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December 1, 2004 ***EX PARTE***

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
Room TW-A325
445 12th Street, SW
Washington, DC 20554

Re: CC Docket No. 01-338, WC Docket No. 04-313

Dear Ms. Dortch:

This letter is written on behalf of Time Warner Telecom, Inc. ("TWTC") for the purpose of submitting the attached declaration of Graham Taylor and Charles Boto ("*Taylor-Boto Declaration*" attached as Exhibit A[1]) for inclusion in the above-referenced proceeding. In their declaration, Messrs. Taylor and Boto describe the extent to which TWTC and other competitors have constructed loop facilities to commercial buildings and the methodology TWTC uses to identify buildings to which it might be able to construct loop facilities in the future. The information supplied in the Taylor-Boto Declaration has the following implications for the loop impairment analysis.

First, the Taylor-Boto Declaration confirms that competitors are impaired in the absence of unbundled DS1s as well as single DS3s. As Messrs. Taylor and Boto explain, TWTC can only justify the construction of loop facilities to a building where it can earn at least **[proprietary begin] [proprietary end]** per year in Tier 1 markets and at least **[proprietary begin] [proprietary end]** per year in Tier 2 markets.[2] *See id.* at 5. The record demonstrates that competitors cannot hope to earn this much revenue from even multiple DS1-level customers in a building.[3] As TWTC expands its entry into the small and medium-sized business market, a growing number of its customers purchase services that utilize DS1-level connectivity. Largely because of the relatively limited revenue

[1] Citations provided herein to the *Taylor-Boto Declaration* refer to the non-redacted version of that document.

[2] Taylor and Boto define Tier 1 markets as those urban areas with population in excess of two million people and Tier 2 markets as those urban areas with populations between 500,000 and two million. *See Taylor-Boto Declaration* at 4.

[3] CLECs have explained that they can earn between $500 and $700 per month (or between $6,000 and $8,400 per year) from a customer that orders a single DS1. *See* Nuvox Comments, WC Dkt. Nos. 04-313 *et al.,* at 3 (filed Oct. 4, 2004); *ex parte* presentation of Cbeyond, WC Dkt. Nos. 04-313 *et al.,* at 3 (filed Sept. 8, 2004). This means that, even in Tier 2 markets, a CLEC would need to win between seven and nine DS1-level customers to come within the range of revenue needed to construct a fiber lateral. This is so unlikely to occur that the Commission need not account for this scenario in an impairment test.

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opportunities associated with services that rely on DS1-level connectivity, TWTC must rely on incumbent LEC loop facilities in 75 percent of its customer locations.[4] Notably, of the customers TWTC serves via ILEC DS1 loop facilities, approximately **[proprietary begin] [proprietary end]** percent are served by a single DS1 loop. *See Taylor-Boto Declaration* at 3.

It is also clear that, where TWTC must rely on incumbent LEC facilities, other competitors also have not been able to build loop facilities to these locations. For example, Taylor and Boto examined the extent of competitive entry in two Tier 1 markets. Of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]**, approximately **[proprietary begin] [proprietary end]** are served by competitive LECs using *either* resold incumbent LEC loops or the competitors' own loop facilities. Only approximately **[proprietary begin] [proprietary end]** of the commercial buildings in that market **[proprietary begin] [proprietary end]** are served by two or more carriers using their own fiber loop facilities. Of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin [proprietary end]**, approximately **[proprietary begin] [proprietary end]** are served by competitors using *either* resold incumbent LEC loops or the competitors' own loop facilities. Only approximately **[proprietary begin] [proprietary end]** of the commercial buildings **[proprietary begin] [proprietary end]** in that market are served by two or more carriers using their own fiber loop facilities. *See id*. at 10-11.

TWTC collected this data as part of its effort to identify buildings served by competitive alternatives to incumbent LEC loops. The data demonstrate that competitors serve only a tiny minority of commercial buildings (even with resold incumbent LEC loops) and that (assuming that buildings with more than one fiber loop account for most buildings to which competitors have constructed loops) competitors have constructed loops to an even smaller percentage of commercial buildings. Moreover, the record in this proceeding demonstrates that most of the loops constructed by competitors are for the purpose of serving customer locations with very large telecommunications demand (multiple DS3s).[5] The Taylor-Boto declaration therefore provides further support for the conclusion that competitors are impaired without access to unbundled DS1 and DS3 loops.

Nor is it reasonable to conclude that competitors will be able to construct loops to a significant percentage of buildings in the future. According to Messrs. Taylor and Boto, in the four Tier 1 and four Tier 2 markets studied, the sum of (1) the buildings to which TWTC has already constructed loop facilities and (2) those buildings to which it might theoretically be able to construct loop facilities in

[4] The 25 percent of locations where TWTC serves customers over its own facilities represents 70 percent of TWTC's revenues. This demonstrates that TWTC generally builds loops only to locations where it can earn extremely high revenues.

[5] *See ex parte* presentation of MiCRA *et al.,* WC Dkt. Nos. 04-313 *et al.,* at 5 (filed Oct. 18, 2004) (citing CLEC filings for the proposition that "KMC will not build laterals unless a customer purchases at least 3 DS3s…XO will not construct laterals unless combined customer demand in a building reaches at least 3 DS3s…Xpedius requires a bare minimum of 3 DS3s in customer demand before constructing laterals…For buildings over 500 feet from its fiber ring, ATI requires that a customer order OC-3 service before building…Echelon and SNiPLink report that it is never economic to self deploy loops to their bases of DS1 service customers.") (internal citations omitted).

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the future[6] amounts to no more than between **[proprietary begin] [proprietary end]** percent of the total commercial buildings in the market in question. *See Taylor-Boto* Declaration at 8.

Second, any impairment test applied to DS3 loops should eliminate incumbent LEC unbundling obligations for such facilities only in those customer locations where multiple competitors already provide DS3-level service over their own loop facilities. In other words, any loop impairment test must be based on actual, not potential, competition. This is because building access problems and customers' refusal to tolerate disruption associated with loop construction vary significantly from one location to another. Such location-specific variations undermine attempts to make generalizations about the level of the relevant entry barriers.[7]

For example, Taylor and Boto estimate that the inability to obtain building access on reasonable terms and conditions causes TWTC to forego loop construction to **[proprietary begin] [proprietary end]** percent of the buildings that otherwise meet its criteria for loop construction. *See id.* at 9-10. Furthermore, TWTC often does not obtain access to all customers located in buildings for which it has obtained some sort of workable building access. This is true both for buildings for which TWTC has obtained building access without signing a contract with the building owner defining the terms under which it obtains access and for buildings for which TWTC has signed such an agreement. Messrs. Taylor and Boto explain that TWTC has signed access agreements for approximately **[proprietary begin] [proprietary end]** percent of the buildings to which it has constructed loops. They state that in fully **[proprietary begin] [proprietary end]** percent of the buildings in which TWTC operates pursuant to a building access contract, TWTC has had to settle for collocation arrangements in the area leased by TWTC's customer rather than establishing a point of presence in a common area in the building. Taylor and Boto estimate that the percentage of collocation arrangements is **[proprietary begin] [proprietary end]** in buildings for which TWTC has not signed an access contract. *See id.* at 10. TWTC's experience in this regard is by no means anomalous. AT&T estimates that it is restricted to collocation arrangements in **[proprietary begin] [proprietary end]** of its **[proprietary begin] [proprietary end]** on-net buildings.[8] To serve other customers in those buildings, AT&T had to purchase ILEC special access **[proprietary begin] [proprietary end]** of the time. *Id.* Sprint has provided similar evidence in this proceeding.[9]

Collocation arrangements place significant constraints on TWTC's ability to serve other customers within a building. In some cases where it serves a customer via a collocation arrangement,

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[6] Of course, the relevant entry barriers (discussed below) would, in the real world, prevent TWTC from constructing loops to some of the buildings that would otherwise meet TWTC's theoretical revenue threshold for loop construction.

[7] It is also important to point out that the large amount of inefficient construction of fiber loops by the many companies that have been forced into bankruptcy demonstrates that it is unreasonable to rely on past loop construction for predictive judgments regarding efficient loop construction.

[8] *See* Declaration of Anthony Fea and Anthony Giovannuci ¶ 44, attached as ex. D to Comments of AT&T Corp., WC Dkt. Nos. 04-313 *et al.,* (filed Oct. 4, 2004).

[9] *See* Reply Comments of Sprint, WC Dkt. No. 04-313 *et al.,* at 29 (filed Oct. 19, 2004) (stating that the "vast majority" of CLEC loops did not have "sufficient reach" within a building to serve as an option for Sprint to serve customers in that building).

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it is simply impossible for TWTC to serve other customers within the same building. This is the case where the landlord refuses to allow TWTC access to the in-building facilities needed to extend fiber to reach other customers or where the first customer refuses to allow TWTC to use collocated equipment to serve additional customers in the same building. Even under the best of circumstances, collocation arrangements make it more expensive for TWTC to serve additional customers in a building than is the case where TWTC has a point of presence in a common area within a building. Higher costs can only be covered by higher revenues. Accordingly, TWTC can only extend collocated fiber to serve additional customers in the building if such customers offer especially large revenue opportunities. Exactly where additional customers can be served in buildings with collocations must be determined on a building-by-building basis, rendering predictions about where competition is "possible" unreliable at best. It is clear therefore that the Commission should adopt an impairment test for multiple DS3 loops that eliminates unbundling only in those circumstances in which competitors have actually constructed such loop facilities.

Third, if the Commission feels compelled to adopt an impairment test for identifying customer locations or buildings to which competitors have not constructed loops but to which they could do so in the future (which it should not), the Commission should at least anchor the analysis in the methodology competitors actually use to identify buildings to which they could potentially construct loops. In their Declaration, Messrs. Taylor and Boto explain that TWTC identifies potential targets for loop construction by comparing the costs of loop construction in a particular building with the potential telecommunications revenues associated with the building as estimated by GeoResults, the same consulting firm that the incumbents have used as the basis for much of the data they have supplied in this proceeding.[10] Messrs. Taylor and Boto estimate that loop construction is economic for buildings that generate **[proprietary begin] [proprietary end]** per year in revenue in Tier 1 markets and **[proprietary begin] [proprietary end]** per year in revenue in Tier 2 markets, and they assume that, on average, TWTC could potentially win a maximum of **[proprietary begin] [proprietary end]** percent of the total telecommunications revenues associated with a particular building. *See Taylor-Boto Declaration* at 5-6. Accordingly, Taylor and Boto conclude that (putting aside the entry barriers associated with building access and other issues that can prevent loop construction) TWTC can potentially build fiber loops to any building with an aggregate potential telecommunications revenue of $450,000 in Tier 1 markets and $275,000 in Tier 2 markets**.** *See id.* at 6.

The Commission could reasonably use these thresholds as the basis for an impairment test for DS3 loops. Under this approach, no competitor would be able to lease more than a single unbundled DS3 loop in any building meeting the relevant aggregate revenue threshold in Tier 1 and 2 cities.[11] This approach is more reasonable than the alternatives for DS3 loop impairment currently under consideration. Those alternatives rely on (1) the number of business access lines in the incumbent LEC wire center in which a building is located, (2) the fact that a competitor has been able to construct a loop to a nearby building or (3) the fact that a competitor has collocated at the incumbent LEC wire

[10] *See e.g.,* Verizon ex. 1 at 13, attached to Verizon *ex parte* letter, CC Dkt. Nos. 01-338 *et al.,* (filed Jul. 2, 2004) (explaining that Verizon relied upon GeoResults to determine the extent to which CLECs had deployed fiber loops).

[11] As a backstop, the Commission would probably also need to eliminate unbundling of multiple DS3 loops in locations that do not meet the aggregate revenue thresholds discussed herein but in which there have nevertheless been adequate levels of actual entry in the provision of DS3 loops.

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center serving a particular building as the means of identifying buildings to which loop construction is possible in the future. As Taylor and Boto explain, these criteria are simply irrelevant to real-world decisions as to where loop construction is possible:

> TWTC does not use these criteria, and we have no basis for thinking that it would be a reasonable business practice to do so. As explained, TWTC assesses the feasibility of loop construction on a building-by-building basis for each building that is located within a reasonable distance (**[proprietary begin] [proprietary end]** feet on average) from its transport network. The fact that a particular building is located near (1) other businesses, (2) a building to which TWTC has constructed loop facilities or (3) a TWTC collocation means only that TWTC's transport network may be within a reasonable distance of the building. These factors do not, however, indicate that it is economic for TWTC to construct a loop to the building. Only the revenue opportunities associated with a building indicate that the revenue associated with loop construction could exceed the relevant costs. Any impairment test for potential loop construction should therefore be based on this criterion.

See id. at 12-13. Furthermore, at least one incumbent, SBC, has supported this type of methodology for identifying buildings for which competitors are unimpaired for high-capacity loops. In several *Triennial Review Order* state implementation proceedings, SBC argued that loop impairment should be determined based on the aggregate telecommunications revenues in a building as estimated in a study by Cambridge Strategic Management Group.[12] In that context, SBC assumed that a competitor could win 100 percent of the revenues associated with a particular building, an assumption that, as Taylor and Boto explain, is unreasonable. Nevertheless, in all other respects, the SBC proposal is very similar to the one proposed by TWTC. Moreover, while the Cambridge Study reached different conclusions than TWTC regarding the telecommunications revenues needed to justify loop construction in **[proprietary begin] [proprietary end]**, the Cambridge Study reached strikingly similar conclusions with regard to **[proprietary begin] [proprietary end]**. Moreover, the Cambridge Strategic Management Group and TWTC included most of the same cost categories in their analyses.[13] Furthermore, while TWTC has been unable to provide an analysis of Tier 3 markets[14], Cambridge Strategic Management Group did analyze several such markets. Based on that analysis, the Commission could adopt $275,000 as the total revenue threshold to determine DS3 loop impairment in Tier 3 cities as well as Tier 2 markets.[15]

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[12] *See e.g.,* attachment RLS-18, appended to direct testimony of Rebecca L. Sparks, SBC Texas, Public Utility Commission of Texas Dkt. No. 28745 (filed Jan. 27, 2004) ("*Cambridge Study*"). A copy of the *Cambridge Study* and the relevant pages from a representative state filing are attached hereto as Exhibit B.

[13] *Compare Cambridge Study* at 3 (asserting that "total costs" include 1) fiber, fiber conduit and installation costs; 2) permitting costs; 3) customer premises electronics; 4) incremental existing network costs; and 5) "billing expense," "bad debt expense" and "LD Operating Costs") *with* Taylor-Boto Declaration at 3-4 (discussing how costs include 1) the cost of fiber installation; 2) ongoing and one-time license fees and franchises; 3) initial and ongoing costs of CPE; 4) costs of incremental additions to network facilities; and 5) ongoing expenses associated with LD operations, billing and bad debt.).

[14] Tier 3 markets are defined by TWTC as having a population of between 50,000 and 499,000.

[15] **[Proprietary begin] [Proprietary end]** TWTC rounded that number up to $275,000 for simplicity.

