome buyers, particularly CLECs, are beginning to rely heavily on non-ILEC providers for transport, especially DS-3 transport.”).

C. Competition for Wireless Backhaul

Wireless backhaul refers to the high-capacity facilities and services used to transport wireless voice and data traffic from cell sites or towers to a wireless carrier's mobile telephone switching office or transport network. Two of the main proponents of regulating the ILECs' special access rates more heavily are Sprint and T-Mobile, respectively the third and fourth largest wireless carriers in the country. These carriers claim to purchase most of their wireless backhaul from ILECs and are seeking re-regulation in hopes of lowering their backhaul costs. The reality, however, is that the provision of wireless backhaul is already highly competitive and growing more so, and there are no signs that regulation is needed to reduce special access prices for wireless carriers.

Wireless backhaul is distinct from other types of high-capacity and special access services from a demand perspective, and also is particularly well suited to competitive supply. There are more than 242,000 wireless cell sites spread through the country.¹⁰⁵ A great deal of these sites are concentrated in urban areas,¹⁰⁶ but in order to provide ubiquitous wireless service there also needs to be sites in areas located far from population centers. These far-flung locations have not traditionally generated significant demand (usually no more than a DS-1), but the recent explosion in wireless data usage (see section III.B, *infra*) is rapidly boosting demand at these and all other cell-site locations.¹⁰⁷ This growth is expected to result in significant increases in the demand for bandwidth at individual cell sites over the next few years.¹⁰⁸ Raymond James analysts have estimated the current size of the U.S. backhaul services market to be approximately \$3 billion annually, and that it could reach \$8 billion to \$10 billion in the next two-to-four years, driven by increasing amounts of mobile data usage.¹⁰⁹

From a supply perspective, the dramatic growth in wireless voice and data connections and usage has outstripped the capacity of traditional time division multiplexing or copper facilities. This has created new opportunities for all suppliers – ILEC, CLEC, cable, and fixed wireless alike – seeking to fill the rapidly growing demand for wireless backhaul. Given the nature of wireless demand – including both its concentration as well as technical characteristics of wireless traffic – wireless backhaul is particularly well-suited to competitive supply, especially from intermodal alternatives

105. CTIA, *Wireless Quick Facts: Year End Figures*, <http://www.ctia.org/advocacy/research/index.cfm/AID/10323> (242,130 cell sites as of December 2008).

106. Vodafone estimates that half of its mobile data traffic comes from just 10 percent of its cell sites. See C. Whelan, *Mobile Backhaul: What is the Ethernet Opportunity for Wholesale Carriers*, Current Analysis (July 14, 2008), <http://www.currentanalysis.com/h/2008/mobilebackhaul-ethernet-26806.asp>.

107. See, e.g., J. Fritzsche et al., Wachovia Capital Markets, *2009 Telecom Outlook*, at 5-6 (Jan. 15, 2009) (estimating demand for tower space based on broadband equivalent additions by carrier); J. Atkin et al., RBC Capital Markets, *Wireless Subscriber and Cell-Site Update*, at 4 (Aug. 4, 2008) (estimating wireless cell site additions).

108. See J. Armstrong et al., Goldman Sachs, *Americas: Telecom Services: '08 Outlook: Searching for Safety from Consumer Wireline Headwinds*, at 21-22 (Jan. 9, 2008) ("Wireless voice minutes alone are projected to increase some 50% in the next ten years. Add data to the mix and network traffic is expected to nearly double in the next ten years"); T.O. Seitz, Lehman Brothers Equity Research, *Sprint Nextel Corp.*, at 3 (Feb. 25, 2008) (citing "increased wireless voice and data backhaul needs"); see also XO Holdings, Inc., Form 10-K, at 16 (SEC filed Mar. 16, 2009) ("We believe the continued growth in the overall market for mobile wireless telecommunications services and the rapid adoption of data and Internet enabled mobile devices will require wireless telecommunications carriers and our business customers to need significantly greater bandwidth. Fixed wireless solutions will compete with other technologies to provide these capabilities.")

109. See F. Louthan et al., Raymond James & Associates, *Examining the Convergence of the Telecom and Cable Sectors*, at 16 (Aug. 18, 2008).

such as cable and fixed wireless. In concentrated urban areas, wireless towers are often located on the top of the same office buildings where other special access demand is concentrated, and can therefore be served by the competitive fiber networks that serve these buildings. As shown in Table 11, a number of traditional competitive carriers, both national and regional, are specifically targeting their high-capacity services to wireless carriers. Such carriers include Level 3, Qwest, tw telecom, Edison Carrier Solutions, and Zayo Bandwidth.

Table 11 – Competitive Fiber Suppliers Are Targeting Wireless Carriers

AT&T	"As a global leader, AT&T delivers a full portfolio of end-to-end, reliable and highly secure network, voice, data and IP solutions to carriers, wireless operators, cable providers, systems integrators, Internet service providers and content providers."
Level 3	"Level 3 Communications can connect you with a high-performance network that allows you to optimize and scale your network to meet bandwidth demands, while working to help reduce costs and increase margins. We connect wireless providers to reliable solutions built for converged applications."
Qwest	"Qwest is a committed provider of wholesale services," offering wireless service providers "long-haul and backhaul support... at whatever levels of functionality and capacity circumstances you require."
tw telecom	"tw telecom integrates data, dedicated Internet access, and local and long distance voice services for long distance carriers, wireless communications companies, incumbent local exchange carriers, and enterprise organizations in healthcare, finance, higher education, manufacturing, and hospitality industries, as well as for military, state and local government."
Verizon	Verizon Partner Solutions offers "[a] technologically advanced organization – serving Long Distance, Local, Internet and Wireless Providers with reliability and choice on an award winning network."
XO	XO serves "[t]he five largest U.S. wireless companies."
AboveNet	AboveNet is "[r]elied upon by the world's most demanding customers" including "[m]ajor telecommunication and wireless carriers."
AGL Networks	AGL Networks "[p]rovides high capacity dark fiber transport services to Institutional wireline and wireless carriers"
Edison Carrier Solutions	Edison Carrier Solutions "provide[s] infrastructure to wireless service providers for wireless site development."
Fibertech Networks	"Fibertech serves a number of U.S. long distance providers and regional CLECs, as well as other local and wireless carriers."
FPL Fibernet	"No matter whether you're an ILEC, Wireless Provider, CLEC or enterprise, FPL FiberNet has a diverse, reliable and scalable solution to accomplish your business-critical functions." Signed an agreement to provide wireless backhaul services to T-Mobile in south Florida.
ITC^DeltaCom (Interstate FiberNet)	"Interstate FiberNet (IFN), a Deltacom company, is the premier, Southeast, facilities-based wholesale telecommunications provider to Inter-Exchange Carriers, Wireless Carriers, CLECs, LECs, ISPs, ESPs, Wi-Max and Wi-Fi Providers, Content Providers, and Cable companies."
Southern Light Fiber	"Southern Light provides the largest last-mile bandwidth pipe, local co-access, and economical service to IXCs, LECs, MSO, as well as Cellular and PCS providers."
Zayo Bandwidth	"Zayo delivers fiber-based bandwidth to cell towers, hub sites, MSCs and central offices for our wireless service provider and fixed wireless customers."

Sources: See Appendix C.

Outside of major downtown centers, near-ubiquitous cable networks are well-positioned to provide wireless backhaul, and each of the major cable operators is now pursuing this opportunity and rapidly

gaining ground. See Table 12. According to one estimate, cable operators generated \$100 million in cellular backhaul revenue in 2006.¹¹⁰

Table 12 – Cable Companies Are Providing Backhaul Services

Comcast	<ul style="list-style-type: none"> ▶ Sees wireless backhaul as a “huge opportunity” using the facilities that Comcast “already [has] out there.” ▶ Chief Operating Officer has stated that Comcast will be able to provide backhaul “cheap[er] than the typical alternative.”
Cablevision/Lightpath	<ul style="list-style-type: none"> ▶ States that its service is currently being used by “several top wireless providers.” ▶ Uses a complementary architecture “designed directly for wireless providers, and it’s moving [wireless providers] to be ready to put high-speed Ethernet in their antenna locations.” ▶ “Optimum Lightpath can provide carriers throughout New York, New Jersey and Connecticut with the transport services they need.”
Time Warner Cable	<ul style="list-style-type: none"> ▶ “[P]rovides advanced services such as... Cellular Backhaul.” ▶ COO views carrier services – which he believes to be “primarily cell backhaul” – to be the “third piece” of business for Time Warner Cable, and the next “great opportunity” for the company. ▶ Fiber is close to cellular towers and will not require “much incremental expense” to provide backhaul services to those towers. ▶ Claims to be “under contract with a couple hundred [cell phone] towers.”
Cox	<ul style="list-style-type: none"> ▶ Has been providing fiber-based wireless backhaul to most major wireless carriers for more than a decade. ▶ States that it “uses Ethernet to provide wholesale services for national telecommunications carriers. Ethernet’s flexibility, reliability and efficient cost make it ideal for local access and wireless tower backhaul connections.” ▶ Cox Business vice president recently stated that backhaul “is a large component of our growth opportunities over the next two years.” ▶ Chief technologist stated that “[t]he increased demands that new wireless services will place on the backhaul capacity of existing networks and the wireless operators’ desire to have access to the reliability and widespread availability of our HFC network creates an attractive business opportunity.”

Sources: See Appendix C.

Fixed wireless networks also are being used extensively to provide wireless backhaul services. As shown in Table 13, a number of fixed wireless providers focus primarily on providing wireless backhaul services. FiberTower claims that the “largest wireless carriers rely on FiberTower to transport their 2G, 3G and 4G traffic from their cell sites to their switching facilities.”¹¹¹ In fact, FiberTower recently described the reach of its network, which can serve nearly half of the more than 242,000 cell sites in the U.S:

We offer our services to mobile wireless carriers, competitive and local exchange carriers, 1st responder networks, and to government and enterprise customers. Our network currently covers approximately 12,000 route miles with 7,000 miles covered using fixed wireless and another 5,000 miles using dark fiber. Through our partnership and master lease agreements we have the ability to access over 100,000 towers nationwide.... As of December 31, 2008 we provide backhaul service to over 6,000 mobile base stations (or cell

110. LightReading’s Cable Industry Insider, *Cable Backhaul: Desperately Seeking Cell Sites*, http://www.lightreading.com/cable/details.asp?sku_id=1829&skuitem_itemid=1039&promo_code=&aff_code=&next_url=%2Fcable%2Flist%2Easp%3Fpage%5Ftype%3Dall%5Freports.

111. FiberTower, *A New Evolution in Wireless Backhaul*, <http://www.fibertower.com/corp/index.shtml>.

sites) in 13 markets; We have customer agreements with the eight largest U.S. wireless carriers. . . . We deploy networks to existing towers, rooftops, or other sites where wireless carriers have deployed cell sites.¹¹²

Among other fixed wireless providers, Conterra states that “[t]he largest end-users of [its] transport services include Verizon Wireless, Sprint, . . . Verizon Business and DukeNet Communications.”¹¹³ Tower Cloud backhauls traffic “to the customer’s mobile switching center with SOnet and Ethernet designs.”¹¹⁴ Tower Cloud further notes that fixed wireless offers “[f]ast network expansion to serve new cell sites and new markets,” and “[c]apacity can quickly and easily be increased to meet the carriers growing traffic demands.”¹¹⁵

Although Sprint has previously claimed that it does not have widespread alternatives to the ILEC for wireless backhaul, Sprint’s extensive use of fixed wireless in the deployment of its Clearwire network proves otherwise. As noted above, Clearwire is deploying a WiMAX network that will reach 120 million people, including 75 percent of the top 50 markets, by the end of 2010.¹¹⁶ Clearwire states that the network has over 18,000 cell sites now under development.¹¹⁷ Clearwire states that it plans to rely on “almost exclusively wireless backhaul,” which enables it to “keep the cost base as low as possible.”¹¹⁸

In Europe, fixed wireless is already used extensively for wireless backhaul, which further demonstrates that the technology is viable from an economic and technical standpoint. As one analyst notes, “[w]ireless implementations of metro backhaul have long dominated in Europe. In North America, however, more TDM copper backhaul has been historically employed primarily as a result of low cost ILEC T1 TDM circuits available through US unbundling regulations.”¹¹⁹ As noted above, Sprint has made the same point, noting that the reason that fixed wireless is not more prevalent in the



Wireless implementations of metro backhaul have long dominated in Europe. In North America, however, more TDM copper backhaul has been historically employed primarily as a result of low cost ILEC T1 TDM circuits.

112. Ravi Potharlanka, COO, FiberTower Corp., Written Testimony before the House Energy and Commerce Committee, Subcommittee on Communications, Technology, and the Internet, Hearing on Competition in the Wireless Industry, at 3, 4 (May 7, 2009) http://energycommerce.house.gov/Press_111/20090507/testimony_potharlanka.pdf.

113. Conterra Telecom Services, *Company*, <http://www.conterra.com/corporate/index.php>.

114. Tower Cloud, *Services Overview*, <http://www.towercloud.com/services.shtml>.

115. *Id.*

116. *Q4 2008 Clearwire Corporation Earnings Conference Call – Final*, FD (Fair Disclosure) Wire, Transcript 030509a2078472.772 (Mar. 5 2009) (statement by Clearwire CEO Ben Wolff).

117. *Id.*

118. *Id.* (statement by Clearwire COO Perry Satterlee). *See also* J. Hodulik et al., UBS, *Clearwire Corp: Launching in an Unclear Environment*, at 13 (Dec. 19, 2008) (UBS analysts report that Clearwire “expects roughly 80% of its backhaul to come from microwave links. Clearwire is buying its own microwave equipment and using unlicensed spectrum rather than contracting with a third-party wireless backhaul provider. . . . Management believes this infrastructure will have lower latency and greater reliability than wired backhaul and will pay for itself in 10 months.”).

119. E. Boch, *Backhaul for WiMax & LTE: High-Bandwidth Ethernet Radio Systems at 22*, Microwave Journal, International Edition (Nov. 2008); *see also* J. Barthold, *Backhaul Drives Nextlink’s Purchase Agreement with DragonWave*, Telecom Magazine (Jan. 31, 2008) (statement by DragonWave vice president of product management Alan Soheim: “North America has some of the lowest leased line data rates in the world and even so it doesn’t work for scaling to next generation services. In other markets, Canada, Europe, the Middle East, it’s pretty much a no-brainer to go with alternate network technologies.”).

United States is because “relatively abundant and inexpensive T-1 lines” have provided an attractive alternative here.”¹²⁰

Table 13 – Fixed Wireless Providers Offer Wireless Backhaul

FiberTower	Considers itself to be “the leading alternative carrier for wireless backhaul,” with a “[s]ignificant track record of providing service to, and working with, major wireless carriers.”
Tower Cloud	Is “focused on delivery of reliable and cost efficient mobile backhaul services to wireless carriers nationally.” “[B]uilds high-capacity SONet and Ethernet networks using fiber and licensed microwave to provide backhaul from cell sites to the carrier’s mobile switching centers.”
Conterra Telecom Services	“[P]rovides high quality, high capacity backhaul and wide area network transport services for mobile communication carriers, school districts and government entities throughout the country.” “Cellsite backhaul is the central focus of Conterra’s business and we are singularly focused on being the nation’s leader of high quality, scalable and dependable services.”
Nextlink (XO)	“We will sell direct to wireless carriers for backhaul.”
Clearwire/Sprint	Claims to have the “largest wireless backhaul network in the US.”
Sparkplug	“[M]any of the nation’s leading wireless carriers already rely on Sparkplug for cell site backhaul.”

Sources: See Appendix C.

■ ■ ■

In Boston, approximately 87% of cell sites are within a half of a mile of cable plant and 83% are within a half mile of fiber.

When each of the various alternatives – competitive fiber, cable, and fixed wireless – is taken into account, the overwhelming majority of cell sites can readily be served using competitive facilities. The maps below, which depict the Boston metropolitan area, illustrate the point. The maps show the location of cell sites based on data from the FCC’s licensing database and tower companies’ public websites. The maps further show competitive fiber,¹²¹ cable plant (obtained from local franchising authorities), and fixed wireless links (from the FCC). Using mapping software, distances were calculated between these various competitive alternatives and the cell sites. This analysis shows that of the 331 total cell sites in the Boston area, approximately 219 (66 percent) are within 0.1 miles of cable plant, and another 71 (21 percent) are within 0.1 and 0.5 miles of cable plant. In addition, of the 331 sites, at least 62 (18 percent) are current served by point-to-point wireless backhaul circuits, and an additional 83 (25 percent) are within 0.5 miles of fiber. See Figures 4-6.

120. S. Lawson, *Sprint Picks Wireless Backhaul for WiMAX*, Industry Standard (July 9, 2008), <http://www.thestandard.com/news/2008/07/09/sprint-picks-wireless-backhaul-wimax> (citing Sprint CTO Barry West).

121. Data are from GeoTel and competitive carriers.

Figure 4 – Majority of Cell Sites within Close Proximity to Cable Network

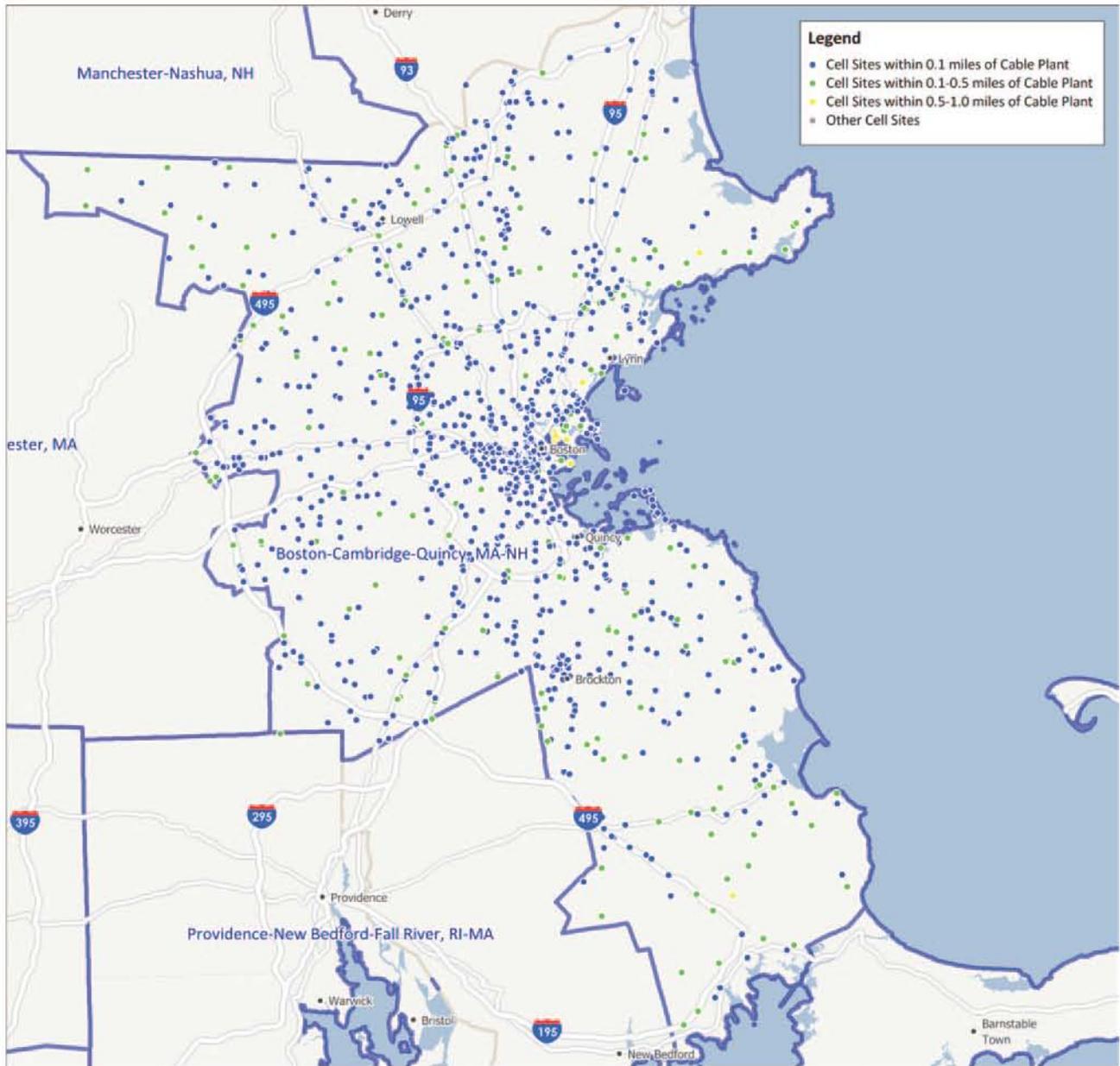


Figure was prepared by Nicholas Vantzelfde of Communications Media Advisors.

Figure 5 – Majority of Cell Sites within Close Proximity to Fixed Wireless, Cable, or Fiber

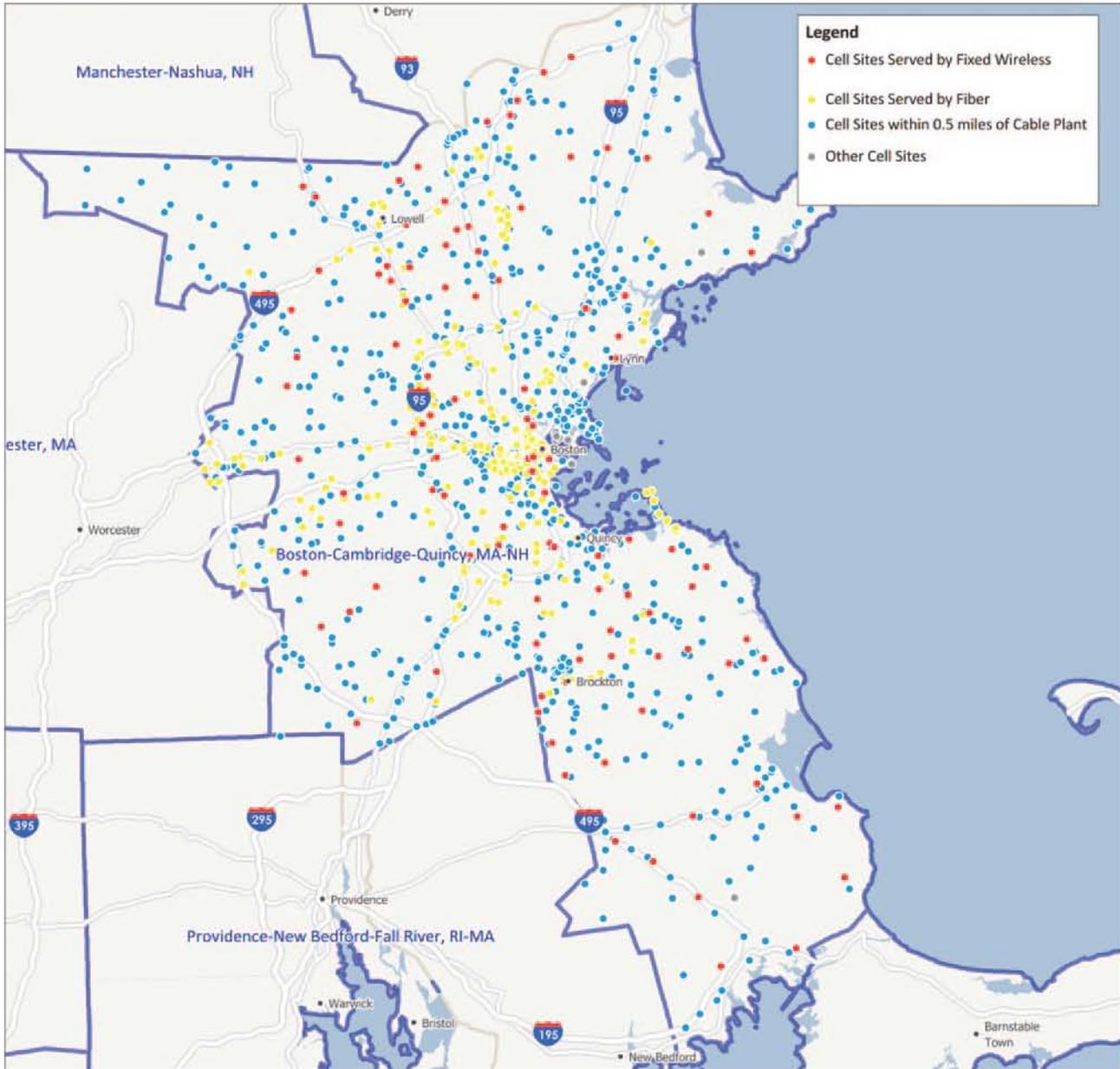


Figure was prepared by Nicholas Vantzelfde of Communications Media Advisors.

Figure 6 – The Extent to Which Fixed Wireless Links Have Been Deployed

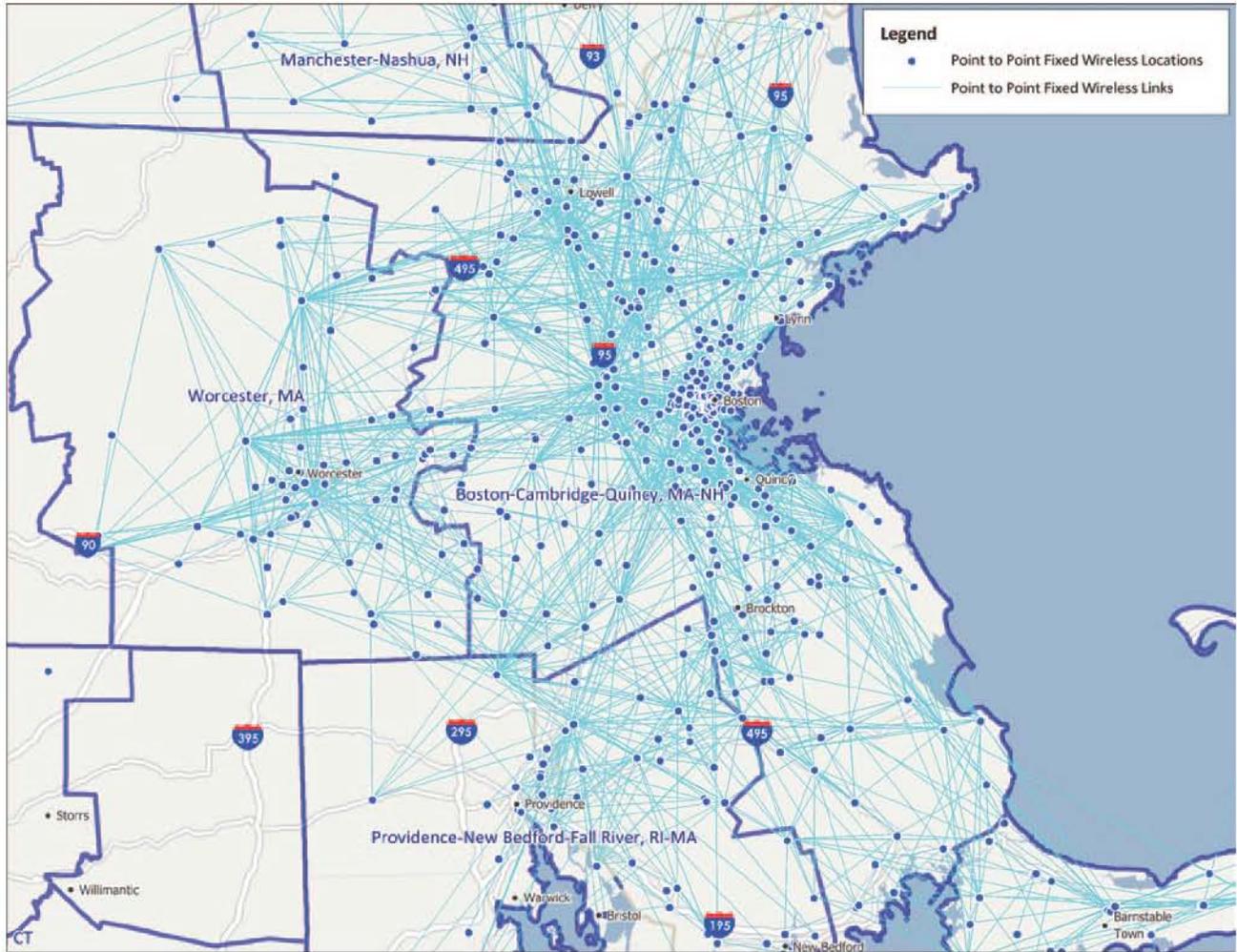


Figure was prepared by Nicholas Vantzfelde of Communications Media Advisors.

■ ■ ■
**Prices for both DS-1
and DS-3 special
access services have
steadily declined since
2001, when the FCC
first began granting
pricing flexibility.**

D. Special Access Prices

In addition to the widespread evidence of competition on the ground, pricing trends provide further proof that this competition has been effective in protecting consumers and that re-imposing regulation is unwarranted. Prices for both DS-1 and DS-3 special access services have steadily declined since 2001, when the FCC first began granting pricing flexibility, including in the most recent 2006-2007 and 2007-2008 periods for which data are available. Comparing the average prices for special access with prices of other telecommunications services that are provided competitively also indicates that special access prices are reasonable. Unable to rebut evidence of declining prices, proponents of new special access price controls have claimed that profit margins for special access are excessive. But these arguments rely on faulty methodology and, in any case, do not yield margins inconsistent with a competitive industry.

1. Pricing trends for DS-1 and DS-3 services

ILECs are required to file tariffs for special access services, but under the pricing flexibility regime also are permitted to enter into individualized contracts for these services.¹²² Under federal rules, each such contract also must be filed with regulators as a tariff, and made available to all other similarly situated entities.¹²³ These contract tariff rates typically provide steep discounts as compared to the “list” or “rack” rates contained in general tariffs. Not surprisingly, therefore, most special access is bought and sold pursuant to generally available tariffed discounts or price flexibility contracts at heavily discounted rates.

In light of this, the relevant analysis of the ILECs’ special access prices looks at the discounted rates that their customers either pay or have available, rather than list prices. In November 2006, the GAO released a report that, among other things, analyzed the prices that individual customers pay under various discount plans and contracts by looking at “average revenue data for the 56 MSAs under pricing flexibility from the four major price-cap incumbents.”¹²⁴ The GAO concluded that, between 2001 and 2005, the ILECs’ average per-unit revenue for DS-1 and DS-3 channel terminations all declined, by 5-17 percent.¹²⁵ See Figure 7. Average per-unit revenue for dedicated transport likewise declined during this period.¹²⁶

122. *Pricing Flexibility Order* ¶ 69 & fn.185.

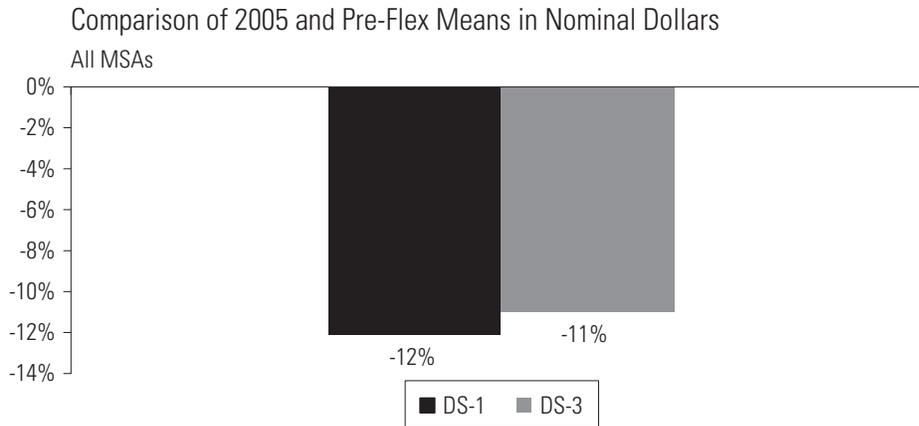
123. *Id.*

124. GAO Report at 11.

125. *Id.* at 32. Although the GAO Report argues that prices have declined more in Phase I areas than Phase II areas due to government-mandated price reductions in Phase I MSAs, the critical point is that prices in both Phase I and Phase II areas declined by *more than* would have been required by the GDP-PI adjustment alone.