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Finally, it is important to point out that the test proposed herein would be simple to administer. The GeoResults data regarding aggregate telecommunications revenue per building are widely used in the industry, and are available for all the markets that should be relevant to the impairment analysis. A periodic review of the data (which are updated regularly) would identify buildings for which multiple DS3s are available, thus making administration of the test straightforward.

Pursuant to Section 1.1206(b) of the Commission's rules, 47 C.F.R. § 1.1206(b), one electronic copy of this notice is being filed in each of the above-referenced proceedings.

Sincerely,

/s/
Thomas Jones

cc: Tom Navin
Jeremy Miller
Cathy Zima
Russ Hanser
Tim Stelzig
Carol Simpson
Gail Cohen
Ian Dillner
Chris Cantor
Chris Killion

Exhibit A

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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
	)	
Unbundled Access to Network Elements	)	WC Docket No. 04-313
	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	CC Docket No. 01-338

DECLARATION OF GRAHAM TAYLOR AND CHARLES M. BOTO ON BEHALF OF TIME WARNER TELECOM, INC.

I am Graham Taylor, Senior Vice President for Marketing at Time Warner Telecom ("TWTC"). I have over 25 years of telecommunications industry experience in marketing, sales, corporate development, management and operations. I spent 13 years specifically in the local network services competitive environment with TCG, AT&T Local, LOGIX and TWTC. I was responsible for the build out of many of TCG's networks and markets.

I am Charles M.. Boto, President of the Real Estate Group at TWTC. I have been with TWTC since 1998 and am responsible for all real estate and building access issues in all TWTC markets. I have completed well over 2,800 building access transactions for the company. From 1994 to 1998, I was the National Director, Real Estate for Metropolitan Fiber Systems (now MCI) and my responsibilities included negotiating over 2,000 access agreements for entry into commercial office buildings in over 65 cities across the country. Prior to joining MFS, I held a senior position with Corporate Real Estate Advisors in Washington, D.C., providing real estate services to corporate clients. I have over 25 years experience in all facets of the real estate industry, including real estate brokerage, development and construction.

The purpose of this declaration is to (1) describe TWTC's business and network generally; (2) describe the analysis TWTC undertakes to determine whether it is possible to construct fiber loop facilities to serve a particular end user location and describe a model for identifying buildings in particular markets that would theoretically meet TWTC's criteria for loop construction; (3) describe the real-world impediments TWTC faces in deploying loop facilities to buildings that would otherwise meet its criteria for loop construction, and the extent to which those impediments have actually limited TWTC's ability to serve all of the customers in a building or prevented TWTC from constructing loop facilities altogether to a building; (4) describe the extent to which other CLECs have constructed loop facilities connecting buildings to which TWTC has not constructed loop facilities; and (5) discuss the appropriate impairment standard for high-capacity loops.

1. TWTC's Business And Network

TWTC was established in 1993. It is a leading provider of local and regional optical networks and broadband services to business customers in 22 states and 44 metropolitan areas around the country. TWTC is collocated in more than 300 ILEC central offices around the country and has installed 52 switches. TWTC has invested nearly $2.3 billion in its network and has deployed over 19,000 route miles of fiber, of which over 12,000 route miles have been deployed in local metro networks.

It is in TWTC's interest to build its own facilities whenever possible. When TWTC provides service over its own facilities, it is able to control the service end-to-end and provide a more reliable customer experience. TWTC also possesses greater flexibility to design innovative new offerings when providing service over its own facilities, because, in such cases, it is not constrained by another carrier's choice of technology or network design.

Unfortunately, there are many locations where TWTC is unable to achieve the revenue and return on investment required to deploy its own loop facilities. Overall, only approximately 25 percent of the customer locations served by TWTC are served entirely by TWTC's own loops. Where TWTC has not built its own loops, it must rely on incumbent LEC loops. Of the customer locations for which TWTC must rely on ILEC loops, **[proprietary begin] [proprietary end]** percent are served by ILEC DS1 facilities and **[proprietary begin] [proprietary end]** percent are served by ILEC DS3 facilities. Of the customers TWTC serves via ILEC DS1 loop facilities, approximately **[proprietary begin] [proprietary end]** percent are served by a single DS1 loop, **[proprietary begin] [proprietary end]** percent by two DS1 loops, **[proprietary begin] [proprietary end]** percent by three DS1 loops, **[proprietary begin] [proprietary end]** percent by four DS1 loops, and **[proprietary begin] [proprietary end]** are served by five or more DS1 loops.

2. Build-Lease Analysis

In the geographic markets in which it operates, TWTC generally deploys fiber SONET ring transport facilities. TWTC constructs such facilities in the parts of downtown metropolitan areas and office parks in which the largest business customers are concentrated.

TWTC's SONET rings are built into some especially large commercial buildings as part of the original construction of those buildings. But in most cases, TWTC must construct a stand-alone fiber lateral (*i.e.*, loop) facility to a building in which it seeks to serve a particular business customer on its own network. TWTC considers a range of different factors when determining whether it is cost-effective to construct fiber loop facilities to a particular end user customer. For example, TWTC considers the proximity of a customer to a splice point on TWTC's SONET ring. This is because loop construction is distance-sensitive, and the further a customer location is from a splice point on TWTC's network, the more expensive the loop facility is likely to be.

TWTC also considers the revenue it can earn by serving customers in a particular building. It is important to emphasize that, even when the revenue associated with a building is significant enough to justify loop construction, problems caused by issues such as the need to obtain building access and access to rights-of-way (discussed in the following section) can prevent TWTC from constructing loop facilities. Absent such problems, however, and assuming that a business customer is within an average of **[proprietary begin] [proprietary end]** of a splice point on TWTC's network, constructing loop facilities and deploying electronics needed to "light" a building costs TWTC, on average, approximately **[proprietary begin] [proprietary end]** per building in Tier 1 markets and **[proprietary begin] [proprietary end]** in Tier 2 markets. Specifically, these average totals are the sum of costs associated with (1) fiber installation (including the cost of the fiber itself, the cost of installing fiber, and the cost of access to conduit and construction of conduit where necessary); (2) costs associated with one-time and ongoing licenses, fees and franchises; (3) the initial and ongoing costs of customer premises equipment (including the equipment itself, labor costs and initial building entrance fees); (4) the cost of incremental additions to existing network facilities (including a splice box on the TWTC SONET ring and ATM or ADM ports that must added); and (5) other ongoing expenses such as costs associated with long distance operations, billing and bad debt. TWTC defines Tier 1 markets as those urban areas with populations in excess of two million people and Tier 2 markets as those urban areas with populations between 500,000 and two million. The average cost of lighting a building is higher in Tier 1 markets than in Tier 2 markets because larger markets have a greater concentration of streets and buildings, which makes trenching and street repair more costly and time-consuming.

To justify loop construction, TWTC must be able to earn sufficient revenue from end user customers to both cover its construction costs, ongoing expenses and achieve a reasonable rate of return. Of course, the number of customers needed to recover the costs of loop construction depends on the aggregate volume of service demanded by the customers in question. Moreover, TWTC incurs different costs to provide different types of service and customers' willingness to commit to longer-term contracts varies (smaller and medium-sized business customers typically commit to two-year agreements and larger customers are more likely to commit to three-year agreements). Variations such as these affect the build-lease analysis. Nevertheless, TWTC has found that, as a general matter, it can justify construction of loop facilities for a building that generates on average (1) approximately **[proprietary begin] [proprietary end]** per year in revenue from multi-year customer contracts in Tier 1 markets, and (2) approximately **[proprietary begin] [proprietary end]** per year in revenue from multi-year customer contracts in Tier 2 markets.

In light of these revenue targets, TWTC conducted a study to determine the number of buildings to which it would be possible to construct loop facilities in four of TWTC's Tier 1 markets **[proprietary begin] [proprietary end]** and four of TWTC's Tier 2 markets **[proprietary begin] [proprietary end]**. As part of its analysis, TWTC assumed that it could potentially win on average **[proprietary begin] [proprietary end]** percent of the revenue associated with a particular commercial building. This is a reasonable average outer limit assumption for a building because many commercial customers have made long-term service commitments to the incumbents that essentially prevent TWTC from competing for such customers for the foreseeable future. Moreover, no competitor can expect to win all, or even a majority, of the customers from a powerful entrenched incumbent with strong brand-name

recognition and established customer relationships. Furthermore, TWTC usually wins less than **[proprietary begin] [proprietary end]** percent of the revenues associated with multi-tenant buildings but often wins more than **[proprietary begin] [proprietary end]** percent of the revenues associated with owner occupied buildings. The **[proprietary begin] [proprietary end]** percent estimate represents an average of these two contexts since TWTC serves customers in both multi-tenant and owner occupied buildings.

Given that TWTC assumes that it can win on average a maximum of **[proprietary begin] [proprietary end]** percent of the telecommunications service revenues associated with a particular building and that TWTC must earn **[proprietary begin] [proprietary end]** per year in Tier 1 markets and **[proprietary begin] [proprietary end]** per year in Tier 2 markets to make loop construction profitable, it follows that TWTC could only potentially construct fiber loops to those buildings with a total of (1) 450,000 in Tier 1 markets and (2) 275,000 in Tier 2 markets per year in telecommunications revenue.

In order to identify the buildings that meet these telecommunications revenue thresholds, TWTC used data regarding revenue potential for commercial buildings provided by GeoResults. GeoResults estimates telecommunications revenues in each commercial building in large urban markets across the country. To estimate telecommunications revenues, GeoResults studies the size and type as well as other profiling characteristics of businesses in a particular building and estimates normal bandwidth needs for such businesses. GeoResults then assigns an average dollar amount to the volume and type of telecommunications services likely to be demanded by the businesses in a building to produce a total telecommunications spend amount for a particular commercial building. Using the GeoResults data, TWTC found that, of the buildings to which TWTC has not constructed fiber loop facilities, the number of buildings that meet the minimum

telecommunications revenue thresholds described above are as follows: **[proprietary begin] [proprietary end]**. When combined with the **[proprietary begin] [proprietary end]** to which TWTC has constructed fiber loops, the total number of buildings to which TWTC has or (assuming the barriers to entry discussed below do not prevent construction) could in theory build loops is **[proprietary begin] [proprietary end]**. These totals represent **[proprietary begin] [proprietary end]** of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** percent of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]**. The Table below summarizes the results discussed above. **[proprietary begin]**

[proprietary end]

Furthermore, the potential fiber construction analysis described herein is subject to the critical qualification that TWTC cannot construct loops to any building unless and until customers within a particular building have actually committed to purchasing services with adequate revenue to meet TWTC's criteria for loop construction. Without careful focus on ensuring that it can recover the costs of loop construction on a building-by-building basis,

TWTC cannot be assured that it will have the financial stability to remain a competitive alternative to the ILECs and to grow. This explains why, even in markets like the eight discussed herein where TWTC has self-deployed its own transport network, there remains a very large segment of customers within buildings that, in theory, meet TWTC's criteria for loop construction to which TWTC cannot yet afford to construct loop facilities.

3. Impediments That Prevent TWTC From Constructing Loop Facilities Where Construction Would Otherwise Be Justified Under TWTC's Build/Buy Analysis.

Even if the business case based on committed customer revenues and proximity to TWTC's network justifies self-deployment, there are three types of entry barriers that can prevent construction completely or delay construction to such an extent that customers are unable or unwilling to wait for the service and have no choice but to purchase service from the ILEC, or from a CLEC that relies on ILEC transmission facilities.

First, TWTC must secure access to rights-of-way ("ROW") from the municipality for the path from TWTC's existing network to the building it wishes to serve. Access to ROW is sometimes denied altogether because of municipal access moratoria or because there is no room in ducts and conduits running along public ROW. Municipalities also sometimes require that carriers wait and coordinate street digging, thereby causing additional delays. Other communities mandate that part of TWTC's network actually be assigned for use by the municipality as a condition of doing business. Municipalities also often impose significant charges for obtaining access to public ROW.

Second, TWTC must obtain access to buildings on reasonable terms and conditions. Sometimes landlords refuse to permit TWTC to obtain access under any terms and conditions to serve customers within their buildings. Other times, landlords require that TWTC pay unreasonable fees. TWTC does not keep detailed records of the number of buildings that qualify

for loop construction based on committed revenues where such construction is rendered impossible because of problems associated with obtaining building access. Nevertheless, based on our experience, we estimate that between **[proprietary begin] [proprietary end]** percent of the buildings to which TWTC would construct fiber loops are deemed ineligible for fiber builds because of building access problems. Moreover, many building owners only grant TWTC access to a single customer within a building. TWTC has had to accept such "collocation" arrangements in **[proprietary begin] [proprietary end]** percent of the buildings in which it has signed building access contracts with the building owner. Overall, TWTC has signed building access contracts with the building owners in approximately **[proprietary begin] [proprietary end]** percent of the buildings to which it has constructed fiber loops. TWTC does not keep detailed records regarding the percent of buildings for which it has not signed building access agreement with the building owner in which TWTC has had to accept a collocation arrangement. Based on our experience, we estimate that **[proprietary begin] [proprietary end]** of such buildings have collocation arrangements than is the case with the buildings for which TWTC has signed building access contracts.

Third, many end user customers will not tolerate the delay and disruption associated with constructing new loop facilities. Many customers decide they are unwilling to wait for even the normal delay associated with loop construction. Many others decide they will not tolerate extra delays that arise due to unforeseen circumstances. TWTC does not keep detailed records regarding customers that refuse service over TWTC loop facilities because of delays associated with loop construction, and it is unfortunately not possible to estimate the percentage of buildings in which this factor has prevented loop construction.

4. The Extent To Which Other Competitors Have Constructed Loop Facilities Serving Commercial Buildings.

In those locations in which TWTC has not been able to construct its own transmission facilities, it must rely on other carriers' facilities to serve end user customers. For example, using GeoResults data, we conclude that, of the **[proprietary begin] [proprietary end]** commercial buildings in **[proprietary begin] [proprietary end]** are served by CLECs using *either* resold incumbent LEC loops or the competitors' own loop facilities. In addition, again using GeoResults data, we conclude that **[proprietary begin] [proprietary end]** of the commercial buildings in **[proprietary begin] [proprietary end]** are served by two or more carriers using their own fiber loop facilities. In **[proprietary begin] [proprietary end]** using GeoResults data, we conclude that, of the **[proprietary begin] [proprietary end]** commercial buildings, **[proprietary begin] [proprietary end]** are served by CLECs using *either* resold incumbent LEC loops or the competitors' own loop facilities. In addition, using GeoResults data, we conclude that **[proprietary begin] [proprietary end]** of the commercial buildings in **[proprietary begin] [proprietary end]** are served by two or more carriers using their own fiber loop facilities.

5. Impairment Standard

We understand that the FCC is considering adopting a standard for determining the circumstances in which competition is "possible" (*i.e.*, where competitors are "impaired") without access to unbundled incumbent LEC DS1 and DS3 loops. As mentioned, TWTC cannot justify constructing loop facilities unless customers in a particular building have actually committed to the minimum revenue thresholds needed to make loop construction economic. Accordingly, the Commission could only reliably conclude that competition is possible in those customer locations where competitors such as TWTC have actually constructed loops and are

offering service at the relevant capacity level. The entry barriers we describe above vary enough from one location to another and from one moment in time to another that predictions as to which customer locations TWTC can construct loops in the future are likely to be unreliable.