126. *Id.* at 34. The GAO was unable to compare revenue for transport across Phase I and Phase II areas because nearly all MSAs with pricing flexibility are under Phase II flexibility. See *id.*

Figure 7 – GAO Data Show Declines in Average Revenue for Channel Terminations



Source: GAO Report at Appendix II, Table 7.

The more recent NRRI Report has reached a similar conclusion about special access prices. NRRI obtained data from both buyers and sellers of special access, and both sets of data confirm that prices for both DS-1 and DS-3 services declined between 2006 and 2007. The buyer data show declines of 12 percent and 27 percent for DS-1 and DS-3 RBOC channel terminations, respectively; a 9 percent and 10 percent decline for RBOC DS-1 and DS-3 fixed transport charges, respectively; and a 13 percent and 18 percent decline for RBOC DS-1 and DS-3 variable transport charges, respectively. The seller data – which were provided only by Verizon and Embarq – likewise show across-the-board declines in special access prices both in the 2001-2006 period, and from 2006-2007, once adjustments for inflation are made as they should be.¹²⁷ And even before adjusting for inflation, Verizon’s rates for DS-1 channel terminations – the service that proponents of new special access price controls have claimed is *least* competitive – declined in both periods.

More recent data supplied by participants in this study show a continued decline in DS-1 and DS-3 special access rates in the most recent periods for which data are available. In the case of one major ILEC, for example, average revenue per unit for DS-1 services decreased by 23 percent in real, inflation-adjusted terms between 2005 and 2008, while ARPU for DS-3 services decreased by 19 percent in real terms during that same period. In the case of another major ILEC, ARPU for DS-1 and DS-3 services decreased in real terms by 11 percent and 13 percent, respectively, between 2005 and 2008.

As noted above, discounted rates are available to virtually all special access customers, regardless of volume. Many discount plans simply require term commitments, which is to be expected given the up-front costs of providing special access that must be recovered and also is consistent with practices for many other services and products with up-front costs, ranging from gym memberships

■ ■ ■
Average revenue per unit for DS-1 services decreased 23% in real, inflation adjusted terms between 2005 and 2008, while ARPU for DS-3 services decreased by 19% in real terms during that same period.

127. Verizon average price changes reported in NRRI Report at 60, Table 8, and Embarq average price changes reported in NRRI Report at 60, Table 9, were adjusted for inflation based on the annual average Consumer Price Index for all urban consumers (CPI-U) for 2001, 2006, and 2007. See Bureau of Labor Statistics, U.S. Dep’t of Labor, *Consumer Price Index: All Urban Consumers – (CPI-U)*, [ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt](http://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt).

to car leases. Because virtually all customers may choose to avail themselves of discounts, standard tariffed or so-called rack rates are of limited competitive significance. But in any event, the NRRI Report found declines in rack rates for the period it studied.¹²⁸

Although special access rates have in fact declined steadily in the time since pricing flexibility began, it is important to recognize that even flat or increasing rates do not reflect a lack of competitiveness. At the time the FCC introduced pricing flexibility, special access services had been subject to artificial regulatory constraints for long periods, including a 10-year period during which special access rates were capped and subject to annual decreases, without regard to what a competitive market rate might be.¹²⁹ Given that history, the FCC acknowledged that, once pricing flexibility was implemented, rates would not necessarily decline in all cases, but would instead move both up and down, pushing toward some equilibrium price, consistent with what occurs in a competitive market. The FCC noted, for example, that, in some cases, special access prices might rise “because our rules may have required incumbent LECs to price access services below cost.”¹³⁰ As demonstrated above, however, despite this expectation, rates have followed an overall downward trend.

2. Special access earnings

Because the evidence conclusively shows that special access prices have steadily declined in the time since the FCC implemented pricing flexibility, proponents of new special access price controls implicitly have tried to argue that costs have declined even faster, and that special access earnings are above competitive levels. But any attempt to analyze special access costs or earnings flies in the face of the last 15 years of regulatory history, during which the FCC (and most states) abandoned cost-based rate-of-return regulation as an inferior regulatory mechanism.¹³¹ In any event, the methodologies that have been used to calculate such margins are deeply flawed.

Proponents of new special access price controls have attempted to rely on allocations reported in the FCC’s Automated Reporting Management Information System (ARMIS) to calculate special access costs. But the FCC has long recognized that the data reported in ARMIS “do[] not serve a ratemaking purpose.”¹³² ARMIS data are collected pursuant to cost-allocation rules that the FCC in 2001 found were “outdated regulatory mechanisms that are out of step with today’s rapidly-evolving telecommunications marketplace,” and that are even more antiquated today.¹³³

128. See NRRI Report at Tables 6, 8-9. See also GAO Report, Appendix II at Table 11 (showing list price declines in price-cap markets).

129. See *Pricing Flexibility Order* ¶¶ 11-13.

130. See *id.* ¶ 155.

131. See *Policy and Rules Concerning Rates for Dominant Carriers*, Second Report and Order, 5 FCC Rcd 6786 (1990) (“*LEC Price Cap Order*”); see also *Price Cap Performance Review for Local Exchange Carriers*, First Report and Order, 10 FCC Rcd 8961, ¶ 64 (1995) (recognizing that a price cap system “was not only superior to rate-of-return regulation, but could also act as a transitional system as LEC regulated services became subject to greater competition”); *id.* ¶ 221 (“to the extent commenters argue in favor of traditional rate of return review of special access rate changes, their quarrel is fundamentally with price cap regulation.”).

132. *Policy and Rules Concerning Rates for Dominant Carriers*, Order on Reconsideration, 6 FCC Rcd 2637, ¶ 194 (1991).

133. *Jurisdictional Separations and Referral to the Federal-State Joint Board*, Report and Order, 16 FCC Rcd 11382, ¶ 1 (2001).

The NRRI Report reached this very conclusion, agreeing “that the ARMIS figures are virtually meaningless.”¹³⁴ As NRRI notes, in 2001 the FCC “froze” separations categories and factors for large companies, which meant that large carriers no longer needed to perform studies that directly assigned their costs to the services associated with those costs.¹³⁵ In subsequent years, interstate special access revenues grew substantially, but ILECs did not assign to the interstate special access category the increased costs associated with this growth. “As a result, interstate special access revenues increase every year, but not interstate special access costs. This imbalance has inflated ARMIS special access earnings reports and made them unreliable.”¹³⁶

Although NRRI recognized that ARMIS data could not be used to estimate special access earnings, it attempted to perform its own “earnings analysis with an adjusted investment base.”¹³⁷ NRRI “increased 2007 special access investment totals so that they bear the same relationship to total investment that 2007 special access revenue bears to total 2007 regulated revenue” and then “reduced other investment categories to maintain constant investment totals and recalculated secondary separations factors such as expenses, general support facilities, and taxes.”¹³⁸ Based on this approach, NRRI estimated that Verizon’s, AT&T’s, and Qwest’s special access returns on investment were 15%, 30%, and 38%, respectively, in 2007. But as economists William Taylor, Harold Ware, and Christian Dippon of NERA have found, NRRI’s methodology is flawed.¹³⁹ As they explain, NRRI “make[s] an adjustment that is as arbitrary as the ARMIS data they adjust.”¹⁴⁰ From an economic perspective, it is not appropriate to assign special access plant in service based on the proportion of revenues these services generate because in the context of cost studies, “[r]evenue data are only loosely related to investment – for example, output is more directly related to cost. . . . This is why economists and regulators have long rejected use of cost allocations such as those in the ARMIS data. It is also why the NRRI conclusions regarding profits for special access should be summarily rejected.”¹⁴¹

E. Output and Innovation

Yet another sign that competition for high-capacity services, including special access, is healthy is the fact that output has been growing, even despite declines in special access prices. In addition, there is considerable innovation in the provision of high-capacity services, with carriers rapidly replacing legacy technologies (such as ATM and Frame Relay) with more advanced ones (such as

134. NRRI Report at 70.

135. *Id.*

136. *Id.*

137. *Id.* at 71.

138. *Id.*

139. See Harold Ware, Christian Dippon & William Taylor, NERA, *Is More Special Access Regulation Needed? Reactions to the NRRI Report on Special Access Competition* (Mar. 4, 2009), http://www.nera.com/image/PUB_Special_Access_Regulation_03.2009_final.pdf.

140. *Id.* at 6.

141. *Id.*

Ethernet). As economists widely recognize, market expansion and innovation are telltale signs of a competitive market.¹⁴²

Data regarding high-capacity services, and the various services for which special access and other high-capacity services are used as inputs, show steady and significant expansion, and also illustrate the innovation taking place with respect to such services. According to the Telecommunications Industry Association, enterprise data communication services revenue as a whole are increasing – by an average of approximately 4 percent per year from 2004 to 2008, with average annual increases of 3.4 percent expected through 2011.¹⁴³ This growth is occurring amid a rapid shift to new technologies such as Ethernet and IP VPN from legacy technologies such as ATM and Frame Relay.¹⁴⁴ For example, as one analyst notes, “[i]n the midst of a crippling economic downturn in many sectors, U.S. demand for Business Ethernet service ports expanded at a rate of 43% during 2008. Spurred by lower bandwidth costs and higher service availability, enterprises of all sizes purchased carrier-based Ethernet to support their business networking applications.”¹⁴⁵

■ ■ ■
**U.S. demand for
Business Ethernet
service ports expanded
at a rate of 43%
during 2008.**

Some proponents of new special access price controls have argued that ILECs have deliberately curtailed deploying innovative new services such as Ethernet in order to favor legacy services such as ATM and Frame Relay. But this is directly contrary to the revenue picture shown above, as well as other evidence demonstrating that the ILECs are in fact leaders in deploying Ethernet technology. According to Vertical Systems Group, ILECs supply 46 percent of all U.S. Ethernet ports.¹⁴⁶ Frost & Sullivan gave AT&T the 2007 North American Market Leadership in Carrier Ethernet services award, citing, among other things, AT&T’s expansion of metropolitan area Ethernet services from 17 cities to more than 100 cities.¹⁴⁷ In 2008 and 2009, AT&T announced that it would invest \$1 billion each year to continue building out its global network for business, including carrier Ethernet services.¹⁴⁸ Verizon introduced standardized 10-Gigabit Ethernet to meet increasing demand from large businesses for

142. See, e.g., Tomohiko Inui, Atsushi Kawakami, & Tsutomu Miyagawa, *Do Competitive Markets Stimulate Innovation?: An Empirical Analysis Based on Japanese Manufacturing Industry Data*, RIETI Discussion Paper Series 08E012 (Mar. 2008) (“Arrow (1962) showed that innovative firms benefit more from an innovation if there is greater competition in the market. In the late 1970s and 1980s, using game-theoretic approaches, [Loury] (1979) and Dasgupta and Stiglitz (1980) examined the effects of market competition on innovative activity. They showed that firms in competitive markets are likely to overinvest in R&D.”) (citing Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention* in R. Nelson (ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors* (1962); Glenn C. Loury, *Market Structure and Innovation*, 93(3) *Quarterly Journal of Economics* 395-410 (1979); Partha S. Dasgupta & Joseph E. Stiglitz, *Industrial Structure and the Nature of Innovative Activity*, 90 *The Economic Journal* 266-293 (1980)); see also Michael E. Porter, *The Competitive Advantage of Nations*, *Harvard Business Review*, at 85 (Mar./Apr. 1990) (“Domestic rivalry, like any rivalry, creates pressures on companies to innovate and improve. Local rivals push each other to lower costs, improve quality and service, and create new products and processes.”).

143. Telecommunications Industry Association (TIA), *TIA 2008 Telecommunications Market Review and Forecast (2008)* at 157 & Tables III-3.9, III-3.19.

144. See *id.* at 146 & Table III-3.2 (global Ethernet service data) and 157 & Table III-3.18 (United States IP VPN data); see also Section I.B.1, above (stating that United States annual revenues for new technologies such as Ethernet, IP VPN, and Dedicated Internet Access are projected to grow from \$17.8 billion in 2008 to \$27.0 billion in 2012, an 11-percent compounded annual growth rate).

145. Vertical Systems Group, Inc. Stat Flash, *Business Ethernet Expands 43% in 2008* (Feb. 2009), available at <http://www.verticalsystems.com/>.

146. Vertical Systems Group, Inc., *The Connected 5,000: Making the Transition to Business Ethernet Services* (June 2008).

147. AT&T News Release, *AT&T Named Leader in North American Carrier Ethernet Services by Leading Industry Consulting Firm* (Nov. 12, 2007).

148. AT&T News Release, *AT&T To Invest \$1 Billion in Global Network, Services for Businesses in 2009* (Feb. 23, 2009); AT&T Inc. News Release, *AT&T To Invest \$1 Billion in Global Network and Services for Multinational Customers in 2008* (Mar. 5, 2008).

greater Carrier Ethernet bandwidth,¹⁴⁹ and has also introduced network enhancements to make it easier for businesses to move from traditional data services such as frame relay ATM to IP-based services.¹⁵⁰ Qwest announced a significant expansion of its global Ethernet portfolio, which will include rolling out Ethernet service in 759 new cities this year, bringing its total number of U.S. cities served to 1,129.¹⁵¹

In addition to the fact that the ILECs have become major providers of Ethernet services, there are a large number of competing carriers who supply these services as well. The fact that competing carriers have been rapidly and extensively deploying Ethernet demonstrates that they have been able to obtain access to such facilities on favorable terms. For example, in April 2009, XO announced the “nationwide availability of an expanded range of new Ethernet access speeds for businesses, enterprises, and wholesale customers.”¹⁵² The new service will be “available in more than 75 metropolitan markets where XO offers services,” both at “XO on-net fiber locations” as well as “locations served by last mile copper where XO has deployed Ethernet over copper technology.”¹⁵³ XO claims that it is “currently capable of delivering Ethernet services to nearly four million commercial buildings.”¹⁵⁴ In March 2009, US Signal announced the expansion of its Ethernet over copper service in Chicago, Detroit, Green Bay, and Toledo, providing customers with access to bandwidth up to 20 Mbps.¹⁵⁵ MegaPath began offering Ethernet over copper in September 2008, delivering symmetrical 10 Mbps service.¹⁵⁶

Cable companies and fixed wireless providers have also begun providing Ethernet services. As shown in Table 3 above, each of the major cable companies states that it is now providing commercial Ethernet services. And as shown in Table 6 above, numerous fixed wireless providers such as FiberTower, Tower Cloud, Conterra, and Alpheus also state that they are providing Ethernet services to commercial customers.

149. Verizon Business News Release, *Verizon Business Expands Carrier Ethernet Capabilities To Boost Application Performance for Enterprises* (Oct. 22, 2008).

150. Verizon Business News Release, *Verizon Business Makes It Easier for Businesses with Traditional Data Networks to Move to IP* (Dec. 17, 2008).

151. Qwest Press Release, *Qwest Announces Significant Expansion of Ethernet Services* (Oct. 15, 2008).

152. XO Communications Press Release, *XO Communications Enhances Ethernet Solutions Portfolio with Broader Range of Access Speeds* (Apr. 2, 2009).

153. *Id.*

154. XO Communications Press Release, *XO Communications Enhances Ethernet Infrastructure to Deliver New Speeds, Extended Reach and Enable Next Generation Service Offerings* (Aug. 18, 2008).

155. US Signal News Release, *US Signal Expands Ethernet over Copper Footprint in Four Markets* (Mar. 24, 2009).

156. MegaPath Press Release, *MegaPath Increases Customers' Cost-Effective High-Bandwidth Options with New Ethernet over Copper Service* (Sept. 22, 2008).

III. Competition for Retail Services That Use High-Capacity Services

When high-capacity service, including special access, is sold on a wholesale basis, it is used primarily either to provide data and voice services to enterprise customers or to provide wireless services.¹⁵⁷ Although proponents of new special access price controls have long argued that ILECs would be able to use their position as wholesale suppliers to dominate competition in these downstream retail markets, the opposite has in fact occurred. As the FCC has repeatedly recognized, both enterprise services¹⁵⁸ and wireless services¹⁵⁹ are robustly competitive. As a matter of antitrust economics, this competition in retail markets provides further evidence that special access services themselves are competitive.¹⁶⁰

A. Retail Enterprise Services

High-capacity facilities, including special access, are most often provided to enterprise customers in combination with other retail services. High-capacity facilities are therefore just one of the components that influence competition for these services. Voice and data switches, long-haul fiber backbones, and various types of customer premises equipment also are key components. Competing carriers that provide retail enterprise services typically own one or more of these components, but it is also common for competitors to aggregate the facilities of multiple providers in order to provide a full range of end-to-end services.¹⁶¹ There are accordingly a wide range of competitors that provide retail enterprise services, including national and regional competitive carriers, network integrators and managed service providers, international carriers, and equipment manufacturers and value-added resellers.

157. See *Triennial Review Remand Order* ¶ 17 (“carriers in certain robustly competitive downstream markets use special access services . . . as inputs for their service offerings”) (citing *United States Telecom Ass’n v. FCC*, 359 F.3d 554, 576-77 (D.C. Cir. 2004)), *aff’d*, *Covad Communications Co. v. FCC*, 450 F.3d 528 (D.C. Cir. 2006); *Special Access Rates for Price Cap Local Exchange Carriers*, Order and Notice of Proposed Rulemaking, 20 FCC Rcd 1994, ¶ 3 (2005) (“[B]usiness customers, commercial mobile radio service (CMRS) providers, interexchange carriers (IXCs), and competitive LECs all use special access services as a key input in many of their respective service offerings.”).

158. The Commission concluded that retail competition for enterprise customers is “strong” and will remain so “because medium and large enterprise customers are sophisticated, high-volume purchasers of communications services that demand high-capacity communications services, and because there [are] a significant number of carriers competing in the market.” *Verizon/MCI Order* ¶ 56; see also *SBC/AT&T Order* ¶ 56. The Commission recognized that “interexchange carriers, competitive LECs, cable companies, other incumbent LECs, systems integrators, and equipment vendors” all “are prepared to make competitive offers” to enterprise customers and therefore “ensure that there is sufficient competition.” *Verizon/MCI Order* ¶¶ 64, 74; see also *SBC/AT&T Order* ¶¶ 64, 73; *AT&T/BellSouth Order* ¶¶ 70, 80.

159. See, e.g., *Triennial Review Remand Order* ¶ 36 n.106 (“The Commission repeatedly has found the mobile wireless service market to be competitive.”).

160. See, e.g., *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 415 n.4 (2004). See also 4A Areeda, Hovenkamp & Solow, *Antitrust Law* ¶ 1004a (rev. ed. 1998).

161. See Application for Transfer of Control, *Verizon Communications Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, WC Docket No. 05-75 (FCC filed Mar. 11, 2005), Public Interest Statement, at Attachment 3, Declaration of Eric J. Bruno and Shelley Murphy ¶ 15; Attachment 5, Declaration of Quintin Lew and Ronald H. Lataille ¶¶ 8-10; and Attachment 12, Declaration of Ronald J. McMurtrie ¶ 27.

National and Regional Carriers. There are a large number of carriers who provide retail enterprise services on a national or regional scale. Each of the three former Bell companies – AT&T, Verizon, and Qwest – competes with each other outside of their respective regions.¹⁶² As the FCC has recognized, AT&T and Verizon are often each other’s largest competitor for enterprise customers.¹⁶³ As shown in Table 7, many other competitive carriers also operate on a national scale, such as Level 3, tw telecom, and XO. Other competing carriers provide retail enterprise services on a regional scale, such as AboveNet, Cavalier (Intellifiber Networks), Integra Telecom, ITC^Deltacom, One Communications, and Zayo Bandwidth. Each of these competing providers offers a wide range of retail enterprise services. See Table 14. And each has demonstrated success in winning substantial numbers of enterprise customers and revenues. See *id.* These various competing carriers have been particularly successful at providing the latest generations of high-capacity services, such as Ethernet, that enterprise customers are demanding in place of legacy TDM-based services. For example, as of the fall of 2008, independent analysts’ reports ranked tw telecom as the third-leading provider of Ethernet business services (based on a port share of 13 percent).¹⁶⁴

Table 14 – Examples of Competitive Offerings for Retail High-Capacity Services

Provider	Markets	Services	Recent Growth & Success
Level 3	<ul style="list-style-type: none"> ▶ Approximately 145 markets in service in North America 	<ul style="list-style-type: none"> ▶ Data offerings include Metro Private Line from DS-1 to OC-48, Metro Ethernet Private Line from 3 Mbps to 1 Gbps, and dedicated Internet access ▶ Claims to be “the premier national, end to end, facilities based alternative to AT&T and Verizon” ▶ Services “are purchased by the world’s largest and fastest growing consumers of communications services” 	<ul style="list-style-type: none"> ▶ \$3.1B in core network services revenue (<i>i.e.</i>, excl. long-distance voice) (2008), 5% YoY growth ▶ 25% of 1Q09 revenues generated by business customers
PAETEC	<ul style="list-style-type: none"> ▶ Serves over 83% of the top 100 MSAs and offers data services “throughout the United States” 	<ul style="list-style-type: none"> ▶ Data offerings include dedicated Internet access (T1 through OCn), burstable Internet access (Ethernet through OCn), and MPLS VPN services 	<ul style="list-style-type: none"> ▶ \$1.1B network services revenue (2008) ▶ \$286.3M network services revenue (1Q09), 13% YoY growth ▶ Serves 46,969 business customers (1Q09), 12% YoY growth

162. See, e.g., Metro Ethernet Forum, *MEF Global Services Directory*, http://metroethernetforum.org/page_loader.php?p_id=310 (availability of carrier Ethernet services from AT&T, Qwest, and Verizon).

163. See, e.g., *Petition for Waiver of Pricing Flexibility Rules for Fast Packet Services*, Memorandum Opinion and Order, 20 FCC Rcd 16840, ¶ 11 (2005) (“Packet switching providers such as AT&T purchase Verizon’s special access facilities as inputs to their own retail advanced services.”); *Verizon/MCI Order* ¶ 54 (rejecting allegations that the Verizon/MCI merger will likely result in anticompetitive effects in SBC’s region, because “Verizon is spending billions of dollars to buy MCI’s nationwide network and global enterprise and business reach, including facilities in SBC’s region. In light of this investment, it is reasonable to expect Verizon to have strong incentives to utilize fully its assets in SBC’s territory.”); *SBC/AT&T Order* ¶ 54.

164. Vertical Systems Group, *AT&T, Verizon Fuel Rise in Business Ethernet Services* (Sept. 5, 2008).

Table 14 – Examples of Competitive Offerings for Retail High-Capacity Services

Provider	Markets	Services	Recent Growth & Success
tw telecom	<ul style="list-style-type: none"> ▶ “75 markets spanning 30 states and D.C.” 	<ul style="list-style-type: none"> ▶ “[A] comprehensive suite of Internet options, not only traditional connections (TDM) from T1 to OC48 but also Ethernet connections from 10 Mbps ports to 10 Gbps ports” ▶ IP VPN service with “bandwidth levels from a T1 to OCn or 2 Mbps to 1000 Mbps of Ethernet to support simple or complex business applications” 	<ul style="list-style-type: none"> ▶ \$840.6M in consolidated enterprise revenue in 2008 (12% YoY growth) ▶ \$220.9M in consolidated enterprise revenue in 1Q09 (9% YoY growth) ▶ Recently reported 18 consecutive quarters of total revenue growth, and 27 consecutive quarters of enterprise revenue growth
XO	<ul style="list-style-type: none"> ▶ “1.16 million metro fiber miles throughout 40 major US cities, including the largest 30 cities in the United States” 	<ul style="list-style-type: none"> ▶ “XO Business Services provides managed services and converged [IP] network services that combine voice, Internet access, and private data networking for small and medium sized companies, enterprises, national and government accounts” 	<ul style="list-style-type: none"> ▶ Serves “[m]ore than 90,000 customers,” including “50% of the Fortune 500;” “Federal, state and local governments; regulatory agencies; and educational organizations” ▶ XO’s 1Q09 results show it is “capturing a greater share of the high-potential enterprise, SMB and carrier markets and realizing strong growth as a result of our expanding customer base and demand for innovative, cost-effective and flexible broadband solutions”
Cavalier/ Intellifiber Networks	<ul style="list-style-type: none"> ▶ 16 states and D.C. 	<ul style="list-style-type: none"> ▶ Provides “reliable and efficient network and data solutions for carriers, enterprise and government customers.” 	<ul style="list-style-type: none"> ▶ Launched Intellifiber Networks division in Feb. 2009 “to serve the growing enterprise, wholesale and government markets.” ▶ “Even in this tough economic climate, data-heavy applications and communications devices are driving bandwidth demand.”
FiberLight	<ul style="list-style-type: none"> ▶ Atlanta, Baltimore, Dallas, Houston, San Antonio, South Florida, Tampa, Washington, D.C. 	<ul style="list-style-type: none"> ▶ Provides “both high capacity lit fiber solutions and dark fiber solutions” to “large enterprises, web services firms and federal, state and local governments” in addition to carrier customers 	<ul style="list-style-type: none"> ▶ Opened a new metro fiber market in Waco, TX in Mar. 2009
Fibertech Networks	<ul style="list-style-type: none"> ▶ Core networks in 21 cities in NY, RI, PA, IN, OH, CT, MA, NH, MD, and DE 	<ul style="list-style-type: none"> ▶ “Enterprises can choose from Private Line T1s to OC-192 connections, Ethernet from 3 to 100 Mg and beyond, business-class dedicated Internet, collocation or the unlimited bandwidth of dark fiber optics” 	<ul style="list-style-type: none"> ▶ Revenue up 36% to \$52M in 2008, expected to reach \$66M in 2009 ▶ Closed \$124M in new sales contracts in the first 5 months of 2009, compared to \$101M in all of 2008
Integra Telecom	<ul style="list-style-type: none"> ▶ 11 Western/ Midwestern states (AZ, CA, CO, ID, MN, ND, OR, NV, UT, WA, WY) 	<ul style="list-style-type: none"> ▶ Internet access services include DSL, T1, and high-bandwidth data (T1, DS3 and OC-n up to 1Gb, and Ethernet); private networking services include Metro Area Networks through SONET, Ethernet, and wavelength solutions up to 10 Gbps 	<ul style="list-style-type: none"> ▶ Serves “an average of 20 percent of the businesses in the metropolitan areas in which it operates”

Table 14 – Examples of Competitive Offerings for Retail High-Capacity Services

Provider	Markets	Services	Recent Growth & Success
ITC^DeltaCom	▶ 14 states in the southeastern U.S.	▶ “From Dedicated Internet Access to traditional Private Line and Frame/ATM networks to next generation MPLS VPN and Ethernet networks” ▶ Markets its services to “Fortune 1,000 end-user customers in the southeastern United States”	▶ \$86.1M in revenues from business local, data, and Internet services (1Q09)
Lightower	▶ New England, New York Metro, Long Island and Hudson Valley markets	▶ “[O]ffers managed services including DS1, DS3, OC-X, Fast/GigE, and wavelength transport of virtually all of the SONET/SDH and SAN protocols (ESCON, FICON, Fiber Channel, GigE, etc.)”	▶ Claims to be “a leading provider of communication services to enterprise customers” ▶ In June 2009, “upgraded its core network backbone to 40G and is uniquely equipped to provide connectivity services from 1G to 40G”
One Communications	▶ “18 states across the Northeast, Mid-Atlantic and Upper Midwest, plus the District of Columbia”	▶ Data and Internet services to businesses include DSL, dedicated Internet access, private line, data center collocation, and MPLS VPN	▶ \$800M in annual revenue ▶ Serves 160,000 small and mid-sized business customers

Sources: See Appendix C.

Cable Operators. As described in Section II.A.1 above, each of the nation’s major cable operators is actively pursuing enterprise customers, both by deploying fiber to office buildings, and by extending hybrid fiber-coax networks to business districts. Each of these cable operators is offering a range of service to enterprise customers, including voice and data services. See Table 7, *supra*. And each of the major cable operators has stated that its enterprise business is rapidly expanding. See *id*.

Systems Integrators. As noted above, because enterprise services depend on a wide range of services besides special access and other high-capacity communications, it is common for providers to aggregate facilities from multiple sources in order to provide end-to-end services. This has opened the door for a wide range of companies who provide services complementary to communications, such as computer-based services and customer premises equipment, to begin competing for the communications component as well. There has accordingly been a rapid increase in competition from so-called systems integrators, such as EDS, IBM Global Services, Accenture, Capgemini, Northrop Grumman, General Dynamics, and CSC. In addition, a number of traditional equipment suppliers, such as Lucent and Siemens, have begun providing communications services. IDC published a report showing that over 10 percent of surveyed businesses reported that a systems integrator or IT outsourcing firm was its primary communications service provider for local, long distance, wireless voice, or VoIP in 2008.¹⁶⁵ For example, as shown in Table 15 below, these systems integrators and equipment vendors have been effective at winning major government contracts.

165. IDC, *IDC’s Vertical Group 2008 Communications Survey*, at 70, 74, 78, 98 (Dec. 2008).

Table 15 – Selected Government Contracts Awarded to Systems Integrators*

Date	Awardee	Organization	Duration	Maximum Value	Services
June 2007	CSC	National Security Agency		\$528 million	Contract extension for “secure and non-secure telephony and network services, distributed computing services, and enterprise and security management at the NSA headquarters and its surrounding offices”
Sept. 2007	General Dynamics-Lockheed Martin Warfighter Information Network-Tactical (WIN-T)	U.S. Army		\$921 million	Contract amendment to upgrade network capacity and integrate communications
	CSC	U.S. Air Force Space Command	10 years	\$820 million	Technical services at the Air Force’s Eastern Range
Jan. 2008	EDS	State of Indiana	6.5 years	\$209.9 million	Upgrade and continue to maintain state Medicaid Management Information System
Mar. 2008	CSC, Lockheed Martin, and 7 others	GSA		\$2.5 billion	Contact center management services
	EDS	U.S. Dept. of Defense	5 years	\$179 million	IT support services for the Defense Manpower Data Center
Apr. 2008	Accenture	New York City Dept. of Information Technology and Telecommunications	3 years	\$79.6 million	Technology and business process support to the Health and Human Services Connect program
July 2008	CSC	U.S. Dept. of Homeland Security		\$391 million	Secure managed data center services
Sept. 2008	EDS, CSC, General Dynamics, and other integrators	U.S. Food and Drug Administration	10 years	\$2.5 billion	IT modernization
Oct. 2008	5 firms including CSC and Lockheed Martin	U.S. Dept. of Education	10 years	\$300 million	Financial IT and business support services for the Federal Student Aid Enterprise Development Support Services
Nov. 2008	IBM	State of Georgia		\$873 million	Comprehensive IT services
	CSC	New York State Dept. of Health, Office of Health Insurance Programs		\$322 million	Contract extension for state Medicaid management information system, call center operations, and other integration duties

* Includes “indefinite delivery, indefinite quantity” contracts and awardees who are eligible to bid for specific segments of a contract.

Competing carriers are winning large numbers of major contracts for services that use high-capacity services. Appendix B provides an index of recent contracts that competitive providers have won. When a competing carrier wins a major contract, it sometimes reports that information by issuing a press release. The index was compiled by canvassing the press releases of 42 known competing providers that claim to serve enterprise customers (and excluding systems integrators as well as AT&T, Verizon, and Qwest, even though these companies compete vigorously against each other). Unfortunately, only 21 of those providers actually issue press releases reporting their successes. Many of these carriers appear to report only a small subset of their contract wins, however. The index nonetheless identifies more than 130 contracts won by competing carriers from the beginning of 2007 through December 2008 alone. While this index represents only a small portion of total contract wins, it nonetheless proves that there are a wide variety of retail competitors in the marketplace that are successfully competing in the provision of retail services that use special access and other high-capacity services.