It is important to point out, however, that the entry barriers to fiber loop construction are generally quite similar regardless of the capacity of the service offered over the fiber and that, generally speaking, the higher the capacity of service TWTC sells to a customer, the greater the revenue it earns. Some of the relevant entry barriers (such as higher building access costs) that would make loop construction uneconomic at lower levels of connectivity can in some cases be overcome where a customer demands a higher level of connectivity and thus offers TWTC greater revenue opportunities. Accordingly, while any effort to identify buildings to which competitors could build fiber loops in the future is likely to be fraught with inaccuracy, the FCC could reduce the inaccuracy of an "impairment" test that eliminates incumbent LEC unbundling obligations at customer locations not currently served by competitors' fiber if such a test applied only to loops of higher levels of connectivity.

Any such test must, however, be based on the criteria that competitors such as TWTC actually use to identify buildings as potential targets for loop construction. We understand that it has been suggested that the FCC could rely on (1) the number of business access lines in the incumbent LEC wire center in which a building is located, (2) the fact that a competitor has been able to construct a loop to a nearby building or (3) the fact that a competitor has collocated at the incumbent LEC wire center serving a particular building as a means of identifying buildings to which loop construction is possible in the future. TWTC does not use these criteria, and we have no basis for thinking that it would be a reasonable business practice to do so. As explained, TWTC assesses the feasibility of loop construction on a building-by-building basis for each

REDACTED--FOR PUBLIC INSPECTION

building that is located within a reasonable distance **[proprietary begin] [proprietary end]** from its transport network. The fact that a particular building is located near (1) other businesses, (2) a building to which TWTC has constructed loop facilities or (3) a TWTC collocation means only that TWTC's transport network may be within a reasonable distance of the building. These factors do not, however, indicate that it is economic for TWTC to construct a loop to the building. Only the revenue opportunities associated with a building indicate that the revenue associated with loop construction could exceed the relevant costs. Any impairment test for potential construction of loops that deliver very high levels of connectivity should therefore be based on this criterion.

I declare under penalty of perjury that the forgoing is true and correct.

Graham Taylor

Executed on 11 · 30 · 04

I declare under penalty of perjury that the forgoing is true and correct.

Charles M. Boto

Executed on 11/30/04

Exhibit B

SBC
January 27, 2004

TABLE OF CONTENTS

DOCKET NO. 28745

IMPAIRMENT ANALYSIS OF ENTERPRISE MARKET LOOP FACILITIES	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

SOUTHWESTERN BELL TELEPHONE L.P. D/B/A SBC TEXAS
DIRECT TESTIMONY OF REBECCA L. SPARKS

[redacted]

40

TABLE OF CONTENTS

(CONT'D)

Q. HOW DID SBC TEXAS DETERMINE WHETHER THE COMPETING PROVIDER "HAS ACCESS TO THE ENTIRE CUSTOMER LOCATION, INCLUDING EACH INDIVIDUAL UNIT WITHIN THAT LOCATION"?

A. Some of the competing providers on Attachment RLS-10 (principally [redacted]) have affirmatively identified the buildings where they have access to all units at a location and satisfy this aspect of the wholesale trigger analysis. Another carrier, [redacted], identified the buildings for which it has access to the "riser cables" giving it access to each unit. Generally, carriers have indicated in their responses that they have not been denied building access, and Attachment RLS-10 does not include any locations for which a carrier affirmatively stated that it does not have access to the entire building.

Q. HOW DID SBC TEXAS VERIFY THAT THE COMPETING PROVIDERS OFFER DS-1 OR DS-3 CAPACITY?

A. Several providers affirmatively stated that they offer loops at the DS-3 level. In addition, as I noted above, fiber facilities have more than sufficient capacity to provide multiple DS-3 and DS-1 loops simultaneously.

III.
ANALYSIS OF POTENTIAL DEPLOYMENT

Q. PLEASE DESCRIBE THE FCC'S IMPAIRMENT ANALYSIS FOR HIGH-CAPACITY LOOPS AT LOCATIONS WHERE NEITHER THE SELF-PROVISIONING OR WHOLESALE TRIGGERS APPEARS TO BE MET.

A. For those locations where neither trigger is satisfied, the FCC's rules require the state commission to examine "other evidence" (including "evidence of alternative loop deployment at that location" along with other operational factors) to determine whether requesting carriers are impaired without access to unbundled DS-3 or dark fiber loops at that location. (47 C.F.R. § 51.319(a)(5)(ii), (a)(6)(ii)).

These criteria are addressed in more detail below and in the testimony of Mr. Ramatowski and Mr. Nutt.

Q. HOW IS EVIDENCE OF ACTUAL DEPLOYMENT RELEVANT?

A. A primary reason that the FCC gave for making a provisional "finding" of impairment (subject to the more granular analysis at the state level) was "sunk cost." (TRO ¶ 303.[3]) The FCC's view was that a carrier would not want to make the initial investment to deploy a high-capacity loop facility unless it had a reasonable expectation that it would earn the necessary revenue to recover that cost. But if a competitor has already deployed loop facilities at or near a location, then all or most of the "sunk cost" of deployment has already been incurred and no longer poses a hurdle to providing service. Further, evidence of actual fiber facilities at or near a location means that at least one carrier has already thoroughly evaluated the pertinent economic and engineering considerations, and made a business decision to invest in the placement of its own facilities. For these reasons, FCC Rule 51.319(a)(5)(ii) and (a)(6)(ii) lists "evidence of alternative loop deployment" as the very first factor for state commissions to consider in assessing potential deployment.

In addition, the existence of *nearby* competitor-deployed loop facilities (including competitive carrier-owned nodes, hubs, POPs and carrier hotels) is also relevant to the economics of installing new loops, and specifically to the "cost of underground or aerial laying of fiber," one of the factors a state is to consider under the FCC Rule. The closer the competitor's existing fiber facilities

are to existing business locations, the less expensive (and more economic) it is to extend the fiber a few hundred feet (*i.e.*, the distance of a short city block) further into the building. As a simplified analogy, one can think of competitive fiber facilities as streets, and loops as the "driveways" that lead from the street into each building location. Clearly, it is much cheaper to put in a new driveway if the building is within 300 feet of the street than it is if the building is a mile from the street.

Q. HOW DID SBC TEXAS APPROACH THE POTENTIAL DEPLOYMENT ANALYSIS?

A. SBC Texas took a tightly focused approach. As I describe in more detail below, SBC Texas took several steps to narrow the "universe" of enterprise customer locations to a much smaller set of locations where the operational considerations are uniform among locations. First, we looked at only 13 of the many wire centers in the state—six in the Dallas/Fort Worth area, three in the Houston area, one in San Antonio and three in Austin.[4] Next, SBC Texas focused only on those locations that are within 300 feet of a competing carrier's existing fiber facilities. Third, the review was limited to business and government locations. Then those locations with an annual estimated "spend" on telecommunications services of at least $50,000 were selected, to focus on locations that are most likely to warrant high-capacity loops. In fact, the average telecom spend for these locations was more in the range of $250,000 annually. Attachments RLS-11 through RLS-14

[3] The FCC explained that optronics are not considered sunk costs, because they can be moved from one location to another if the provider no longer serves a particular location. (Id. ¶ 313 n.922).

[4] SBC Texas does not waive any of its rights to pursue other wire centers and areas for potential deployment of high capacity loops in a future proceeding.

illustrate the geographic areas from which SBC Texas selected specific customer locations for review; Attachment RLS-15 is a list of the 994 specific customer locations selected.

From there, an experienced network engineering expert, Mr. Nutt, applied the various factors described by the FCC (such as engineering, underground or aerial placement of fiber, and installation) to determine whether competing carriers are not impaired without access to unbundled high-capacity loops at these specific locations. That analysis is described in the separate direct testimony of Mr. Nutt. Mr. Ramatowski discusses costs relative to the potential deployment analysis.

Q. DID YOU PROVIDE MR. NUTT WITH THE COST INPUTS THAT HE UTILIZED?

A. No, that information was provided by Mr. Ramatowski, as discussed in his direct testimony.

A. Geographic Scope of Analysis

Q. PLEASE DESCRIBE FURTHER THE STEPS SBC TOOK TO FOCUS THE GEOGRAPHIC SCOPE OF THE ANALYSIS.

A. First, we selected a limited geographic area and excluded the rest of the state. We focused on areas with high customer density, a significant number of large "enterprise" locations that would warrant high-capacity loops, and evidence of competitive entry—the hallmarks of potential deployment. In these locations in particular, there has been competitive entry by several different providers: in Dallas/ Fort Worth, for example, there are 8 different providers that have already deployed several loops.

Within those wire centers, we narrowed our view again to those locations that are within 300-foot "corridors" of existing competitive fiber. Carriers that plan to deploy high-capacity loops first lay fiber down a city street as a backbone or "base" from which they can more easily extend a short lateral to serve selected customer locations along that street. Locations within these corridors present a simple analysis of potential deployment, in that competing providers have already made a decision to deploy and have already done much of the physical "ground work" to deploy fiber facilities as well.

Q. COULD YOU ILLUSTRATE THE LOCATIONS SBC TEXAS REVIEWED?

A. Yes. Attachments RLS-11 through RLS-15 contain maps that show those specific customer locations, and the 300-foot "corridors" in which they are situated. To illustrate, Attachment RLS-11 contains a series of maps covering the Dallas/Fort Worth wire centers. The first map shows the alternate provider fiber facilities in the Dallas Addison wire center in red, along with customer locations that are already served by one or more competing provider, as confirmed by discovery (depicted as green and blue triangles). The second map highlights the 300-foot corridors surrounding the alternate providers' fiber facilities. The following maps provide the same information for the Melrose, Riverside, Ross, and Taylor wire centers, along with the Fort Worth Edison wire center. As with the first map, many customer locations within those corridors are already served by at least one competing provider, and these are shown again as green and blue triangles. Customer locations that SBC Texas selected for review that are not already served by a competing provider (or at least where the information available to SBC Texas thus far has not revealed a competing

provider) are shown as diamonds. The first map shows alternative provider fiber facilities in the wire center, and several fiber "lit" buildings (as confirmed by discovery). The second map shows that all of those fiber lit buildings, and other enterprise building locations, fall within 300 feet of an alternate provider fiber facility.

Attachment RLS-12 contains similar maps for the three Houston wire centers selected, while Attachments RLS-13 and RLS-14 cover San Antonio and Austin. The locations selected by SBC Texas for review that already have fiber loops deployed by one competing provider appear in representative form on the maps as blue triangles. The remaining locations appear as diamonds. The specific addresses (along with the identities of the competing providers identified to date) for these locations are identified on Attachment RLS-15. For reference, locations that satisfy the "triggers" based on the deployment of loops by two or more competing providers are also shown, as green triangles, separate and apart from the "potential deployment" locations.

Q. WHY IS SBC TEXAS' TARGETED APPROACH CONSERVATIVE?

A. First, as shown on the maps at Attachments RLS-11 through RLS-15, several carriers have already placed a significant amount of the infrastructure and backbone of their networks. In order to add traffic to their networks, these carriers actively seek to serve new enterprise customers and building locations. As discussed in Mr. Nutt's testimony, it is feasible for these carriers to extend their facilities a few hundred feet further to serve the enterprise customer location, at a relatively low cost. In fact, some of these locations already have fiber loops provided by one of several different competing providers. Further, as

I discussed above, several locations in these wire centers are served by *more* than one competing provider, and are included in SBC Texas' analysis of the triggers (*See* Attachment RLS-6).

Second, because SBC Texas' analysis is limited to locations within selected competitive fiber corridors that are narrowly defined (roughly equivalent to a short city block on each side of the existing competitive fiber), the local economic, engineering, and topographical factors which the FCC considers relevant are largely homogeneous for all locations within the corridors. For example, if an enterprise building is within 300 feet (about 1/17 of a mile) of a competing carrier's existing fiber facilities, it is highly unlikely that there would be a large hill or river in between the two that would prevent potential deployment. The fact that multiple carriers have already deployed fiber loops to numerous customer locations within the same 300-foot "corridors" provides further evidence that there is no "impairment" for potential deployment to enterprise locations within those corridors. Further, SBC Texas excluded those locations with estimated telecommunications spending under $50,000 per year, as I describe further below.

Q. WHAT DATA DID SBC TEXAS USE TO ESTABLISH THE LOCATION OF EXISTING FIBER FACILITIES AND LIT BUILDINGS?

A. For the location of lit buildings, SBC Texas obtained information in discovery as described in Section II. An independent third party, GeoTel, provided information regarding the location and layout of competing fiber networks. Competing carriers' web sites, which include details such as lists of cities served were also

reviewed. Finally, SBC Texas obtained additional information from competing carriers in discovery.

Q. WHO IS GEOTEL?

A. GeoTel, Inc. is a telecommunications research and geographic information systems mapping firm. It provides a variety of reports on telecommunications infrastructure to assist service providers in penetrating new markets and expanding existing markets, and to help fiber vendors sell or lease fiber to those service providers. It gathers information about business opportunities, product offerings, potential customers, and telecommunications markets throughout the country, and then it provides that information to clients that include major telecommunications providers, consultants, government agencies and universities.

Q. WHY DID SBC TEXAS RELY ON GEOTEL'S INFORMATION?

A. SBC Texas does not generally maintain detailed information on the facilities of its competitors. GeoTel is an established source of such information that the industry uses in the ordinary course of business, and GeoTel provides this information in an easy to use format.

Further, GeoTel has several sources that it uses to compile and verify information. First, GeoTel acquires information from fiber owners themselves: Some fiber owners provide the information to GeoTel so that GeoTel can help them locate buyers; others provide the information at GeoTel's request. Second, GeoTel has researchers go through large cities tracing fiber routes, by looking at fiber access manholes and using Global Positioning Systems to map the location of the fiber. Third, GeoTel searches public records, such as construction permits

and information from companies that lay trenches for fiber. Because GeoTel uses multiple sources to gather data, each serves as a cross-check on the others. Finally, approximately every six months, GeoTel repeats its methodology to keep its information accurate and up-to-date.

Q. PLEASE DESCRIBE THE GEOTEL-PROVIDED INFORMATION THAT SBC TEXAS USED?

A. GeoTel provided SBC Texas with a report showing the locations of fiber routes for several Texas metropolitan areas, and the identities of the applicable providers.

B. Selection of Specific Customer Locations

Q. WITHIN THE FIBER CORRIDORS SHOWN IN ATTACHMENTS RLS-11 THROUGH RLS-14, WHAT CUSTOMER LOCATIONS DID SBC TEXAS SELECT FOR FURTHER ANALYSIS OF POTENTIAL DEPLOYMENT?

A. The first step we took was to remove any residential locations that are within those corridors and focus on business and government locations. SBC Texas consulted a database provided by Dun & Bradstreet ("D&B"), which maintains a wealth of information about business and government entities and the geographic locations of their offices, right down to the building address.