B. Wireless Services

The intensely competitive wireless sector provides further evidence that special access and other high-capacity services are being provided competitively. As the FCC has repeatedly recognized, competition among four national wireless carriers and multiple regional carriers has produced steadily decreasing prices, rapid expansion in output, and massive investment.¹⁶⁶ Although some wireless carriers have complained that special access represents a large percentage of the cost of operating a cell site,¹⁶⁷ all wireless carriers face these costs, and there is no evidence that the ILECs' wireless affiliates have any advantage in this regard. To the contrary, ILEC wireless affiliates must purchase special access from tariffs just as unaffiliated wireless carriers.¹⁶⁸

Wireless rates have steadily declined while wireless output has rapidly grown. According to UBS, the average price per wireless minute of use (MOU) has decreased by 47 percent between 2002 and 2008 from \$0.11 to \$0.06.¹⁶⁹ During this same period, average wireless usage per subscriber has

166. See *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Thirteenth Report, 24 FCC Rcd 6185, ¶ 275 (2009) (“*Thirteenth CMRS Report*”) (“a wide variety of indicators of provider conduct and market structure [] show that competition in mobile telecommunications markets is flourishing”); *Triennial Review Remand Order* ¶ 36 n.106 (“The Commission repeatedly has found the mobile wireless service market to be competitive.”).

167. Comments of Sprint Nextel Corporation at 33, *Special Access Rates for Price Cap Local Exchange Carriers*, WC Docket No. 05-25 (FCC filed Aug. 8, 2007) (“Special access constitutes, on average, approximately 33% of the monthly cost of operating a cell site.”); Letter from Kathleen O’Brien Ham, T-Mobile USA, Inc., to Marlene H. Dortch, FCC, WC Docket No. 05-25, at 1 (Sept. 6, 2007) (“Special access constitutes a significant portion of the costs that T-Mobile must recover from its customers in order to provide wireless service, including future wireless broadband offerings”); Letter from Andrew D. Lipman and Patrick J. Donovan, Bingham McCutchen, Counsel for MetroPCS Communications, Inc., to Marlene Dortch, FCC, WC Docket No. 05-25, at 2 (Oct. 29, 2007) (“MetroPCS... like other wireless carriers who rely on special access services, must recover from its customers a portion of the exorbitant special access rates it is charged.”).

168. See 47 C.F.R. § 20.20(a)(3) (“The affiliate shall acquire any services from its affiliated incumbent LEC for which the affiliated incumbent LEC is required to file a tariff at tariffed rates, terms, and conditions. Other transactions between the affiliate and the incumbent LEC for services that are not acquired pursuant to a tariff must be reduced to writing and must be made on a compensatory, arm’s length basis. All transactions between the incumbent LEC and the affiliate are subject to part 32..., including the affiliate transaction rules.”).

169. See J. Hodulik et al., UBS Investment Research, *Wireless Market Feeling the Economy*, at 3, Table 1 (Jan. 29, 2009) (including data). See also *Thirteenth CMRS Report* ¶ 2 (ARPU declined from \$0.10 in 2003 to \$0.06 in 2007).

increased by approximately 89 percent – from 454 to 860 minutes per month – while the average monthly bill for wireless voice services has decreased from \$47 to \$38.¹⁷⁰ The number of wireless subscribers has grown from 158 million to 270 million in the last five years,¹⁷¹ and analysts now view wireless penetration – which now stands at approximately 90 percent – as close to fully saturated.¹⁷²

With the deployment of advanced wireless networks, the focus of wireless competition in the past two years has shifted to data services. Much of this competition centers on the promotion of advanced handsets that exploit these networks. Wireless carriers have competed aggressively to provide smartphones such as the iPhone, the Blackberry Storm, and the Google/Android-based G1.¹⁷³ Wireless carriers have heavily subsidized these phones to enable customers to take advantage of advanced data services without high up-front costs.¹⁷⁴ Wireless carriers have introduced various unlimited data usage plans,¹⁷⁵ and wireless data prices are declining.¹⁷⁶ Average revenue per user for wireless data services has doubled since the beginning of 2006 – from approximately \$6 per month to approximately \$12 per month.¹⁷⁷ Data services now comprise a quarter of overall monthly wireless revenues, up from 16 percent in the first quarter of 2007.¹⁷⁸

The decline in wireless prices and the ability of some wireless carriers to provide data services have also increased rates of wireless substitution. Some wireless carriers have argued that further reduction in special access rates would better enable wireless to substitute for wireline voice services,¹⁷⁹ but this has already happened without regulatory intervention. The percentage of

170. See J. Hodulik et al., UBS Investment Research, *Wireless Market Feeling the Economy*, at 3, Table 1 (Jan. 29, 2009). See also *Thirteenth CMRS Report ¶ 2* (MOUs per subscriber increased from 507 in 2003 to 769 in 2007).

171. CTIA, *Year-End 2008 Top-Line Survey Results*, http://files.ctia.org/pdf/CTIA_Survey_Year-End_2008_Graphics.pdf (data for Dec. 2003 – Dec. 2008).

172. See D. Barden et al., Bank of America/Merrill Lynch Research, *Recession Resistant, Not Recession Proof*, at 1 (Jan. 5, 2009) (“US wireless penetration ticked over 90% in 2008”); T. Horan et al., Oppenheimer, *4Q08 Mid-Quarter Review*, at 4 (Feb. 19, 2009) (estimating 88 percent penetration); C. Moffett et al., Bernstein Research, *U.S. & European Telecommunications: Stuck in the Middle... Will T-Mobile USA Be the Next Sprint?*, at 5 (Feb. 5, 2009) (estimating that “[w]ireless penetration currently stands at 85% and is unlikely to exceed 90%”).

173. “Handset pricing, promotions, and retention initiatives are where and how the wireless industry competes.” D. Barden et al., Bank of America/Merrill Lynch Research, *Recession Resistant, Not Recession Proof*, at 40 (Jan. 5, 2009).

174. “The average price of PDA/Smartphone moved down to \$158 (vs. \$170 in 2Q08) as the average discount from full retail in exchange for a two-year contract moved up to \$249 (vs. \$235 in 2Q08).” D. Barden et al., Bank of America/Merrill Lynch Research, *Recession Resistant, Not Recession Proof*, at 40 (Jan. 5, 2009).

175. In January 2009, for example, Sprint introduced an unlimited voice, text, and data plan for \$50 under its prepaid Boost brand. See D. Barden et al., Bank of America/Merrill Lynch Research, *4Q08 Wireless Services & Handset Pricing Analysis*, at 2 (Jan. 20, 2009). See also D. Barden et al., Bank of America, *Wireless Services & Handset Pricing Analysis*, at 7 (Sept. 29, 2008) (describing Verizon Wireless’s introduction of an unlimited monthly voice plan, and reactive offerings by AT&T, T-Mobile, and Sprint).

176. See, e.g., Gabriel Brown, Senior Analyst, Heavy Reading, *Good Times For 3G*, Unstrung (Apr. 11, 2008), http://www.unstrung.com/document.asp?doc_id=150915 (“In a sample of five progressive 3G operators in competitive markets, per-month pricing for mobile data declined an average of 57 percent in 2007, falling as low as \$20 a month in some markets. Under the ‘get more for less’ principle, operators have also started to include greater amounts of data in monthly packages while simultaneously cutting prices. Price per megabyte, for example, fell from an average of 5.7 cents in 2006 to just 1.6 cents in early 2008 – a decrease of 72 percent. Already several operators are at the 1 cent per megabyte price point.”).

177. M. McCormack et al., JP Morgan, *Telecom Buzz: Stop Obsessing About Subscriber Growth, ARPU Matters So Much More*, at 2, Figure 1 (Jan. 7, 2009).

178. M. McCormack et al., JP Morgan, *Wireless Recap: Dissection of 4Q08 Wireless Trends*, at 8, Figure 8 (Mar. 3, 2009) (data for the top four wireless carriers).

179. See, e.g., Letter from Christopher J. Wright et al., Harris, Wiltshire & Grannis, LLP, to Marlene H. Dortch, FCC, WC Docket No. 05-25, at 4-5 (Oct. 5, 2007); Comments of T-Mobile USA, Inc., at 8, *Special Access Rates for Price Cap Local Exchange Carriers*, WC Docket No. 05-

households that have cut the cord is expected to reach 27 percent by the end of 2009.¹⁸⁰ Analysts further expect that more than 35 percent of households will have given up their wireline phone by the first quarter of 2012.¹⁸¹

The enormous growth in wireless reflects massive investment in wireless infrastructure and technology, which is still intensifying. Wireless carriers invest more than \$20 billion annually, much of which has gone to deploying next-generation wireless networks to consumers.¹⁸² AT&T has invested an average of \$5 billion per year, and plans to evolve from High Speed Packet Access (HSPA) technology to HSPA+, and eventually adopt Long Term Evolution (LTE) technology.¹⁸³ Verizon Wireless has announced plans to offer LTE-based service beginning in 2010, and “plans are in place for aggressive deployment throughout Verizon Wireless’ entire network, including areas not currently covered by the existing Verizon Wireless footprint.”¹⁸⁴ Cox has invested more than \$500 million “to acquire wireless spectrum and to develop the infrastructure and human resources needed to architect [its] own advanced wireless service,” which it plans to launch in 2009.¹⁸⁵

Wireless competition is impressive not only in its own right, but also in comparison to other countries. As the FCC has recognized, the United States leads the world in average minutes of use per subscriber, and wireless calls are significantly less expensive in the United States than in Western Europe or Japan.¹⁸⁶ The United States has also leapfrogged Europe in making wireless broadband services available, despite getting a later start due to early 3G licensing in Europe.¹⁸⁷ Wireless broadband services are now more widely available in the United States than in Europe, and also offer higher speeds.¹⁸⁸

25, RM-10593 (FCC filed Aug. 8, 2007); Letter from Andrew Lipman and Patrick J. Donovan, Bingham McCutchen, Counsel for MetroPCS Communications, Inc., to Marlene H. Dortch, FCC, WC Docket No. 05-25, at 2 (Oct. 29, 2007).

180. D. Barden et al., Bank of America/Merrill Lynch Research, *Recession Resistant, Not Recession Proof*, at 32 (Jan. 5, 2009).

181. *See id.*

182. *See* CTIA, *Wireless Quick Facts* (Dec. 2008), <http://www.ctia.org/advocacy/index.cfm/AID/10323>; CTIA, *100 Wireless Quick Facts*, <http://www.ctia.org/advocacy/index.cfm/AID/10380> (quick fact #32).

183. AT&T News Release, *AT&T Reports 3G Wireless Download Speeds of Up to 1.7 Mbps for LaptopConnect Customers – a 20+ Percent Increase* (June 4, 2008).

184. Verizon Press Release, *Verizon Wireless Fosters Global LTE Ecosystem As Verizon CTO Dick Lynch Announces Deployment Plans* (Feb. 18, 2009).

185. Cox News Release, *Cox To Launch Next Generation Bundle with Wireless in 2009* (Oct. 27, 2008) (statement by Cox President Pat Esser).

186. *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Eleventh Report, 21 FCC Rcd 10947, ¶ 189 (2006) (“*Eleventh CMRS Report*”) (“[M]obile calls continue to be significantly less expensive on a per minute basis in the United States than in Western Europe and Japan.”); *id.* ¶ 193 (average revenue per minute, a standard proxy for mobile pricing, is \$0.07 in the U.S. compared to an average of \$0.22 in Western Europe, \$0.27 in Japan, and \$0.10 in South Korea); CTIA Press Release, *Wireless Becomes Vital Economic Engine: Study Shows Industry To Be Major Economic Player in U.S.* (Oct. 6, 2005) (citing Ovum) (industry analyst estimated that the average U.S. wireless consumer spends \$54 per month on wireless services but would pay about \$125 for the same services in the European Union).

187. *See Eleventh CMRS Report* ¶ 202 (“Although early 3G licensing gave European operators a head start in the deployment of WCDMA networks, *Wall Street Journal* personal technology columnist Walt Mossberg argues that the superior next-generation technologies deployed by U.S. wireless carriers have given the United States an edge over Europe in wireless data networks for the first time in years.”) (citing Walter S. Mossberg, *Cingular Joins Rivals with Fast, Reliable Wireless Broadband*, *Wall St. J.*, Jan. 19, 2006, at A9).

188. *See id.*

Despite overwhelming evidence that the wireless sector is thriving, several wireless carriers (most notably Sprint and T-Mobile) have argued that they would better be able to compete if special access prices were further reduced. But to the extent these carriers are not faring as well as other wireless carriers it has nothing to do with special access prices, but with other business decisions these carriers have made. For example, Sprint's merger with Nextel has been widely hailed as a failure;¹⁸⁹ Sprint and T-Mobile have been slow to invest in advanced wireless technology and their average capital expenditures are much lower than the other major carriers, Verizon and AT&T.¹⁹⁰

189. See, e.g., S. Ante, *Sprint's Wake-Up Call: Reversing a Miserable Service Reputation After the Nextel Merger Will Be Key to the Company's Turnaround*, Business Week, Special Report, at 54 (Feb. 21, 2008) ("Since Sprint and Nextel merged three years ago, the deal has turned into something of a fiasco.... On Jan. 31, Sprint Nextel said it would take merger-related charges of as much as \$31 billion, wiping out nearly all of the deal's value."); A. Sharma et al., *Sprint Mulls Shedding Nextel Unit*, Wall St. J., (May 6, 2008), <http://online.wsj.com/article/SB121001458454368317.html> ("Sprint Nextel Corp. is considering spinning off or selling its ailing Nextel unit, people familiar with the situation say. The move would be a dramatic acknowledgment that Sprint's \$35 billion acquisition of Nextel Communications Inc. in 2005 has been a failure.... Nextel's current valuation is unclear. One telecom-industry veteran says its value 'has significantly deteriorated' since the takeover"); C. Moffett et al., Bernstein Research, *Quick Take – Sprint (S): Making Lemonade at Nextel...*, at 1 (Oct. 31, 2008) ("Absent a shut down strategy, Sprint is left to make lemonade, making the best of the [Nextel] iDEN network.").

190. See D. Barden et al., Bank of America/Merrill Lynch, *Recession Resistant, Not Recession Proof*, at 42, Chart 46 (Jan. 5, 2009); see also B. Partridge, Yankee Group, *Yankee Group's Global Telecommunications Capex Forecast*, at 5 (Mar. 2009).

IV. Conclusion

The factual evidence available to us from public, third party, and internal sources confirms that there is extensive and growing competition for high-capacity services, including the so-called backhaul that wireless carriers use to connect cell towers to their transport networks. There is rapid new entry in high-capacity services from intermodal competitors such as cable and fixed wireless providers. Competitive fiber networks have been deployed in virtually all areas where there is sufficient high-capacity demand. Prices have been steadily declining. Providers of high-capacity services are continually offering new rates, terms, and conditions in response to competitive pressure. Output and innovation have been increasing and there is extensive competition for the retail voice and data services that use high-capacity services as an input.

This evidence refutes the claims that new and expanded price controls are needed for a single component of the high-capacity services market – special access. Such claims rest on false premises that competition is lacking, prices are excessive, and innovation is not occurring. On the contrary, this report reveals that high-capacity services are characterized by growing competition, declining prices, continued investment, and ongoing innovation.

Nonetheless, as noted above, any review of publicly available data is necessarily incomplete because many competing carriers do not make available information regarding the extent of their network facilities, services, and customers. The competitive showing here is therefore conservative. Moreover, previous data collections have not adequately accounted for intermodal competition from cable and fixed wireless providers. Therefore, in order for the FCC to understand the likely effects of increased regulation on consumers, competition, and innovation, it would be necessary for the FCC to undertake a comprehensive data collection that captures all suppliers, actual and potential. We are confident that the actual extent of competition for high-capacity services is even greater than this report demonstrates.