Q. PLEASE DESCRIBE BRIEFLY DUN & BRADSTREET AND THE SERVICES IT PROVIDES.

A. D&B is a world leader in obtaining, maintaining, and analyzing data about business and government, for use in credit, marketing, and purchasing decisions worldwide. Its databases include more than 64 million businesses worldwide (including 13 million in the United States). Information provided by D&B is routinely used by businesses in the telecommunications industry in decision making.

Q. AFTER OBTAINING THE LIST OF BUSINESS AND GOVERNMENT ADDRESSES FROM D&B, DID SBC TEXAS NARROW FURTHER THE SCOPE OF LOCATIONS SELECTED FOR ANALYSIS?

A. Within the locations identified by D&B, we selected only those locations with an annual telecommunications "spend" of $50,000 or more, as identified by TNS Telecoms ("TNS"). This resulted in an overall set of approximately 994 customer locations selected for review. These are listed on Attachment RLS-15.

Q. PLEASE DESCRIBE TNS TELECOMS.

A. TNS Telecoms "(TNS") is the world's largest provider of telecommunications market information. It offers in-depth market intelligence on all aspects of the telecommunications market and its clients include the major worldwide providers of telecommunications services. It has a strategic alliance with Dun & Bradstreet, who I discussed above.

Q. HOW DOES TNS DETERMINE THE ANNUAL TELECOMMUNICATIONS "SPEND" OF A BUILDING?

A. TNS conducts random samples of businesses across the nation to determine how much they spend each year. Attachment RLS-16 is a TNS publication that describes its database. Using a model that it developed, TNS uses its samples to estimate the telecommunications spending characteristics of businesses based on size, location, industry, and other factors. TNS verifies its estimates by conducting 3,500 additional surveys each quarter. Further detail concerning TDS' methodology is set forth in Attachment RLS-17.

Q. HOW DID SBC TEXAS SELECT THE $50,000 FIGURE?

A. In determining whether to extend facilities into a building, a reasonable carrier will look at two revenue factors. First, it will consider the value of actual revenue it has under commitment from a customer or customers within the building. On a

DS-3 this revenue would ordinarily be in the form of fees for a suite of local, long distance and data services for a set term. However, this actual revenue tells only part of the story. The CLEC must also consider the potential revenue it can derive from those facilities in serving other customers, selling more services to existing customers, and continuing to provide services to the existing customer after the initial term agreement expires. The simple fact is that once fiber is brought into a building, the carrier has the ability to add additional services to that facility far exceeding a single DS-3.

SBC Texas selected the $50,000 figure as a benchmark to capture the actual and potential revenue figure that would represent a significant business opportunity for deploying facilities. In FCC Docket 96-98, the FCC's ongoing rulemaking to implement the 1996 Act, the United States Telecommunications Association submitted a study from the Cambridge Strategic Management Group ("Cambridge study") that analyzed the costs and other factors of extending an existing fiber network.[5] Attachment RLS-18. The results of that study showed that an annual revenue threshold in the range of $44,000 would, on average, be sufficient to recover the investment required to extend a CLEC SONET network 500 feet to an enterprise building. SBC Texas' selected figure is above the $44,000 average revenue threshold identified by the Cambridge study, and also above the results for all of the individual cities in that study.

[5] This study, the "CLEC Network Extension Model", was attached to the Reply Comments of the United States Telecom Association ("USTA") filed in FCC CC Docket No. 96-98 on April 30, 2001.

Q. DOES THE TNS ESTIMATE OF TELECOMMUNICATIONS SPENDING MEAN THAT A CLEC IS GUARANTEED $50,000 IN REVENUE (OR AT LEAST THE $44,000 REVENUE THRESHOLD ESTABLISHED BY THE CAMBRIDGE STUDY) SIMPLY BY EXTENDING ITS FIBER TO THE BUILDING?

A. There are no guarantees in business, and a carrier (whether ILEC or CLEC) is seldom, if ever, fully guaranteed that any individual network deployment will prove profitable. There are a number of factors that make the $50,000 figure reasonable for the purposes of SBC Texas' analysis here. First, most of the locations we selected have an annual estimated spend that is well above $50,000. In fact, the average for the selected locations is approximately $250,000. Further, once a carrier installs a fiber loop to serve one or more customers at a location, it can price aggressively to obtain more customers (and more revenue) in that location. Still, the revenue a carrier can gain is a complicated matter with many variables. But that is not the point of the $50,000 figure here. For present purposes, it does not matter whether the carrier will actually earn $50,000, or achieve the average revenue threshold of $44,000. If the carrier does not think that a particular building location (or a particular customer opportunity within that location) will "spend" enough on telecommunications service to warrant a DS-3, it does not need a DS-3 in the first place and would not be impaired without unbundled access to a DS-3 loop. By applying a spending criterion, SBC Texas is limiting the scope of its analysis to exclude small-revenue locations that are unlikely to demand a DS-3 in the first place. For that purpose, TNS provides a reasonable, objective estimate of revenue, and the Cambridge study provides a reasonable benchmark revenue threshold figure.

Q. PLEASE SUMMARIZE THE RESULTS OF SBC TEXAS' ANALYSIS?

A. Based on the "evidence of alternative loop deployment" set forth above, and based on the analysis of other engineering and cost considerations set forth in the testimony of Mr. Nutt and Mr. Ramatowski, testimony requesting carriers are not impaired without access to unbundled DS-3 and dark fiber loops at the 994 customer locations set forth in Attachment RLS-15.

IV.
CONCLUSION

Q. PLEASE SUMMARIZE THE CONCLUSIONS YOU HAVE REACHED.

A. As shown above, requesting carriers would not be impaired without unbundled DS-3 and dark fiber loops at the approximately 1,198 customer locations identified in Attachments RLS-6 and RLS-15 to my testimony, and they would not be impaired without unbundled access to DS-1 loops at the 110 customer locations identified in Attachment RLS-10 to my testimony.

Q. DO YOU AGREE THAT CLECS ARE IMPAIRED IN THE CUSTOMER LOCATIONS NOT ADDRESSED IN YOUR TESTIMONY?

A. No. First, much of the relevant information as to competitive high-capacity loop facilities does not reside with SBC Texas but with its competitors. It is certainly possible that the competitors will deploy additional loops (or identify additional loops that have already been deployed but not yet disclosed in discovery). Second, because of the time constraints in this proceeding SBC Texas has focused its potential deployment analysis on limited geographic areas. As conditions change and SBC Texas gathers additional evidence, SBC Texas may petition the Commission at a later date regarding additional customer locations.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

CSMG

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CLEC Network Extension Cost Model

Prepared for:

The Industry

Prepared by:

Cambridge Strategic Management Group

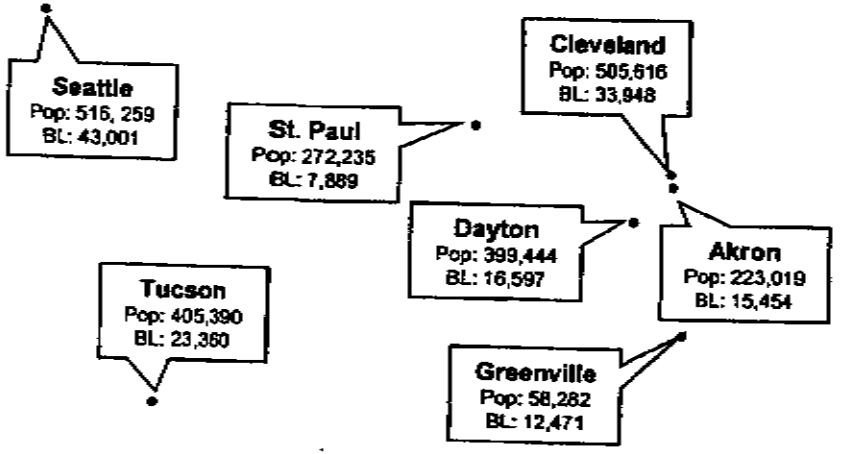
26 April 2001

Today's discussion

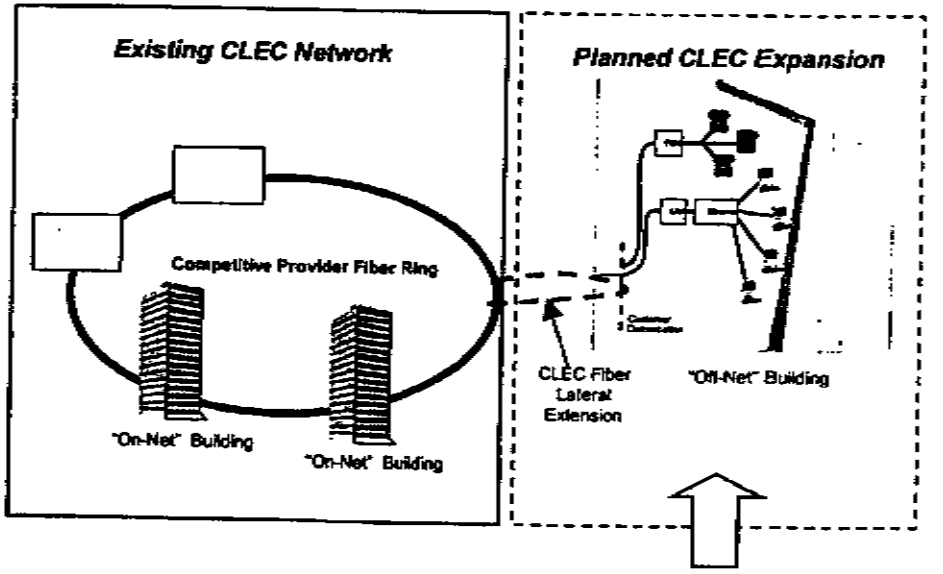
- Background & Introduction
- Current Results
- Model Architecture Design
- Assumptions and Sources

The Industry has asked CSMG and Criterion to determine the proportion of currently "off-net" buildings that can be profitably served by CLECs within a set of seven representative US cities…

Representative Cities
Population and Business Lines



Competitive Provider Network



Source: Criterion and CSMG Wirecenter Database

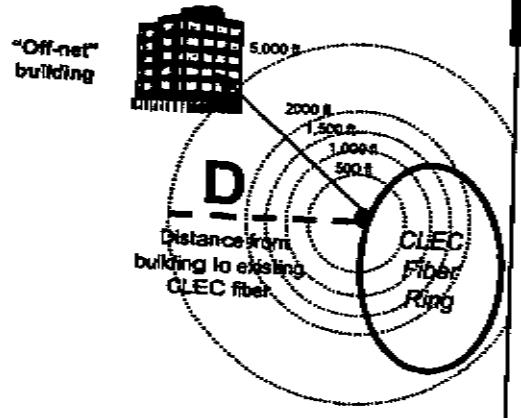
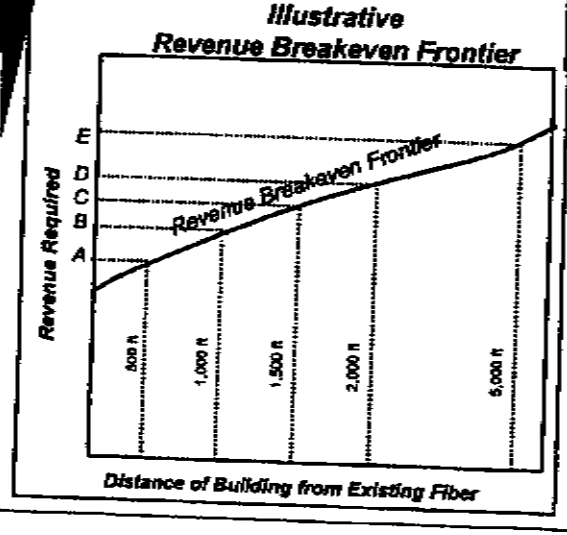
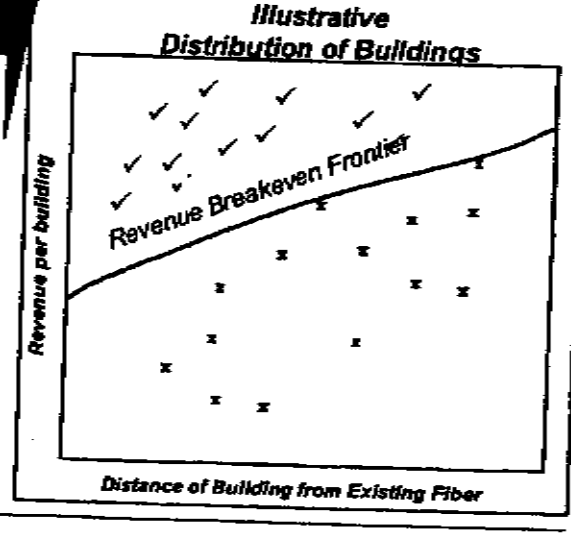
Tier 1 Cities	Tier 2 Cities	Tier 3 Cities
• Cleveland	• St. Paul	• Akron
• Seattle	• Tucson	• Dayton
		• Greenville

Build Considerations

- Distance
- Trenching & Labor Costs
- Fiber & Electronics Costs
- Addressable Voice & Data Revenue in Target Building

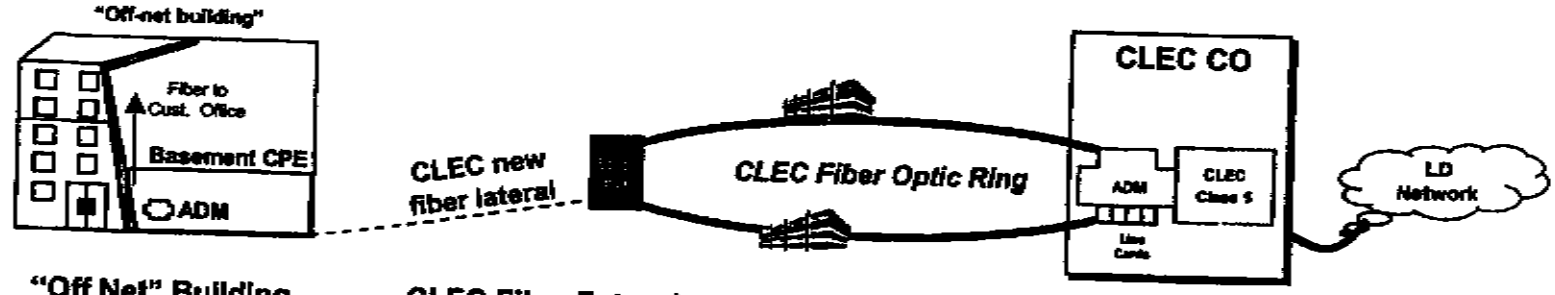
This analysis requires an understanding of both CLEC costs and revenues

This task has been split into the following three steps . . .

	1	2	3
	Estimate costs to extend network to additional building	Calculate revenue breakeven threshold	Develop distribution of buildings within each city
Description	• For a building at a given distance from existing CLEC fiber, what are the total (operating & capital, fixed & variable) costs to build fiber to that building?	• Within each of the seven markets, what is the revenue required from an "off net" building in order to recoup incremental costs and investment for the gamut of distances away from existing CLEC fiber?	• For each building within a given city, what is the revenue a CLEC could expect to receive over time? • Which buildings lie above the revenue frontier based on their distance from fiber and their expected revenues?
Illustration			

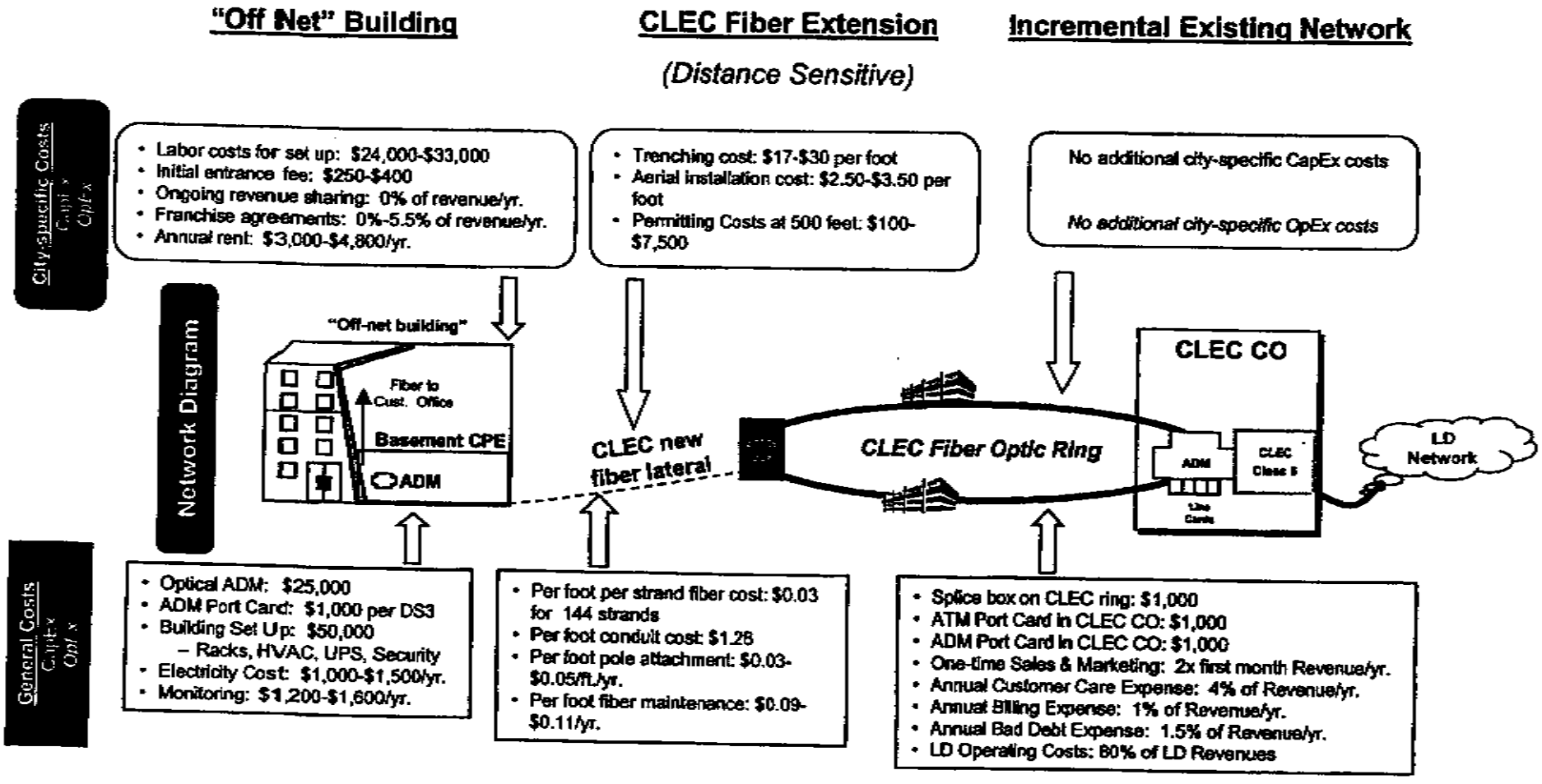
In order to carry out Step One for each market, we calculate total costs associated with installing and operating fiber to connect and service an "off-net" building at any given distance from an existing CLEC fiber ring with a SONET architecture

Network Diagram



		"Off Net" Building	CLEC Fiber Extension (Distance Sensitive)	Incremental Existing Network
Capital Expenditures	General	**Customer Premise Electronics** • Optical ADM • ADM Port Card • Racks, HVAC, UPS, Security	**Fiber Installation** • Fiber cost • Conduit cost	**Network Expenditures** • Splice box on CLEC ring • ATM Port Card in CLEC CO • ADM Port Card in CLEC CO
	City-specific	**Initial Customer Premise Costs** • Labor costs • Initial entrance fee	**Fiber Installation** • Installation cost (aerial and underground) **Licenses and Fees** • Permitting costs	None
Operating Expenses	General	None	**Outside Plant Operating Costs** • Pole attachment fees • Fiber maintenance	**LD Operating Costs**
	City-specific	**On-going Customer Premise Costs** • Revenue sharing • Franchise agreements • Power supply • Rent • Monitoring	None	**SG&A Costs** • Customer care & retention • Billing expense • Bad debt expense • Sales & marketing

For each of these cost components, we have developed detailed input assumptions...



Many of the cost inputs vary considerably by city. Here are some examples...

City Specific Costs

"Off Net" Building

- Labor costs for set up: $24,000-$33,000
- Initial entrance fee: $250-$400
- Ongoing revenue sharing: 0% of revenue/yr.
- Franchise agreements: 0%-5.5% of revenue/yr.
- Annual rent: $3,000-$4,800/yr.

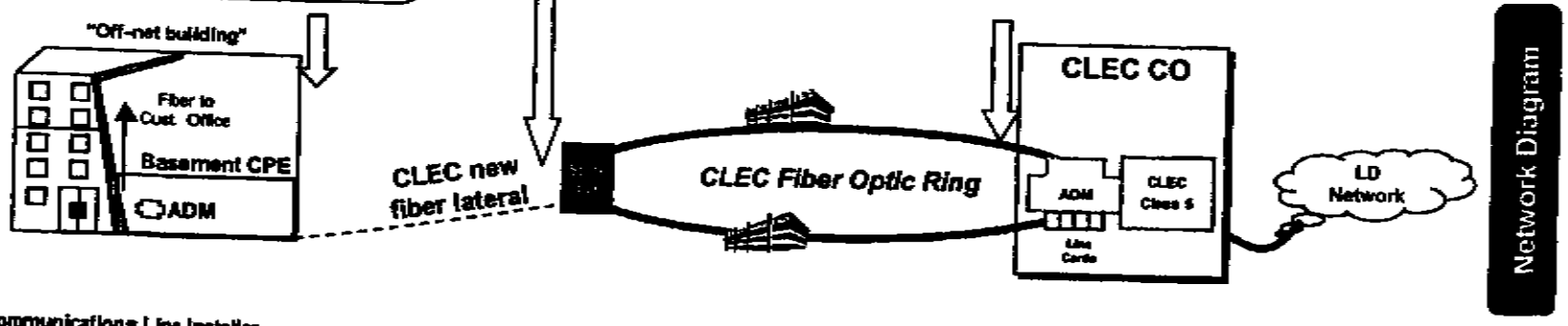
CLEC Fiber Extension
(Distance Sensitive)

- Trenching cost: $17-$30 per foot
- Aerial installation cost: $2.50-$3.50 per foot
- Permitting Costs at 500 feet: $100-$7,500

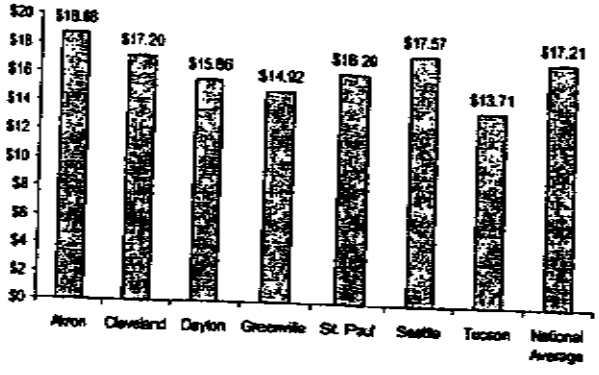
Incremental Existing Network

No additional city-specific CapEx costs

No additional city-specific OpEx costs

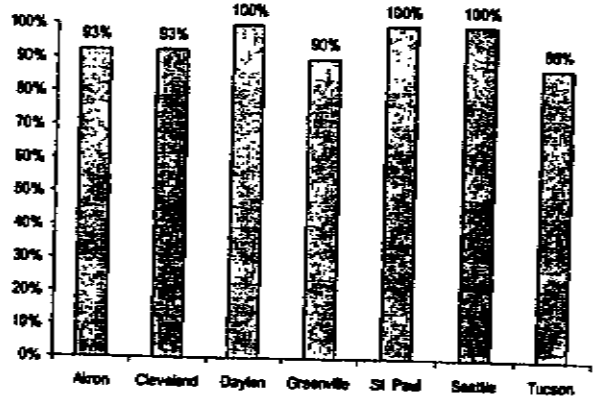


Telecommunications Line Installer and Repairer Hourly Wages



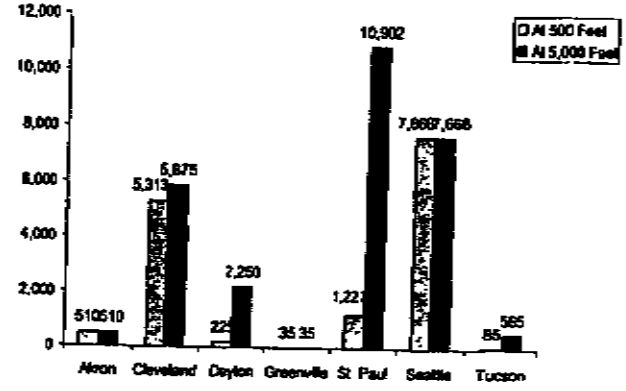
Source: Bureau of Labor Statistics

Percent Terrestrial Build



Source: Conversation with City officials

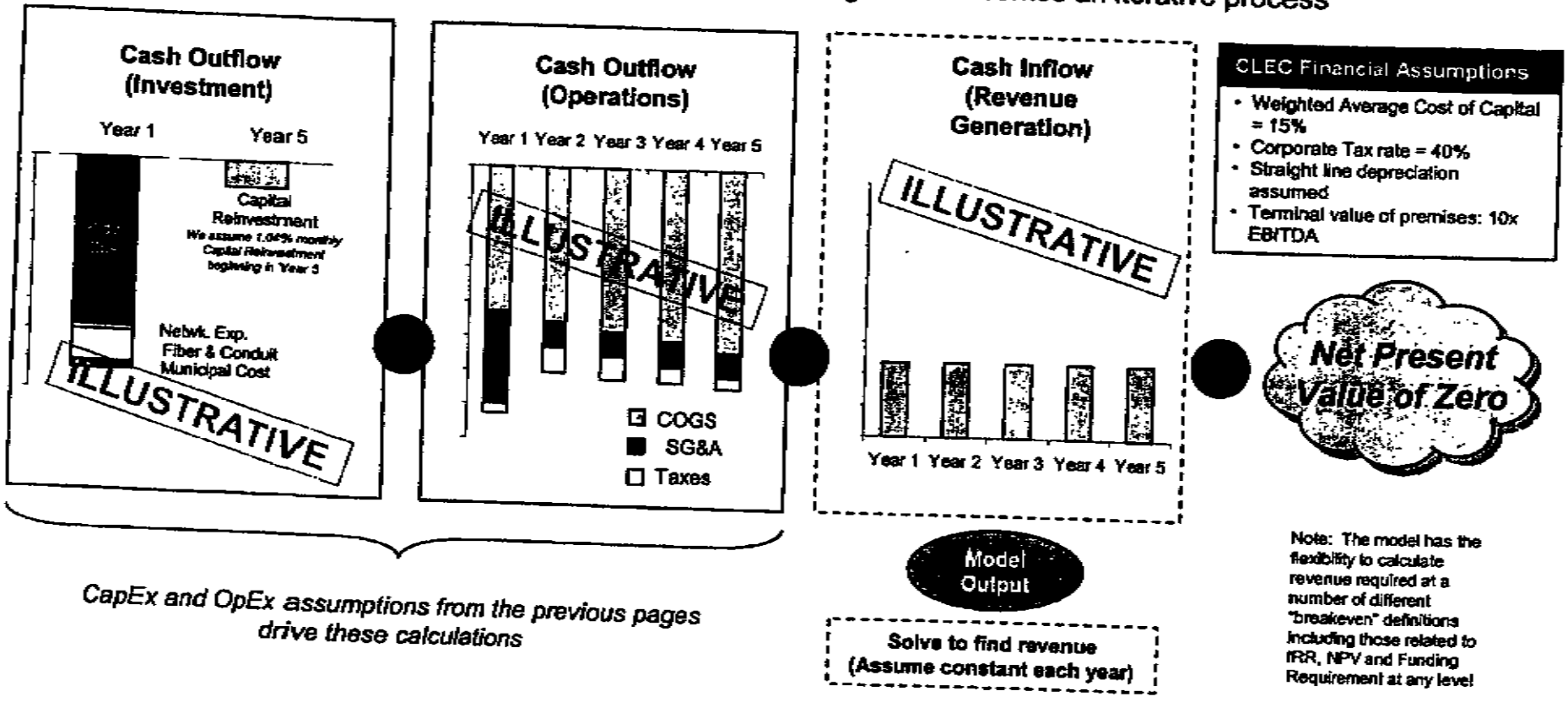
Terrestrial Trenching Permit Costs



Source: City Officials

The model output is the revenue generation required from the "off-net" building in order for the CLEC to "break even" based on expected cash outflows from investment and operations. This result is sensitive to the building's market location and its distance from existing CLEC fiber…