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Appendix A – Selected Known Competitive Telecom Providers in Top 50 MSAs (Excluding Cable and Fixed Wireless)

Metropolitan Statistical Area (MSA)	# of Providers	Competitive Providers
1 New York-Northern New Jersey-Long Island, NY-NJ-PA	14	AboveNet, AT&T, Cavalier/Intellifiber Networks, Fibertech Networks, Level 3, Lexent Metro Connect, Lighttower, Long Island Fiber Exchange, One Communications, Qwest, RCN Metro, tw telecom, XO, Zayo Bandwidth
2 Los Angeles-Long Beach-Santa Ana, CA	8	AboveNet, AT&T, Edison Carrier Solutions, Level 3, Qwest, tw telecom, Verizon, XO
3 Chicago-Naperville-Joliet, IL-IN-WI	10	AboveNet, Cavalier/Intellifiber Networks, Level 3, Qwest, RCN Metro, tw telecom, US Signal, Verizon, XO, Zayo Bandwidth
4 Dallas-Fort Worth-Arlington, TX	8	AboveNet, FiberLight, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
5 Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	9	AboveNet, AT&T, Cavalier/Intellifiber Networks, Level 3, One Communications, Qwest, RCN Metro, XO, Zayo Bandwidth
6 Houston-Sugar Land-Baytown, TX	8	AboveNet, FiberLight, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
7 Miami-Fort Lauderdale-Pompano Beach, FL	8	FiberLight, FPL Fibernet, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
8 Washington-Arlington-Alexandria, DC-VA-MD-WV	11	AboveNet, AT&T, Cavalier/Intellifiber Networks, FiberLight, Level 3, One Communications, Qwest, RCN Metro, tw telecom, XO, Zayo Bandwidth
9 Atlanta-Sandy Springs-Marietta, GA	10	AboveNet, AGL Networks, American Fiber Systems, FiberLight, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
10 Boston-Cambridge-Quincy, MA-NH	8	AboveNet, AT&T, Level 3, Lighttower, One Communications, Qwest, RCN Metro, XO
11 Detroit-Warren-Livonia, MI	6	Cavalier/Intellifiber Networks, Level 3, Qwest, US Signal, Verizon, XO
12 San Francisco-Oakland-Fremont, CA	7	AboveNet, IP Networks, Level 3, Qwest, tw telecom, Verizon, XO
13 Phoenix-Mesa-Scottsdale, AZ	9	AboveNet, AGL Networks, AT&T, Integra Telecom, Level 3, SRP Telecom, tw telecom, Verizon, XO
14 Riverside-San Bernardino-Ontario, CA	1	Edison Carrier Solutions
15 Seattle-Tacoma-Bellevue, WA	7	AboveNet, AT&T, Integra Telecom, Level 3, tw telecom, Verizon, XO
16 Minneapolis-St. Paul-Bloomington, MN-WI	7	American Fiber Systems, AT&T, Level 3, tw telecom, Verizon, XO, Zayo Bandwidth
17 San Diego-Carlsbad-San Marcos, CA	5	Level 3, Qwest, tw telecom, Verizon, XO
18 St. Louis, MO-IL	4	Level 3, Qwest, Verizon, XO
19 Tampa-St. Petersburg-Clearwater, FL	8	FiberLight, FPL Fibernet, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
20 Baltimore-Towson, MD	11	AboveNet, AT&T, Cavalier/Intellifiber Networks, FiberLight, Level 3, One Communications, Qwest, RCN Metro, tw telecom, XO, Zayo Bandwidth
21 Denver-Aurora, CO	5	AT&T, Level 3, tw telecom, Verizon, XO
22 Pittsburgh, PA	9	AT&T, Cavalier/Intellifiber Networks, DQE Communications, Fibertech Networks, Level 3, One Communications, Qwest, XO, Zayo Bandwidth
23 Portland-Vancouver-Beaverton, OR-WA	7	AboveNet, AT&T, Integra Telecom, Level 3, tw telecom, Verizon, XO

Metropolitan Statistical Area (MSA)	# of Providers	Competitive Providers
24 Cincinnati-Middletown, OH-KY-IN	5	Level 3, Qwest, tw telecom, Verizon, Zayo Bandwidth
25 Cleveland-Elyria-Mentor, OH	6	American Fiber Systems, Cavalier/Intellifiber Networks, Level 3, Qwest, Verizon, XO
26 Sacramento--Arden-Arcade--Roseville, CA	7	Integra Telecom, Level 3, Qwest, SureWest, tw telecom, Verizon, XO
27 Orlando-Kissimmee, FL	7	FPL Fibernet, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
28 San Antonio, TX	7	FiberLight, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
29 Kansas City, MO-KS	6	American Fiber Systems, Level 3, Qwest, SureWest, tw telecom, Verizon
30 Las Vegas-Paradise, NV	5	American Fiber Systems, AT&T, Level 3, tw telecom, XO
31 San Jose-Sunnyvale-Santa Clara, CA	5	AboveNet, Level 3, Qwest, Verizon, XO
32 Columbus, OH	9	Cavalier/Intellifiber Networks, Fibertech Networks, ITC^DeltaCom, Level 3, One Communications, Qwest, tw telecom, XO, Zayo Bandwidth
33 Indianapolis-Carmel, IN	8	Fibertech Networks, Level 3, One Communications, Qwest, tw telecom, US Signal, Verizon, Zayo Bandwidth
34 Virginia Beach-Norfolk-Newport News, VA-NC	2	Cavalier/Intellifiber Networks, Level 3
35 Charlotte-Gastonia-Concord, NC-SC	3	ITC^DeltaCom, Level 3, tw telecom
36 Providence-New Bedford-Fall River, RI-MA	6	AT&T, Fibertech Networks, Lighttower, One Communications, RCN Metro, XO
37 Austin-Round Rock, TX	7	AboveNet, ITC^DeltaCom, Level 3, Qwest, tw telecom, Verizon, XO
38 Milwaukee-Waukesha-West Allis, WI	5	Level 3, One Communications, tw telecom, US Signal, Verizon
39 Nashville-Davidson--Murfreesboro--Franklin, TN	5	American Fiber Systems, ITC^DeltaCom, Level 3, tw telecom, XO
40 Jacksonville, FL	4	FPL Fibernet, ITC^DeltaCom, Level 3, tw telecom
41 Memphis, TN-MS-AR	5	ITC^DeltaCom, tw telecom, Verizon, XO, Zayo Bandwidth
42 Louisville/Jefferson County, KY-IN	2	Level 3, tw telecom
43 Richmond, VA	3	Cavalier/Intellifiber Networks, ITC^DeltaCom, Level 3
44 Oklahoma City, OK	2	Level 3, Verizon
45 Hartford-West Hartford-East Hartford, CT	5	Fibertech Networks, Level 3, One Communications, RCN Metro, Verizon
46 Buffalo-Niagara Falls, NY	4	Cavalier/Intellifiber Networks, Fibertech Networks, Level 3, One Communications
47 Birmingham-Hoover, AL	2	ITC^DeltaCom, tw telecom
48 Salt Lake City, UT	6	American Fiber Systems, AT&T, Integra Telecom, Level 3, Verizon, XO
49 Rochester, NY	4	Fibertech Networks, Level 3, One Communications, tw telecom
50 New Orleans-Metairie-Kenner, LA	4	ITC^DeltaCom, Level 3, Southern Light Fiber, tw telecom

Figures for Verizon, AT&T, and Qwest reflect competitive (non-ILEC) operations: this approach is conservative because it generally excludes MSAs where these companies are both the ILEC in parts of the MSA and compete with another ILEC in other parts of the same MSA.
Sources: See Appendix C.

Appendix B – Examples of Business Contracts Won by Competitive Carriers

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
360networks	Suburban Broadband	Communications Services	Fixed wireless Internet phone service provider	n/a	n/a	Contract to support Suburban Broadband, LLC's Voice over Internet Protocol (VoIP) service offerings	4/16/2007	Domestic	Wholesale
360networks	Clear Reach	Communications Services	Internet phone service provider	n/a	n/a	Contract to provide the underlying network infrastructure and communication services supporting Voice over Internet Protocol (VoIP) service offerings from Clear Reach	3/20/2007	Domestic	Wholesale
360networks	AccessLine	Communications Services	Internet phone service provider	n/a	n/a	Contract to provide underlying communication services supporting Voice over Internet Protocol (VoIP) service offerings from AccessLine	3/19/2007	Domestic	Wholesale
AboveNet	Switch and Data	Communications Services	Leading provider of network neutral data centers and Internet exchange services	n/a	n/a	Contract to provide a full suite of high-bandwidth Ethernet, IP and fiber data transport services to customers in Switch and Data's new North Bergen, NJ data center	11/19/2008	Domestic	Wholesale
AboveNet	Stargate Holdings Corp.	Communications Services	Co-location provider, data center company, and a leader in the global IT services industry	n/a	n/a	Contract to offer fiber connectivity to Stargate's new 86,000 square-foot high-security co-location data center in Chicago's western suburbs	12/17/2007	Domestic	Wholesale
AboveNet	Philadelphia Stock Exchange	Financial	Stock Exchange and leader in the derivatives industry	n/a	n/a	Contract to build a private, optical network that will extend and expand network reach from Pennsylvania to New York and New Jersey	10/23/2007	Domestic	Retail
AboveNet	Sentinel Data Centers	Communications Services	Leading provider of carrier-neutral enterprise data center solutions	n/a	n/a	Partnership with NEF Inc. to provide Sentinel with a robust, custom optical network offering services from 1Gb to 10Gb to key carrier PoPs and commercial buildings in the Boston area	10/11/2007	Domestic	Wholesale
AboveNet	PAXIO Inc.	Communications Services	Company which deploys fiber-to-the-home and fiber-to-the-premise networks and technology solutions for select residential communities and commercial centers	n/a	n/a	Agreement for optical network facilities in the San Francisco Bay Area	4/6/2007	Domestic	Wholesale
Alpheus Communications	EarthLink	Communications Services	Market leader in the deployment of citywide, municipal wireless networks	n/a	n/a	Contract to provide fiber-based backhaul support for EarthLink's municipal Wi-Fi network in Corpus Christi	5/28/2007	Domestic	Wholesale
Broadview Networks	AB&T Telecom	Communications Services	Provider of telecommunications, IT, and field tech services to business and government customers throughout the U.S.	n/a	n/a	Master Agency agreement to offer Broadview's comprehensive line of voice, data, security and other related services through AB&T's national network of technology partners	11/20/2008	Domestic	Wholesale

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
Cablevision	Xand Corporation	Communications Services	Facilities-based provider of data center infrastructure and business continuity solutions to financial services and mid-sized corporations	n/a	n/a	Contract and extension of relationship with Optimum Lightpath to offer uninterrupted delivery of robust internet performance, availability and security to the hundreds of customers that Xand serves through its state-of-the-art 30,000 sq. ft. Westchester County Data Center facility	4/16/2008	Domestic	Wholesale
Cavaliere Telephone	U.S. Chemical Safety Hazard Review Board (CSB)	Government	Federal agency responsible for the investigation of industrial chemical accidents	n/a	5	Contract to provide the CSB with Voice and Internet services to support their investigative and administrative efforts	4/2/2008	Domestic	Retail
Cavaliere Telephone	U.S. Air Force	Military	Branch of the United States Armed Forces	\$179,517	n/a	Contract to provide exchange services to Dover Air Force Base	9/17/2007	Domestic	Retail
Charter Communications	Maximus Multimedia International, LLC	Communications Services	Leading hospitality media network and provider of hospitality information and entertainment-on-demand systems	n/a	n/a	Agreement in which Charter Business and Maximus will offer hotels in Charter's service area a suite of services consisting of Charter's Internet and video services with the Maximus entertainment-on-demand service	3/18/2008	Domestic	Retail
Conterra Telecom Services	Pulaski County, Virginia Schools	Education	School district for Pulaski County, Virginia	n/a	n/a	Completion of contract to provide Pulaski County, Virginia Schools with a wide area network	12/9/2008	Domestic	Retail
Conterra Telecom Services	Cellular One of Arizona / Navajo Nation	Communications Services	Provider of cellular telephony and microwave broadband transport / Tribal government	n/a	n/a	Joint marketing and engineering effort to develop an IP-based Ethernet network providing middle and last-mile wireless solutions for cellular voice/data and broadband, as well as high capacity bandwidth to tribal communities, businesses, schools, and other institutions	12/15/2007	Domestic	Wholesale
Cox Communications	Burnham Composite Structures, Inc.	Manufacturing	Leader in composite manufacturing for the aerospace industry	n/a	n/a	Contract to provide voice, data and video services	12/16/2008	Domestic	Retail
Cox Communications	Clark Naval Communities, LLC	Real Estate	Luxury on-base naval housing development	n/a	n/a	Contract to provide video, Internet and voice services	11/24/2008	Domestic	Retail
Fibertech Networks	Hibernia Atlantic	Communications Services	Diverse trans-Atlantic transport provider	n/a	5	Contract to provide metro connections in Stamford, CT	4/2/2007	Global	Wholesale
FiberTower	Sprint Nextel	Communications Services	Major wireless and wireline communications provider	n/a	n/a	Agreement to provide backhaul services in seven of Sprint's initial WiMax launch markets	8/1/2007	Domestic	Wholesale
FPL Fibernet	T-Mobile USA, Inc.	Communications Services	U.S. operation of Deutsche Telekom AG's Mobile Communications Business, and a wholly owned subsidiary of T-Mobile International, one of the world's leading companies in mobile communications	n/a	n/a	Agreement to act as backhaul carrier in Miami, Fort Lauderdale and West Palm Beach in South Florida	9/18/2008	Domestic	Wholesale

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
Global Crossing	Cubix	Manufacturing	Software and hardware wholesale dealer	n/a	n/a	Completed the installation of an IP MPLS technology network in six countries including Colombia, Costa Rica, Guatemala, the United States, and Dominican Republic	10/14/2008	Global	Retail
Global Crossing	GoDaddy.com	Communications Services	The world's number one domain name registrar and largest shared hosting provider in North America	n/a	n/a	Contract to connect GoDaddy's North American facilities through Global Crossing's Dedicated Internet Access (DIA) service	3/6/2008	Domestic	Retail
Global Crossing	Lotus Interworks	Technology	Growing technology company that leverages VoIP, 3G wireless, and XML to enable a variety of solutions for enterprises	n/a	n/a	Contract to provide Voice over IP (VoIP), Dedicated Internet Access (DIA), and Converged IP services, as well as audio and Web conferencing solutions	12/12/2007	Domestic	Retail
Global Crossing	Bristow Group Inc.	Services / Other	One of the world's largest providers of helicopter services	\$1,440,000	n/a	Contract to provide IP VPN connectivity across 30 individual sites in Europe, North America and Australia	10/18/2007	Global	Retail
Global Crossing	Highwinds Network Group, Inc.	Communications Services	Global provider of content distribution solutions	n/a	n/a	Contract to provide Highwinds with an extensive suite of telecommunications services that enable Highwinds' customers to leverage Global Crossing's widespread IP-based network for accessing Internet-based content	8/28/2007	Global	Wholesale
Global Crossing	Hay Group	Consulting	Global management consultancy firm	n/a	n/a	Contract providing "Mobile IP Connect" to allow Hay to access its IP VPN service; Mobile IP Connect is a remote access solution that enables mobile and remote workers to gain secure internet access from tens of thousands of WiFi and broadband "hot spots" and 35,000 dial access points in more than 160 countries around the world	7/31/2007	Global	Retail
Global Crossing	University of the Virgin Islands Research and Technology Park	Real Estate	Business partner that aligns resources, including generous corporate tax incentives, with workforce development opportunities to benefit companies and the USVI economy	n/a	15	Contract for high capacity broadband connectivity and collocation space at Global Crossing's fiber switching facilities in St. Croix, U.S. Virgin Islands (USVI)	7/19/2007	Global	Retail
Global Crossing	Gila Corporation	Services / Other	Company offering outsourced collections, payment processing and call center services to governmental entities and financial institutions, such as the Texas Department of Public Safety	n/a	n/a	Contract to provide Gila's growing revenue recovery call center with a full suite of Voice over Internet Protocol (VoIP) and Dedicated Internet Access (DIA) services through Global Crossing's converged IP services offering	7/18/2007	Domestic	Retail
Global Crossing	U.S. General Services Administration	Government	Federal agency responsible for a centralized delivery system of multiple products and services to the federal government	Up to \$20 Billion	10	Provide a range of information technology services to federal government agencies and serve as a subcontractor to AT&T Government Solutions, a business unit of AT&T, Inc. as part of AT&T's Network Enterprise contract	6/21/2007	Domestic	Retail

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
Global Crossing	Stereotaxis	Healthcare	Provider of advanced cardiology systems	n/a	n/a	Contract to provide remote clinical training by utilizing Global Crossing's worldwide IP Virtual Private Network (VPN) service	5/8/2007	Domestic	Retail
Global Crossing	Skadden, Arps	Legal	Law firm	n/a	Multi-year	Contract, extending existing relationship, to provide Skadden with a new worldwide IP Virtual Private Network (VPN) to support its growing practice	4/24/2007	Global	Retail
Global Crossing	GrandCentral Communications, Inc.	Communications Services	Next-generation personal communications company	n/a	n/a	Contract to provide GrandCentral with "VoIP Local Service" to its converged personal communications solution; Global crossing will provide single IP interconnection, transport and call completion of packet-based voice traffic over its integrated IP and TDM platforms	3/21/2007	Domestic	Wholesale
Global Crossing	RJF International	Manufacturing	World-class manufacturer of decorative, industrial, transit and office products	n/a	n/a	Completion and management of a next-generation data network for RJF; Global Crossing is providing RJF International with managed network services, overseeing a 13-site Multi-Protocol Labeling Switching (MPLS) network that replaces their legacy frame relay network	3/7/2007	Global	Retail
Global Crossing	U.S. Naval Research Laboratory (NRL)	Military	Corporate research laboratory for the Navy and Marine Corps, conducting a broad program of scientific research, technology and advanced development	Up to \$10 Million	5	Contract for private line services connecting U.S. Forces in a cross-Pacific link	1/25/2007	Global	Retail
Global Crossing	Alpine Access, Inc.	Services / Other	Premier provider of customer contact solutions using the home-based employee model	n/a	n/a	Contract to use Global Crossing's converged IP services to ease Alpine's network expansion, penetrate new markets and deliver superior customer service	1/8/2007	Domestic	Retail
Global Crossing	SyncCast	Technology	One of the fastest-growing providers of digital media technology content delivery solutions	n/a	n/a	Contract supplying IP Transit service to deliver music, movie, and gaming downloads quickly and reliably to end users	1/3/2007	Domestic	Retail
Level 3 Communications	Texas Education Telecommunications Network (TETN)	Education	Network dedicated to facilitating communications among educational entities throughout Texas, improving student performance and increasing efficiency of educational operations	n/a	Multi-year	Contract to be primary provider of network services, delivering high-speed IP and collocation services	12/22/2008	Domestic	Retail
Level 3 Communications	Iformata, LLC	Communications Services	Telepresence and video conferencing solutions provider	n/a	n/a	Expanded relationship with Iformata to become primary provider of IP services, delivering that company's high-bandwidth traffic via Internet protocol virtual private network (IP VPN) across a fully integrated multiprotocol label switching (MPLS) platform	12/17/2008	Domestic	Retail

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
Level 3 Communications	Group One Trading, LP	Financial	Nationwide proprietary options trading firm	n/a	Multi-year	Contract, extending existing relationship, to provide connectivity to major financial exchanges through additional Collocation, Private Line Services and Direct Internet Access services	12/3/2008	Domestic	Retail
Level 3 Communications	National Hockey League (NHL)	Sports	Professional sports league	n/a	n/a	Expansion of NHL's network services commitment with Level 3 to include content storage, caching and downloading, and high-definition (HD) video streaming	12/2/2008	Domestic	Retail
Level 3 Communications	Pando Networks	Technology	Pioneer of content delivery cloud services	n/a	n/a	Contract to provide a content delivery network (CDN) to support the delivery of rich media content for commercial customers	11/20/2008	Domestic	Retail
Level 3 Communications	The Quilt	Education	Coalition of regional network organizations representing many of the country's most highly respected institutions in the field of research and education	n/a	Multi-year	Renewed contract giving Quilt members access to one of the largest and most connected Tier 1 Internet backbones in North America and Europe	10/30/2008	Global	Retail
Level 3 Communications	Bostwick Laboratories	Healthcare	Full-service laboratory specializing in uropathology	n/a	Multi-year	Renewed and expanded contract whereby Level 3 will deliver dedicated internet access (DIA), Voice over Internet Protocol (VoIP) and enhanced network services (ENS) to connect locations in Arizona, Florida, New York, Tennessee and Virginia	9/23/2008	Domestic	Retail
Level 3 Communications	Cbeyond	Communications Services	IP-based, managed services provider to small businesses	n/a	n/a	Contract to expand Ethernet services into three additional markets	8/26/2008	Domestic	Wholesale
Level 3 Communications	Shriners Hospitals for Children	Healthcare	International health care system of 22 hospitals dedicated to improving the lives of children by providing specialty pediatric care, innovative research and outstanding teaching programs	n/a	Multi-year	Contract to deliver a virtual private network with direct connections to several Shriners Hospitals and data center sites, and providing full mesh connectivity	8/14/2008	Domestic	Retail
Level 3 Communications	Sueddeutsche Zeitung	Media	One of Germany's leading national newspapers	n/a	n/a	Contract to deliver caching and download services to support ongoing demand growth at http://www.sueddeutsche.de/	8/7/2008	Global	Retail
Level 3 Communications	Vixxi Solutions, Inc.	Communications Services	Nationwide, Internet-enabled Enhanced 911 (E-911) solutions provider	n/a	n/a	Extended relationship with Vixxi to support that company's network connectivity to E-911 private and dedicated infrastructures	8/6/2008	Domestic	Wholesale
Level 3 Communications	Funcom	Technology	Leading independent developer and publisher of computer and console games	n/a	n/a	Contract to deliver origin storage, caching and download services for the Age of Conan Hyborian Adventures online game launch and ongoing content patching	7/21/2008	Domestic	Retail
Level 3 Communications	Adobe	Technology	One of the world's largest and most diversified software companies	n/a	n/a	Expanded strategic collaboration with Adobe and is deploying Adobe Flash Media Server 3 across Level 3's content delivery infrastructure	4/21/2008	Domestic	Retail

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Level 3 Communications	National Hockey League (NHL)	Sports	Professional sports league	n/a	Multi-year	Contract to support the NHL's video, high-speed Internet Protocol (HSIP) and content delivery services needs	2/27/2008	Domestic	Retail
Level 3 Communications	Spill Group	Services / Other	One of the world's leading generators of online gaming traffic	n/a	Multi-year	Contract to provide high-speed Internet access and collocation services to manage increased gaming traffic	2/13/2008	Global	Retail
Level 3 Communications	Crackle, Inc.	Media	A Sony Pictures Entertainment Company and multi-platform next-generation video entertainment network	n/a	Multi-year	Contract to provide Crackle underlying network solutions including High Speed Internet Access via multiple 10 Gigabits per second (GigE) ports and collocation services	12/12/2007	Domestic	Retail
Level 3 Communications	U.S. General Services Administration	Government	Federal agency responsible for a centralized delivery system of multiple products and services to the federal government	n/a	4+	Level 3 subsidiary awarded Washington Interagency Telecommunications System (WITS 3), contract by the U.S. General Services Administration (GSA) to provide communications services for all federal agencies and other authorized users in the Washington, D.C., metropolitan area	11/9/2007	Domestic	Retail
Level 3 Communications	Jangl	Communications Services	Service allowing consumers to exchange text messages, phone calls and voicemail without sharing real phone numbers	n/a	Multi-year	Contract to provide local inbound, voice termination, international voice termination, toll free, and High Speed IP (HSIP) services	10/30/2007	Domestic	Retail
Level 3 Communications	SipStorm	Communications Services	Wholesale provider of converged applications and services centered on VoIP, mobility, and enhanced network services	n/a	n/a	Contract to use Level 3's voice services to enable nationwide wholesale mobile phone service and fixed mobile convergence (FMC) services	10/30/2007	Domestic	Wholesale
Level 3 Communications	Leap Wireless International, Inc.	Communications Services	Leading provider of wireless communications services	n/a	n/a	Deployed core network backbone services, including intercity private line, voice termination and collocation services for Leap Wireless International, Inc.	7/31/2007	Domestic	Wholesale
Level 3 Communications	Joost	Services / Other	Service allowing users to watch videos – music, TV, movies and more – over the Internet	n/a	n/a	Contract to provide Joost with network solutions including high speed Internet access and collocation services in North America and Europe	7/24/2007	Global	Retail
Level 3 Communications	Library of Congress / National Audio Visual Conservation Center (NAVCC)	Government	NAVCC supports the preservation and digitization of the national copyright collection of films, television, radio, and recorded sound	n/a	Multi-year	Contract to maintain the connectivity that extends the Library's Dense Wavelength Division Multiplexing (DWDM) network and deliver fiber optic links and underlying infrastructure to the National Audio Visual Conservation Center (NAVCC)	6/11/2007	Domestic	Retail

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Level 3 Communications	Ben Franklin Technology Partners as fiscal agent for the Wall Street West initiative	Financial	Wall Street West is a Federal and Pennsylvania-funded initiative to provide back-up systems to New York City's financial institutions and designed to attract financial services firms to northeastern Pennsylvania	n/a	n/a	Contract to construct a diverse fiber optic network from New York City to Northeastern Pennsylvania	6/7/2007	Domestic	Retail
Level 3 Communications	Jupiter Hosting, Inc.	Communications Services	Leading managed hosting company	n/a	Multi-year	Contract to upgrade Internet access service to multiple 10 Gigabit Ethernet (10 GigE) circuits	5/31/2007	Domestic	Wholesale
Level 3 Communications	U.S. General Services Administration	Government	Federal agency responsible for a centralized delivery system of multiple products and services to the federal government	n/a	10	Awarded a Network Enterprise contract by the U.S. General Services Administration (GSA) allowing Level 3 to bid on business issued by 135 government agencies and managed under the GSA's Network Enterprise program	5/31/2007	Domestic	Retail
Level 3 Communications	Linden Lab	Technology	Creators of Second Life, a rapidly growing 3D virtual world	n/a	n/a	Contract to provide High Speed Internet Access and Wavelengths via two 10 gigabits per second (GigE) ports, connecting Second Life's data centers in San Francisco and Dallas	5/2/2007	Domestic	Retail
Level 3 Communications	Lavallife Corp.	Services / Other	Leading provider of products and services designed for singles	n/a	n/a	Deployed an innovative, first-of-its-kind combination of services, Voice over Internet Protocol (VoIP) solution for Lavallife Corp.	3/20/2007	Domestic	Wholesale
Level 3 Communications	NBC Universal	Media	One of the world's leading media and entertainment companies in the development, production, and marketing of entertainment, news, and information to a global audience	n/a	Multi-year	Contract for Level 3 subsidiary, Vyxx, to be NBC's exclusive provider of NFL backhaul, a primary provider of NHL backhaul and enable NBC to receive feeds from all other Sunday games for highlights on the NBC Sunday pregame program	1/4/2007	Domestic	Retail
PAETEC	Conner Strong	Insurance	Major insurance and employee benefits brokerage	n/a	n/a	Contract to deploy a virtual information technology (IT) infrastructure consisting of a 10-site network deployment for data and voice communications, geographically diverse data-center collocations, and customer premises equipment	10/23/2008	Domestic	Retail
PAETEC	RE/MAX International, Inc.	Real Estate	Company overseeing network of real-estate agents worldwide	n/a	n/a	Partnership to help RE/MAX offices across the country enhance their business operations by using advanced communications technology for data, Internet, voice, and IP-based (Internet Protocol) services	8/4/2008	Domestic	Retail
PAETEC	New York State Office of General Services	Government	State agency providing a broad spectrum of services to other state agencies, local governments, and the public	n/a	10	Comprehensive Telecommunications Services will allow PAETEC to offer advanced communications solutions to more than 6,800 municipal, city, and state agencies, educational institutions, and not-for-profit organizations throughout the state	11/7/2007	Domestic	Retail

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Rapid Link	Cobb County School District	Education	School district for Cobb County, Georgia	n/a	3	Contract to provide internet access to the Cobb County School District	11/18/2008	Domestic	Retail
Rapid Link	The Wallace Community Services District	Services / Other	Provider of domestic water and sewer services, road and street light maintenance and repair and recreational facilities in Wallace Lake Estates and surrounding areas	n/a	Multi-year	Agreement to offer high speed wireless broadband internet access within Calaveras County	1/18/2008	Domestic	Retail
RCN Metro Optical Networks	Pine Tree Networks	Communications Services	Provider of telephone and Internet services to homes, businesses, and service providers throughout New England	n/a	n/a	Expanded relationship with Pine Tree to provide additional Virtual Private Network (VPN) bandwidth	12/8/2008	Domestic	Wholesale
RCN Metro Optical Networks	UZAP	Communications Services	Virtual marketplace and community that connects buyers and sellers via a revolutionary online platform that combines the best search and safety features of auction websites with the precise, localized targeting of interactive classified websites on a global scale	n/a	n/a	Contract to provide UZAP with high speed Internet access and collocation space for a Web 2.0 social marketplace	12/4/2008	Domestic	Retail
RCN Metro Optical Networks	Securities Industry Automation Corporation (SIAC)	Financial	Subsidiary of the New York Stock Exchange and provider of technical services	n/a	Multi-year	Renewed a multi-year contract to upgrade and manage portions of the SFTI (Secure Financial Transaction Infrastructure) network; RCN will provide a portion of the SFTI backbone that handles distribution of critically important exchange trading and market data	3/10/2008	Domestic	Retail
Sprint	Safelite AutoGlass	Automotive	Leading provider of vehicle glass repair and replacement services	Multi-million	2	Renewed contract to provide mobile and IP-based solutions and act as Safelite's primary partner for its national rollout of a custom mobile BlackBerry solution to more than 3,000 service technicians.	12/16/2008	Domestic	Retail
Sprint	Vanderbilt University and Medical Center	Education	Leader in patient care, medical education, nursing education, and research	n/a	n/a	Upgrade to the existing system, including additional network coverage on both the Nationwide Sprint Network and the Nextel National Network covering eight buildings on campus, an area of 3.8 million square feet	9/3/2008	Domestic	Retail
Sprint	KPN International	Communications Services	Leading European provider of next-generation telecommunications services	n/a	n/a	Partnership agreement allowing KPN International's network in Europe and locations in North America to be seamlessly interconnected with Sprint's IP network	2/26/2008	Global	Wholesale
Sprint	Outsource Partners International	Financial	Leading professional services firm that is solely dedicated to finance and accounting outsourcing	n/a	n/a	Agreements for a variety of communications services through Sprint Global MPLS VPN such as secure data connectivity and Voice over IP (VoIP) between all corporate locations and to provide video backhaul services for clients	8/2/2007	Domestic	Retail