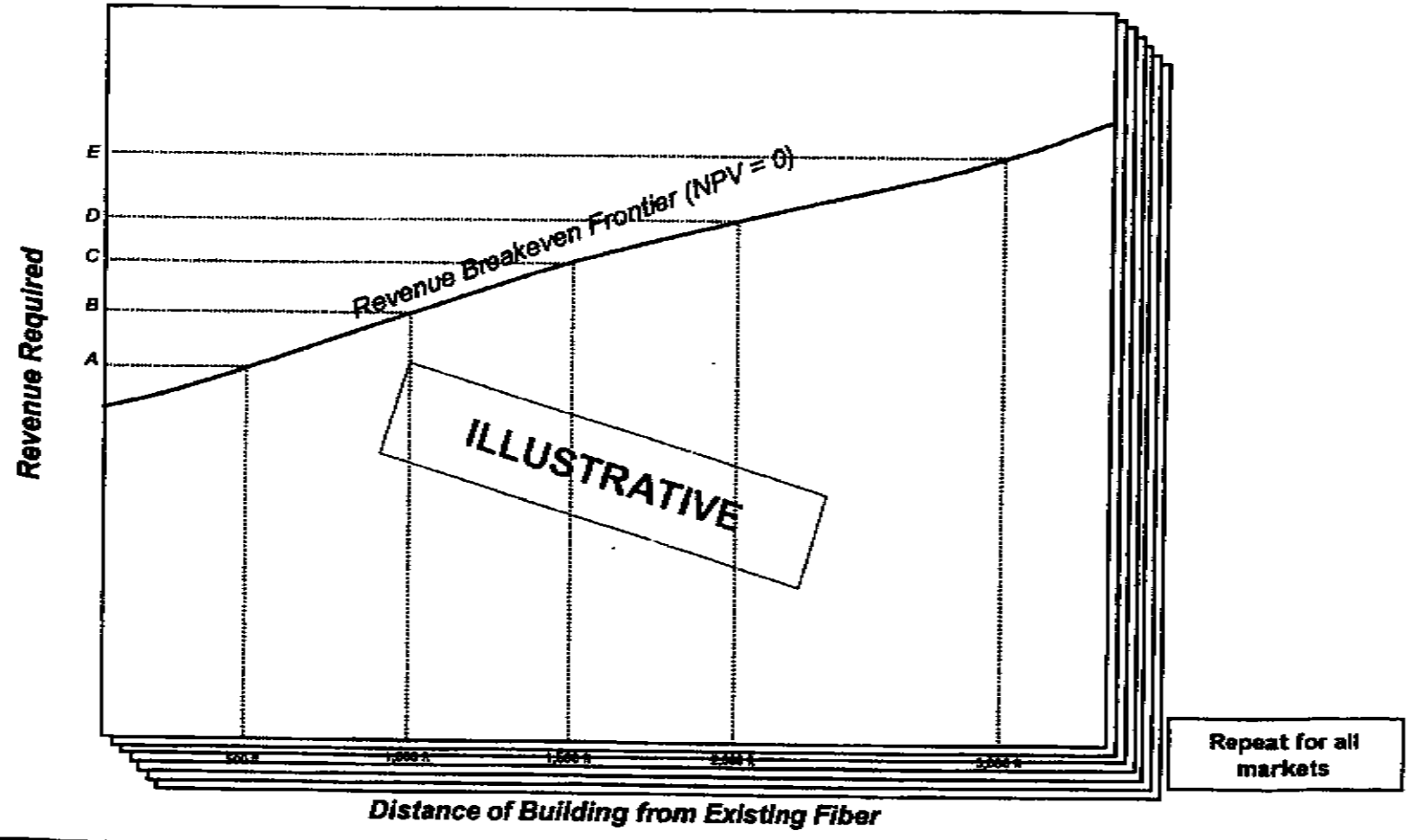
- Since some costs scale with revenue (and usage), the algorithm becomes an iterative process



CapEx and OpEx assumptions from the previous pages drive these calculations

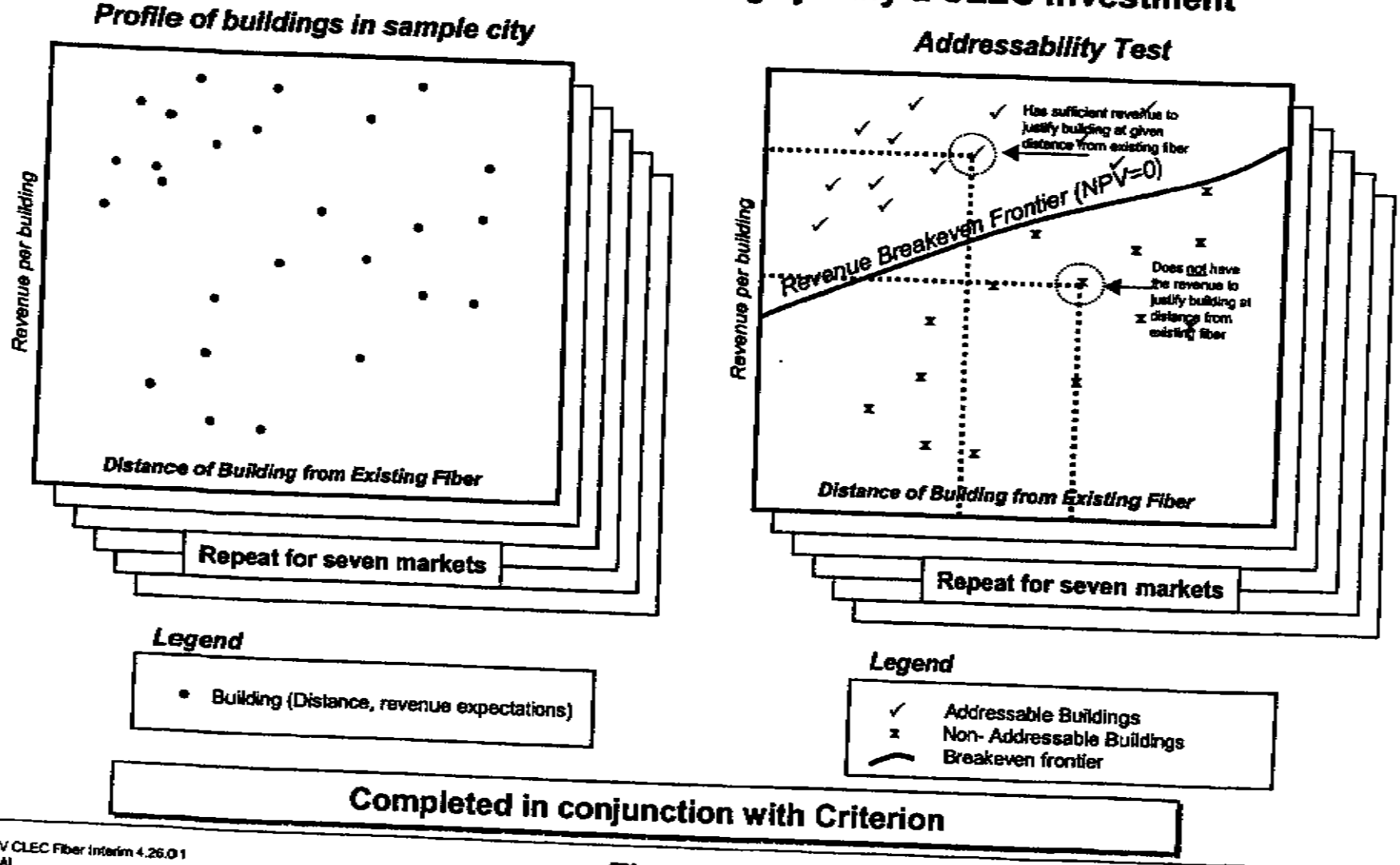
We calculate the model output (revenue generation required by building to ensure breakeven) over a wide range of distances for each of the seven markets to create a revenue breakeven frontier…

Example Revenue Breakeven Frontier



Our final draft revenue breakeven frontier assumptions are presented today

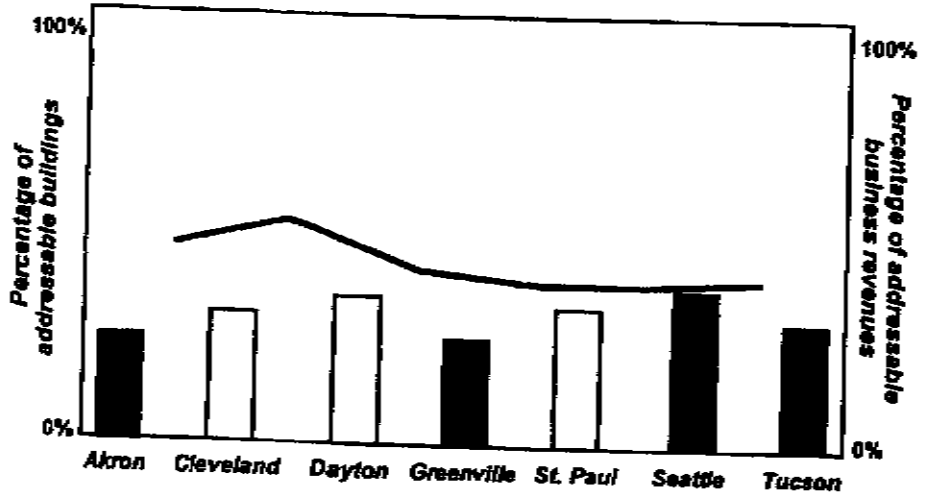
In every city, Criterion has plotted each building's distance from CLEC fiber and expected revenue. These points can then be compared to the revenue-distance breakeven frontier to determine which buildings justify a CLEC investment



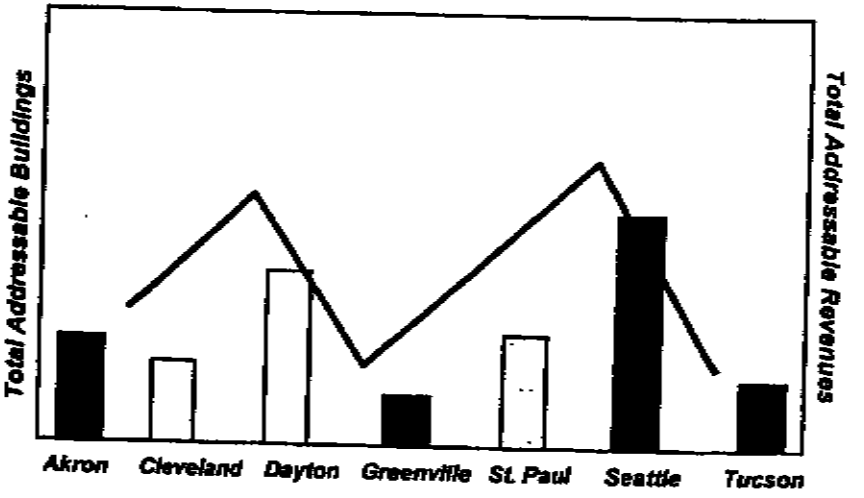
Completed in conjunction with Criterion

The Industry can use this analysis to understand the addressability of buildings and revenues in seven representative US markets

Percentage of addressable "off-net" buildings and revenues in seven markets



Total addressable "off-net" buildings and revenues in seven markets



Completed in conjunction with Criterion

Today's discussion

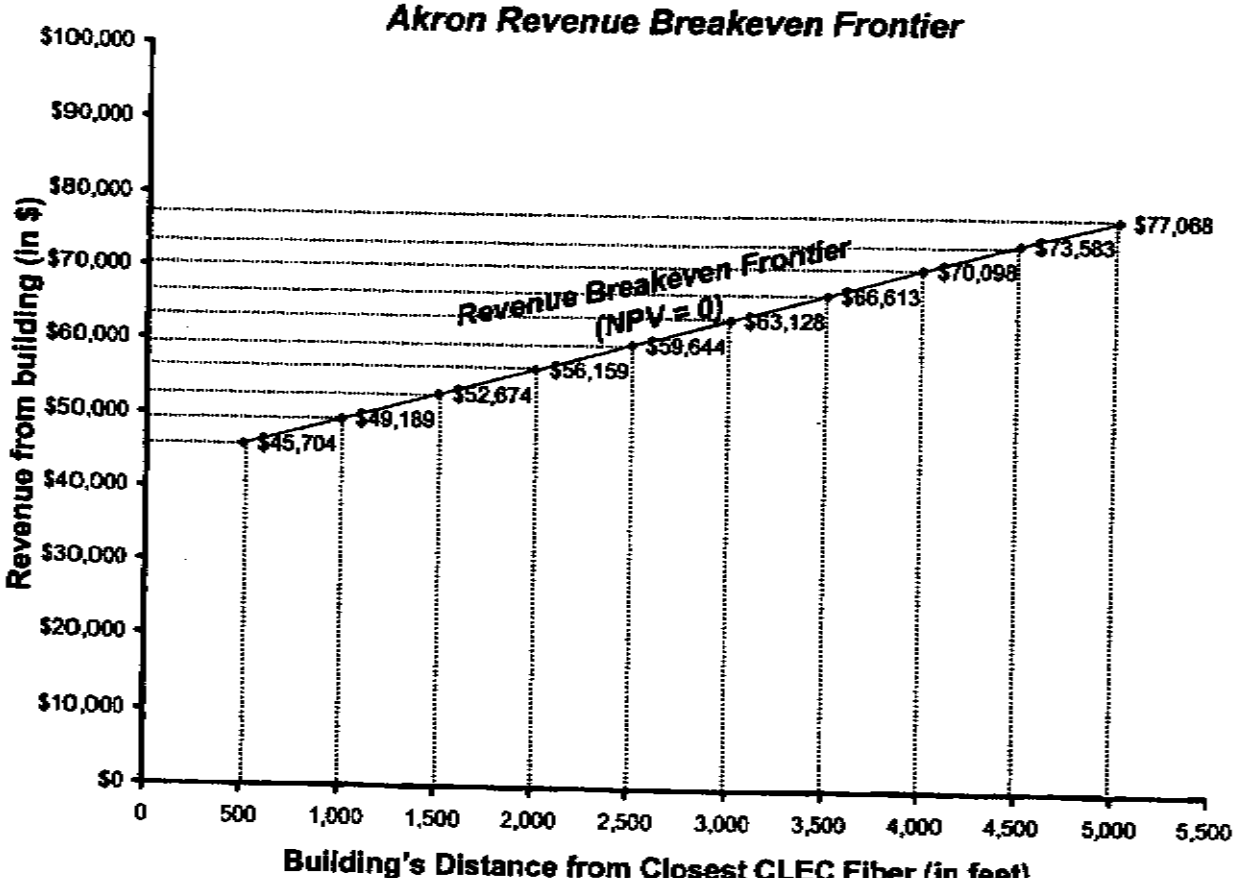
- Background & Introduction
- Current Results
- Model Architecture Design
- Assumptions and Sources

Using a SONET based architecture for every city, we have calculated the revenue breakevens at various distances...