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Sprint	Graebel Companies	Services / Other	World's largest privately-held relocation company specializing in residential and commercial relocation services	n/a	n/a	Graebel has deployed Sprint's Multiprotocol Label Switching Virtual Private Network (MPLS VPN) technology in over 70 locations throughout the U.S.	7/11/2007	Domestic	Retail
Sprint	Turner Construction Company	Construction	A leading company in the construction industry	n/a	n/a	Expanded relationship to deploy an IP-based wide area network (WAN), IP Voice Connect, managed network services and mobility solutions from Sprint at locations across the United States	6/26/2007	Domestic	Retail
Sprint	Air National Guard	Military	Division of the U.S. National Guard	n/a	n/a	Contract under Sprint's GSA FTS 2001 Bridge contract, to provide a 100-site MPLS on Peerless IP network services to support peacetime and wartime missions	6/4/2007	Domestic	Retail
Sprint	U.S. General Services Administration	Government	Federal agency responsible for a centralized delivery system of multiple products and services to the federal government	Up to \$20 Billion	10	Awarded Network Enterprise contract to provide powerful communications services, including a Tier-1 IP backbone with IPv6 services, integrated wireline and wireless managed services, robust wireless networks, and innovative voice products	5/31/2007	Domestic	Retail
Sprint	NTT Communications Corporation	Communications Services	Provider of high-quality voice, data and IP services to customers around the world	n/a	n/a	Expanded collaboration to complement Sprint Global MPLS capabilities in the Asia-Pacific region by interconnecting the two companies' global data networks	5/21/2007	Global	Wholesale
Sprint	Beja Broadband, LLC	Communications Services	Owns and operates broadband cable systems serving thousands of residential and commercial business customers in the West	n/a	n/a	Sprint will offer residential and commercial telephony solutions for Baja Broadband homes in Utah, Nevada, New Mexico and Colorado	5/7/2007	Domestic	Wholesale
Sprint	Millennium Digital Media	Communications Services	Broadband services company that provides telecommunications services including voice, video and data to residential and commercial customers in Maryland, Michigan, Washington and Oregon	n/a	n/a	Sprint will provide residential and commercial telephony solutions for Millennium Digital Media markets in Washington, Oregon and Michigan covering 184,000 households passed	5/7/2007	Domestic	Wholesale
Sprint	Antietam Cable	Communications Services	Company providing cable television and high-speed Internet services to residents and businesses in Washington County, Md.	n/a	n/a	Sprint provides residential telephony solutions for Antietam reaching approximately 52,000 households in Maryland	5/7/2007	Domestic	Wholesale
Sprint	MTC Cable	Communications Services	Provider of cable television and high-speed Internet service to New York residences	n/a	n/a	Sprint provides residential telephony solutions for MTC Cable, reaching 5,000 households in New York	5/7/2007	Domestic	Wholesale
Sprint	Orange Business Services	Communications Services	Orange is the key brand of France Telecom, one of the world's leading telecommunications operators	n/a	n/a	Enhancement of long-standing partnership by increasing the overall breadth of services to include IP/MPLS capabilities in additional areas worldwide, notably throughout Europe and Asia	5/7/2007	Global	Wholesale

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
tw telecom	Amerex Brokers LLC	Energy	Amerex provides energy brokerage services for electricity, natural gas, emission credits and allowances, renewable energy credits and retail energy procurement	n/a	n/a	Successful installation of a private, four-node network delivering Ethernet, Internet and local and long distance services for Amerex Brokers LLC of Houston	12/10/2008	Domestic	Retail
tw telecom	Wright-Patterson Air Force Base	Government	One of the nation's largest Air Force Bases and home to the 88th Air Base Wing and Air Force Materiel Command	n/a	5	Contract to deliver advanced voice services to Wright-Patterson Air Force Base in Dayton	11/21/2008	Domestic	Retail
tw telecom	Ascantium Corporation	Advertising	One of the nation's leading digital marketing and advertising agencies	n/a	n/a	Successful installation of a six-site IP VPN and other telecommunications services	10/15/2008	Domestic	Retail
tw telecom	Louisiana Optical Network Initiative (LONI)	Communications Services	Initiative for a state-of-the-art, fiber optics network that runs throughout Louisiana	n/a	n/a	Deployment of a dedicated 600 Megabit Ethernet connection to the Louisiana Optical Network Initiative (LONI). LONI will deploy and manage tw telecom's Internet solution to connect Louisiana's 12 major research universities in order to greatly improve collaboration on research projects and deliver results faster, with greater accuracy	10/2/2008	Domestic	Wholesale
tw telecom	Pacific Plumbing Supply Company of Seattle	Manufacturing	Distributor of wholesale plumbing supplies to retail and commercial customers in the states of Washington, Hawaii and Alaska	n/a	n/a	Completed successful installation of a 14-site IP VPN service	8/26/2008	Domestic	Retail
tw telecom	Virtual Radiologic Corp.	Technology	Leading national provider of teleradiology services	\$3,200,000	Multi-year	Completed \$3.2 million, multi-year installation of telecommunications solutions for Virtual Radiologic Corp.	8/21/2008	Domestic	Retail
tw telecom	Peak 10	Communications Services	Leading independent data center operator	n/a	n/a	Expansion of a master services agreement that enables tw telecom to deliver its industry-leading Ethernet Services portfolio to Peak 10's Cincinnati data center	7/23/2008	Domestic	Wholesale
tw telecom	The Oregon Clinic	Healthcare	Provider of critical medical services	n/a	n/a	Successful installation of Metro Ethernet connectivity to West Hills Gastroenterology and West Side Surgical facilities in West Portland	5/22/2008	Domestic	Retail
tw telecom	Douglas County School District	Education	School district for Douglas County, Colorado	\$2,500,000	2	Contract to provide a comprehensive set of communications and network services	5/9/2008	Domestic	Retail
tw telecom	Cable One	Communications Services	Operator of cable systems that serves approximately 720,000 customers in 19 states with cable television, telephone and high-speed Internet service	\$2,500,000	Multi-year	Contract to serve as the primary backbone Internet network provider by Cable One for its Boise system	4/21/2008	Domestic	Wholesale

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tw telecom	American Payroll Association	Not-for-profit	Leading association serving the interests and professional development needs of over 23,000 payroll professionals across the United States	n/a	Multi-year	Contract to provide a five-site IP VPN service in Las Vegas, as well as company headquarters in San Antonio, Texas and three additional U.S. locations	4/8/2008	Domestic	Retail
tw telecom	CooperVision	Manufacturing	Worldwide leader in the manufacture of contact lenses including toric astigmatism correction lenses and multifocal lenses	n/a	Multi-year	Contract to deploy an eight-site IP VPN solution to CooperVision, Inc. of Fairport, New York	3/18/2008	Domestic	Retail
tw telecom	Rallinc	Technology	Largest North American supplier of real-time transportation data to the railroad industry	n/a	Multi-year	Contract to provide metro Ethernet, Multi-Site IP VPN, Ethernet Internet and advanced voice services to Rallinc of Cary, N.C.	2/6/2008	Domestic	Retail
tw telecom	University of Kentucky in Lexington	Education	Kentucky's only comprehensive, land-grant research university	n/a	n/a	Successful installation of Ethernet Internet Service (EIS) to the University of Kentucky in Lexington	11/28/2007	Domestic	Retail
tw telecom	State of New York	Government	New York State Government	n/a	10	Comprehensive telecommunications services contract to deliver advanced communications solutions to state, municipal and city governments, higher education institutions, and not-for-profit organizations throughout the state	10/29/2007	Domestic	Retail
tw telecom	Lewis and Roca LLP	Legal	Full-service corporate law firm serving local, regional and national clients from locations in Arizona, New Mexico and Nevada	n/a	n/a	Successful installation of a 7-site IP VPN, a 100 Mbps Ethernet connection and voice services	8/9/2007	Domestic	Retail
tw telecom	Burnett Staffing Solutions	Services / Other	BSS provides a full line of staffing solutions supporting accounting, financial, administrative engineering, human resources, information technology and legal support throughout Texas	n/a	n/a	Successful installation of a fully converged voice and data network	8/6/2007	Domestic	Retail
tw telecom	The Oregon Clinic	Healthcare	Multi-specialty medical practice with locations throughout the metropolitan Portland area	\$1,100,000	5	Successful installation of a broad-based Metro Ethernet network	7/30/2007	Domestic	Retail
tw telecom	National Corporate Research (NCR)	Legal	Provider of corporate regulatory document-filing search and retrieval services	n/a	n/a	Successful installation of an 8-site IP-based Virtual Private Network (IP VPN)	7/16/2007	Domestic	Retail
tw telecom	NCI Building Systems Inc.	Manufacturing	Largest integrated provider of pre-engineered metal building systems, components and metal coating applications in the United States	\$3,000,000	n/a	Successful installation of a 63-site Internet Protocol-based Virtual Private Network (IP VPN) and voice services solution	5/30/2007	Domestic	Retail

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tw telecom	Skybus Airlines	Transportation	Low-fare airline	n/a	Multi-year	Contract to deliver a comprehensive suite of communication solutions including Metro Ethernet, an IP-based Virtual Private Network (IP VPN), Ethernet Internet services (EIS) and voice and data services	5/23/2007	Domestic	Retail
tw telecom	Huff Realty	Real Estate	Real estate service company	n/a	Multi-year	Agreement to deliver an 11-site IP-based Virtual Private Network (IP VPN), Ethernet Internet services (EIS) and voice services	5/21/2007	Domestic	Retail
tw telecom	Inland Northwest Bank of Spokane	Financial	Community bank serving Spokane, WA and surrounding areas	n/a	n/a	Successful installation of a 10-site MPLS-based IP VPN service	2/28/2007	Domestic	Retail
tw telecom	San Joaquin Valley College	Education	Accredited private junior college with multiple campuses throughout California	n/a	n/a	Successful installation of an IP-based Virtual Private Network (IP VPN) and Ethernet Internet services	2/19/2007	Domestic	Retail
tw telecom	ACT Pipe and Supply of Houston	Manufacturing	Largest independently-owned waterworks and fire protection distributor in Texas	n/a	n/a	Successful installation of a 14-site IP VPN and Ethernet Internet services	2/15/2007	Domestic	Retail
tw telecom	Piedmont Hematology and Oncology Associates	Healthcare	Provider of diagnostics and treatment for blood and cancer patients	n/a	n/a	Successful deployment of IP VPN and Ethernet Internet Services (EIS)	2/6/2007	Domestic	Retail
tw telecom	Orange County, California	Government	One of the nation's largest counties	\$1,200,000	Multi-year	Multi-vendor contract to deliver Metro Ethernet	2/5/2007	Domestic	Retail
XO Communications	WOW! Internet, Cable & Phone	Communications Services	MSO and competitive local exchange carrier	n/a	n/a	Contract to provide high-speed, low-latency Gigabit Ethernet IP Transit Circuits and voice termination services in major metropolitan markets across the Midwestern United States	12/2/2008	Domestic	Wholesale
XO Communications	America First Credit Union	Financial	One of the largest credit unions in the U.S. in terms of total membership and assets	n/a	3	Agreement to provide network services	11/20/2008	Domestic	Retail
XO Communications	T-Systems	Communications Services	Owner and operator of one of the world's largest MPLS-based telecommunications networks	n/a	n/a	Agreement to deliver a market-based aggregation solution in six U.S. markets that will expand T-Systems' presence, while improving its existing access circuit efficiency	10/29/2008	Domestic	Wholesale
XO Communications	RideNow Powersports	Retail	Largest powersport dealership group in the U.S.	n/a	n/a	Successfully delivered a nationwide IP-based wide area networking solution	10/13/2008	Domestic	Retail
XO Communications	University of Memphis	Education	Major research university	n/a	n/a	Provide scalable, high-capacity Ethernet services	8/26/2008	Domestic	Retail
XO Communications	Utah Education Network	Not-for-profit	Not-for-profit consortium of higher and public education, libraries, state government and businesses	n/a	3	Agreement to provide high-speed dedicated Internet access and metro private line services	7/31/2008	Domestic	Retail

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
XO Communications	Fidelity Access	Communications Services	Provider of digital broadband IP services	n/a	n/a	Agreement to use XO's High-Speed IP Transit Service to serve the growing client bandwidth needs	7/21/2008	Domestic	Wholesale
XO Communications	HOK Sport Venue Event	Architecture	Leading architecture firm	n/a	n/a	Successfully delivered a nationwide IP-based wide area networking solution	7/8/2008	Domestic	Retail
XO Communications	The Quilt	Education	Leading coalition of advanced regional network organizations representing more than 200 universities and thousands of other educational institutions across the United States	n/a	n/a	Selected as an authorized network services provider: Quilt members now have access to XO's High-Speed IP Transit and Network Service at highly competitive rates	6/30/2008	Domestic	Retail
XO Communications	Smith Seckman Reid	Engineering	Leading national engineering design and facility consulting firm	n/a	n/a	Selected to provide a nationwide IP-based wide area networking solution	5/14/2008	Domestic	Retail
XO Communications	Berlin Packaging	Manufacturing	North America's premier stocking supplier of glass, plastic and metal containers and closures to various markets including the chemical, automotive, food and personal care industries	n/a	n/a	Selected to provide a converged IP voice and data wide area networking solution	5/5/2008	Domestic	Retail
XO Communications	BandCon	Communications Services	Network provider for large content Web sites	Multi-million	Multi-year	Agreement to provide high-capacity network transport services	4/22/2008	Domestic	Retail
XO Communications	Tech Data Corporation	Communications Services	Leading IT products distributor	n/a	n/a	Strategic partnership to offer technology resellers advanced IP services and solutions for small and medium-sized businesses	12/17/2007	Domestic	Retail
XO Communications	Wine.com	Retail	Online wine retailer	n/a	n/a	Delivered a nationwide MPLS-enabled wide area networking solution for Wine.com	8/28/2007	Domestic	Retail
XO Communications	J.D. Garber Furniture	Retail	Operator of home furnishings stores under the Lane Home Furnishings and D&D Home Furnishings brands across the greater Philadelphia, southern New Jersey and Wilmington, Delaware metro area	n/a	n/a	Completion of a 13-site MPLS-based IP-VPN solution	8/20/2007	Domestic	Retail
XO Communications	Progression, LLC, dba GameRail	Communications services	Nation's first and leading network operator dedicated to delivering superior performance to the online gaming community	n/a	n/a	Agreement to provide network services in support of the rapid expansion of GameRail's high-capacity gaming network	7/9/2007	Domestic	Retail
XO Communications	China Netcom (USA) Operations Ltd.	Communications Services	China's leading broadband and telecommunications company and a leading international data communications operator for multinational business customers	n/a	Multi-year	Agreement to provide high capacity network services across the United States	5/21/2007	Domestic	Wholesale

Competitive Provider	Company	Industry	Detailed Description	Value	Contract Duration (Years)	Other/Comments	Release Date	Domestic/Global	Wholesale/Retail
XO Communications	NTT America	Communications Services	Wholly-owned U.S. subsidiary of NTT Communications Corporation	n/a	n/a	Agreement to provide multiple 10 Gigabit (Gbps) wavelength circuits to NTT America connecting regional and coast-to-coast locations across the United States	5/21/2007	Domestic	Wholesale
XO Communications	PCCW Global	Communications Services	A business unit of PCCW Limited, the largest and most comprehensive provider of communications services in Hong Kong and one of Asia's leading players in information and communications technologies	n/a	Multi-year	Agreement to provide multiple wavelength circuits to PCCW Global, supplementing existing connectivity across PCCW Global's network in the United States	5/14/2007	Domestic	Wholesale
XO Communications	Hatteras Networks	Communications Services	Mid-band Ethernet service specialists	Multi-million	n/a	XO Communications signed an agreement, standardizing on Hatteras' award-winning HN4000 and HN400 platforms as the exclusive Mid-band Ethernet (MBE) solution to be used in its network	4/18/2007	Domestic	Wholesale
XO Communications	Availius LLC	Communications Services	Subsidiary of FiberNet Telecom Group, Inc., a provider of complex interconnection services	n/a	n/a	Agreement to supply 2.5 Gbps long haul and metro private line services and other high-speed transport services in multiple markets across the United States	1/9/2007	Domestic	Wholesale
Zayo Group	T-Mobile USA, Inc.	Communications Services	U.S. operation of Deutsche Telekom AG's Mobile Communications Business, and a wholly owned subsidiary of T-Mobile International, one of the world's leading companies in mobile communications	n/a	n/a	Backhaul agreement to support high speed data bandwidth requirements covering the Philadelphia and Memphis metropolitan areas, and more than 450 unique sites	9/18/2008	Domestic	Wholesale
Zayo Group	Core180	Communications Services	Leading telecommunications network integrator	n/a	n/a	Contract with Core180 to help further expand Core's proprietary last-mile platform into the Northeastern portion of the U.S.	4/9/2008	Domestic	Wholesale

Appendix C – Additional Sources

Tables

Table 1 – Overview of Cable’s Commercial Services

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Figures

Figure 2 – Average Number of Known Competitive Fiber Providers in Top 50 MSAs

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