Annual Revenue Breakeven Threshold (NPV = 0) by Distance per Building

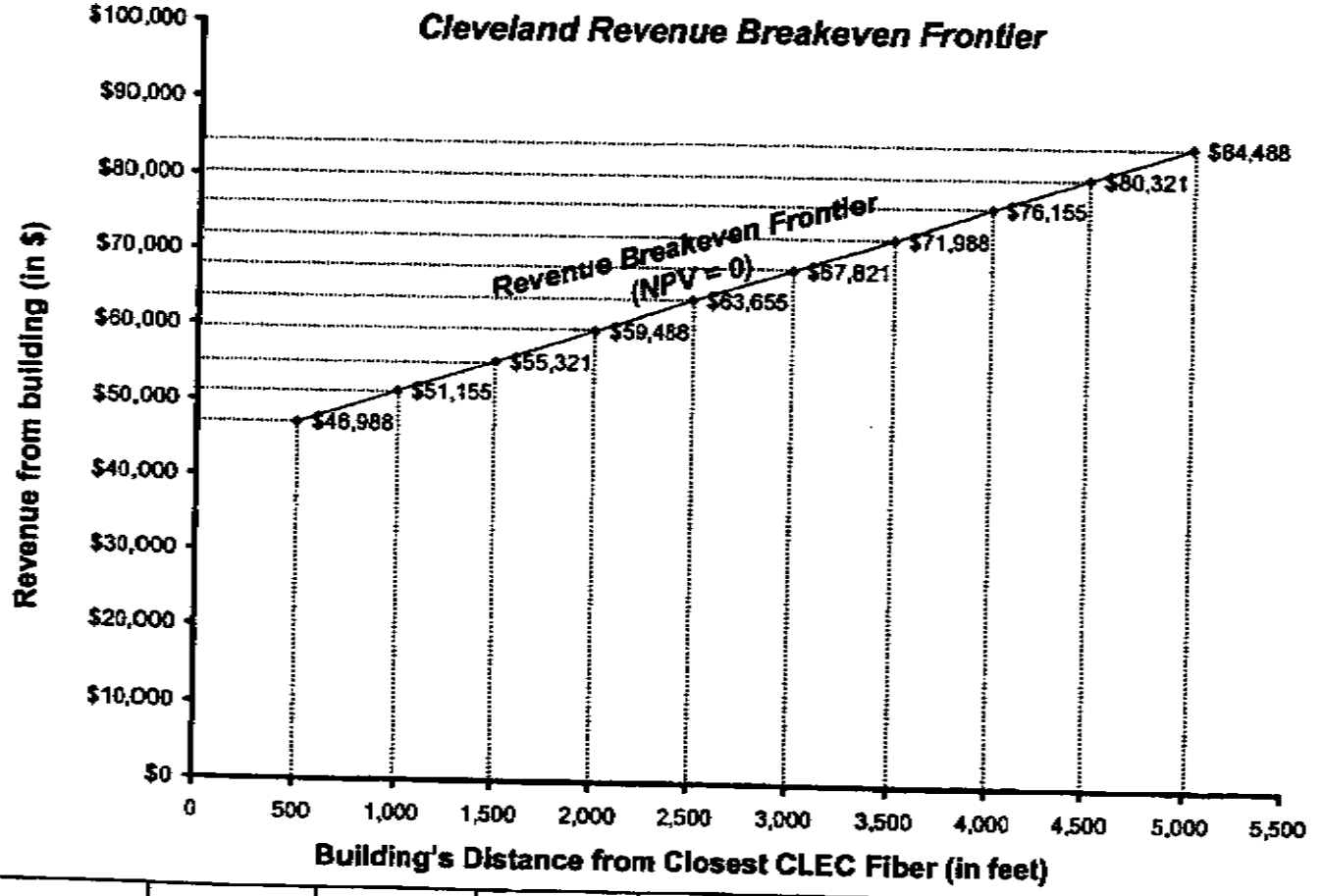
Market	500 feet	1,000 feet	1,500 feet	2,000 feet	2,500 feet	3,000 feet	3,500 feet	4,000 feet	4,500 feet	5,000 feet
Akron, Ohio	$45,704	$49,189	$52,674	$56,159	$59,644	$63,128	$66,613	$70,098	$73,583	$77,068
Cleveland, Ohio	$46,988	$51,155	$55,321	$59,488	$63,655	$67,821	$71,988	$76,155	$80,321	$84,488
Dayton, Ohio	$40,476	$43,656	$46,836	$50,015	$53,195	$56,375	$59,555	$62,734	$65,914	$69,094
Greenville, South Carolina	$40,294	$42,970	$45,646	$48,322	$50,998	$53,674	$56,350	$59,026	$61,702	$64,378
St. Paul, Minnesota	$42,800	$46,816	$50,833	$54,850	$58,867	$62,883	$66,900	$70,917	$74,933	$78,950
Seattle, Washington	$47,079	$51,581	$56,044	$60,526	$65,009	$69,491	$73,974	$78,456	$82,938	$87,421
Tucson, Arizona	$44,124	$47,399	$50,677	$53,955	$57,233	$60,509	$63,780	$67,051	$70,322	$73,593

... And used these to develop revenue breakeven frontiers. In Akron, a building 500 feet from fiber requires $46,000 in annual revenues to justify a lateral, while a building at 5,000 feet requires $77,000 annually



Market	500 feet	1,000 feet	1,500 feet	2,000 feet	2,500 feet	3,000 feet	3,500 feet	4,000 feet	4,500 feet	5,000 feet
Akron	$45,704	$49,189	$52,674	$56,159	$59,644	$63,128	$66,613	$70,098	$73,583	$77,068

In Cleveland the annual revenue required from an off-net building ranges from $47,000 at 500 feet to $84,000 at 5,000 feet in order to justify the cost of laying fiber



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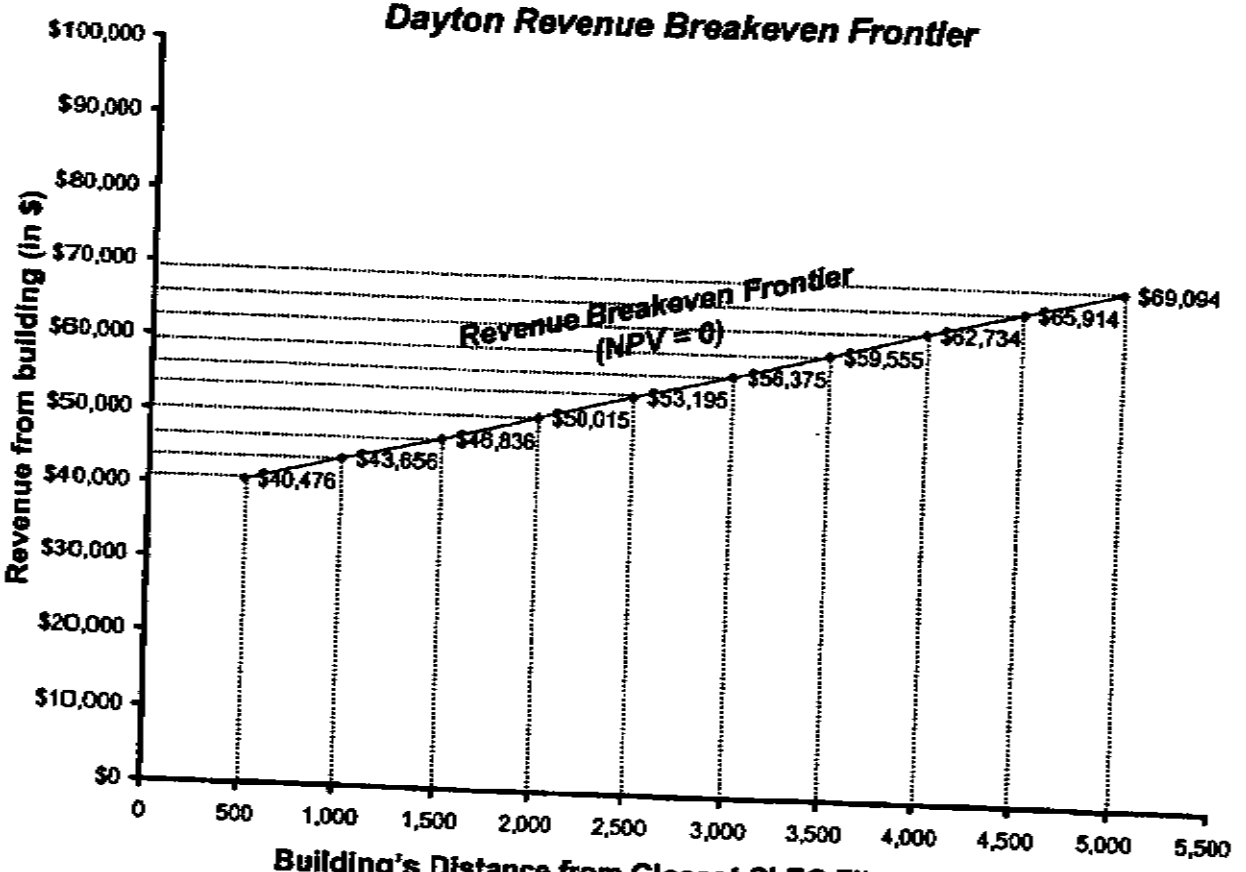
Cleveland	$46,988	$51,155	$55,321	$59,488	$63,655	$67,821	$71,988	$76,155	$80,321	$84,488

In Dayton, a building 500 feet from fiber requires $40,000 in annual revenues to justify a lateral, while a building at 5,000 feet requires $69,000 annually



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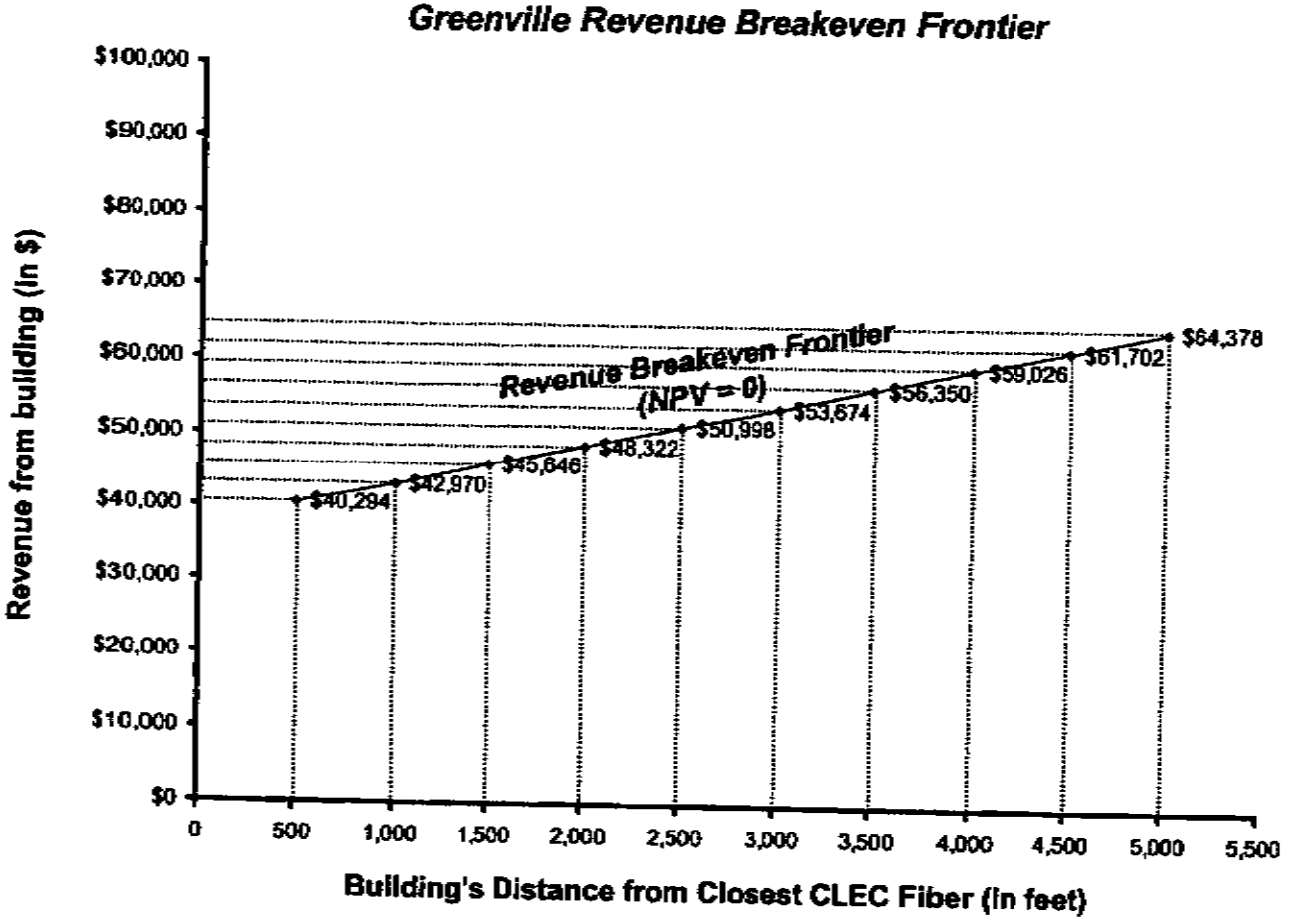
Dayton	$40,476	$43,656	$46,836	$50,015	$53,195	$56,375	$59,555	$62,734	$65,914	$69,094

Of all our cities, Greenville requires the lowest breakeven revenue for any given distance



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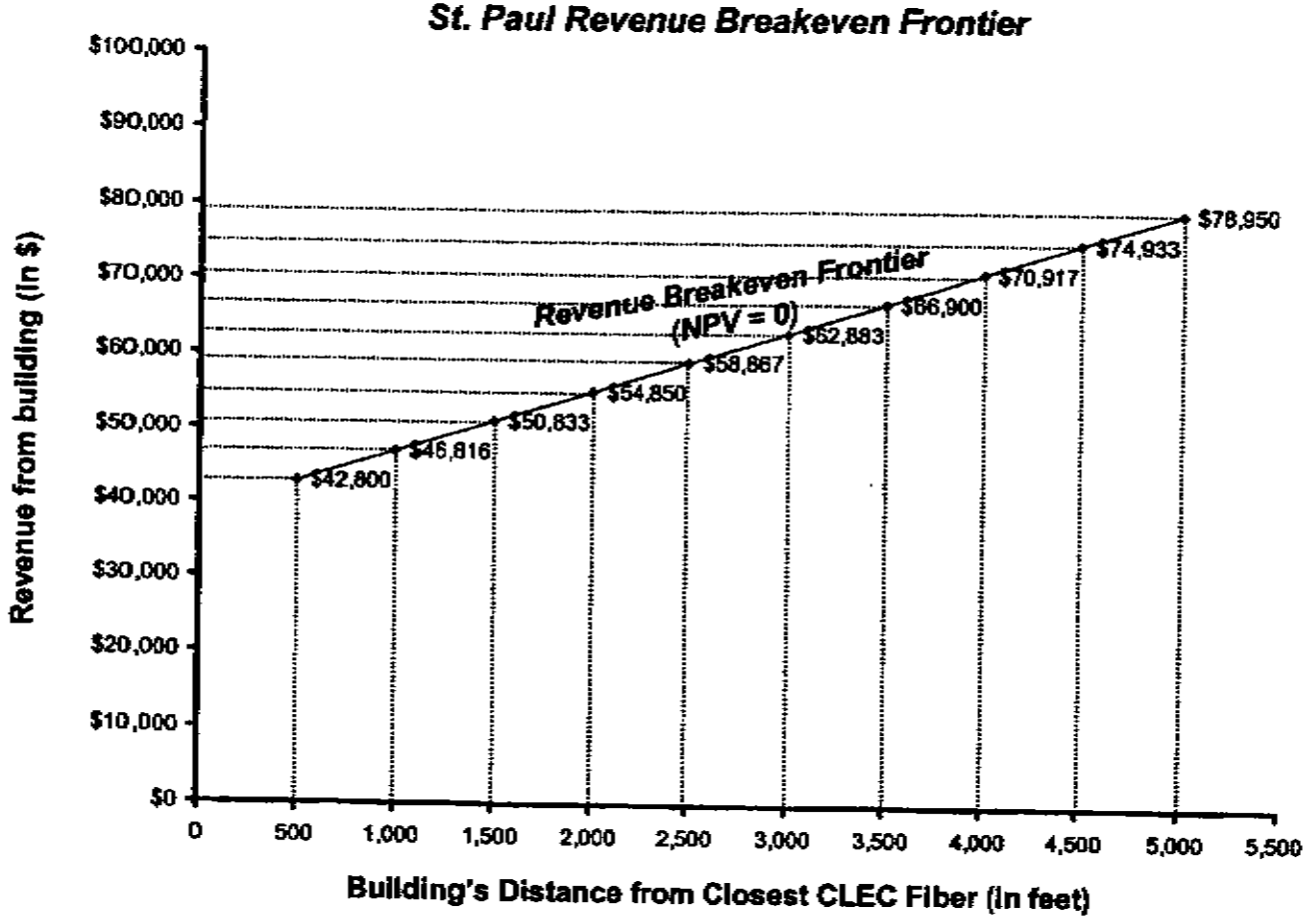
Greenville	$40,294	$42,970	$45,646	$48,322	$50,998	$53,674	$56,350	$59,026	$61,702	$64,378

St. Paul requires $43,000 to $79,000 annually from a building in order to justify the cost of laying fiber



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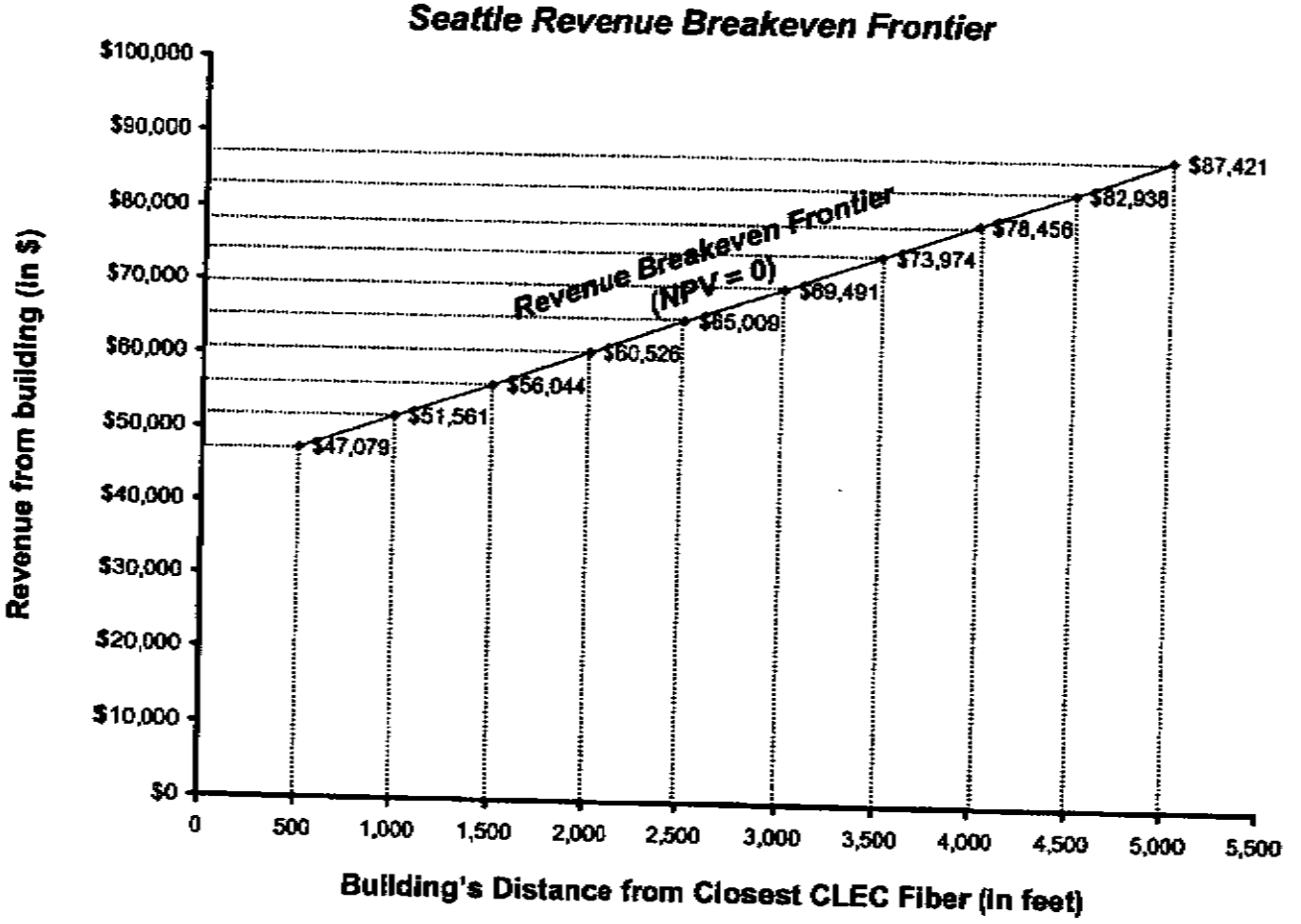
St. Paul	$42,800	$46,816	$50,833	$54,850	$58,867	$62,883	$66,900	$70,917	$74,933	$78,950

Seattle has the highest revenue breakeven frontier of any of the seven cities



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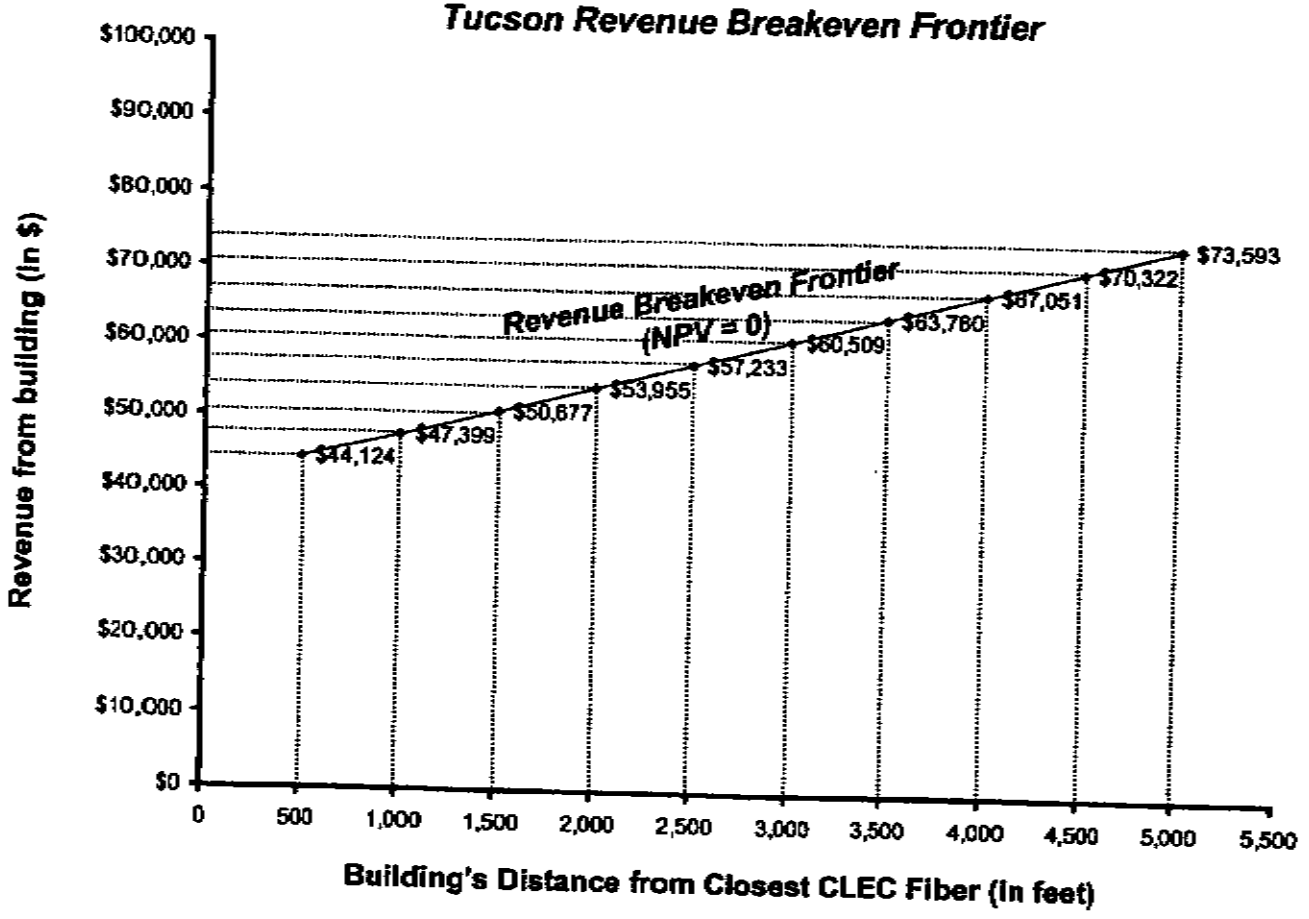
Seattle	$47,079	$51,561	$56,044	$60,526	$65,009	$69,491	$73,974	$78,456	$82,938	$87,421

Tucson is in the middle of the range of cities in terms of revenue required from a new building at a given distance from existing CLEC fiber



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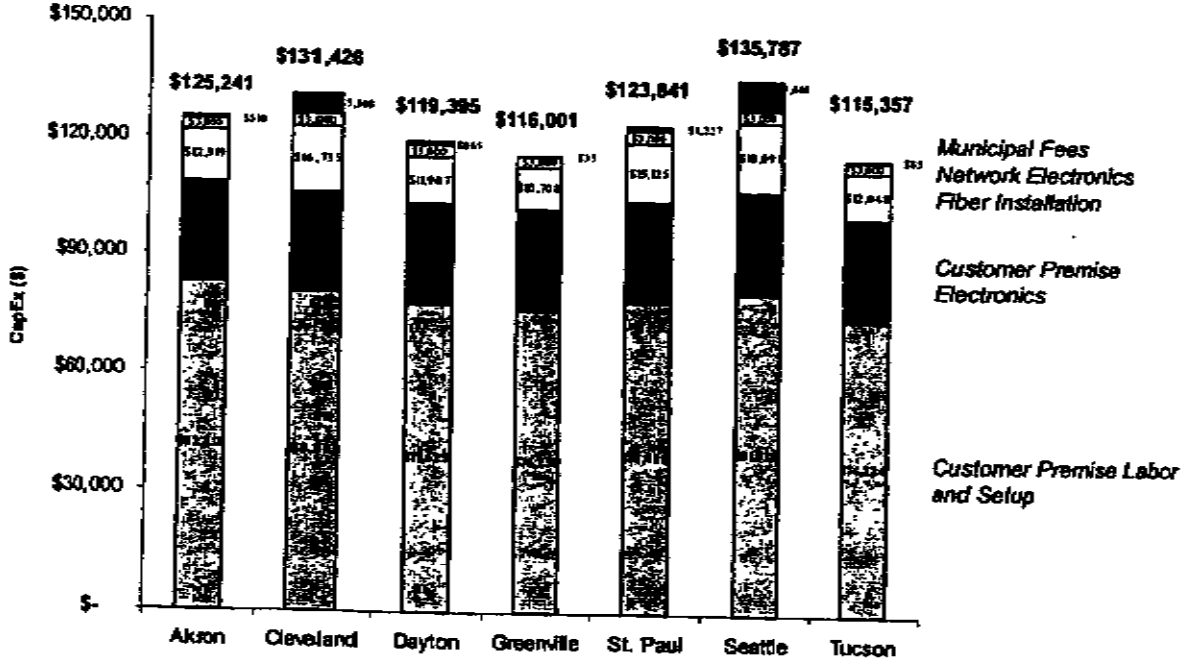
Tucson	$44,124	$47,399	$50,677	$53,955	$57,233	$60,509	$63,780	$67,051	$70,322	$73,593

Year 1 capital expenditures are highest in Seattle and lowest in Tucson primarily because of differences in fiber installation costs

Year 1 CapEx by Market for Building at 500 Feet

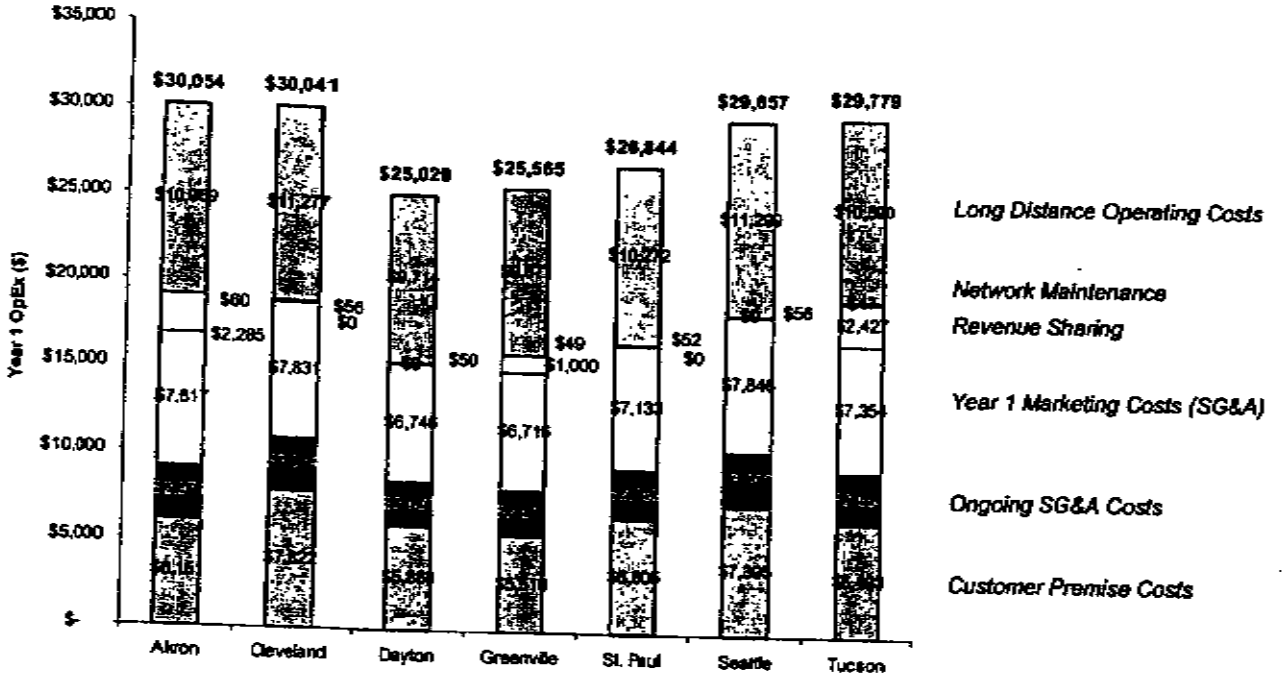


Primary Drivers

- Labor costs vary widely from market to market, directly affecting both fiber installation costs and customer premise labor and setup costs
  - Tucson has the lowest labor cost of the seven markets
  - Seattle has the highest labor cost of the seven markets
- Municipal fees fluctuate substantially for each city
  - Tucson has a very low permit cost of $85 at 500 feet
  - Seattle has a high permit cost of $7,668 at 500 feet

Differences in operating costs are primarily due to differences in customer premise costs

Year 1 OpEx by Market for Building at 500 Feet



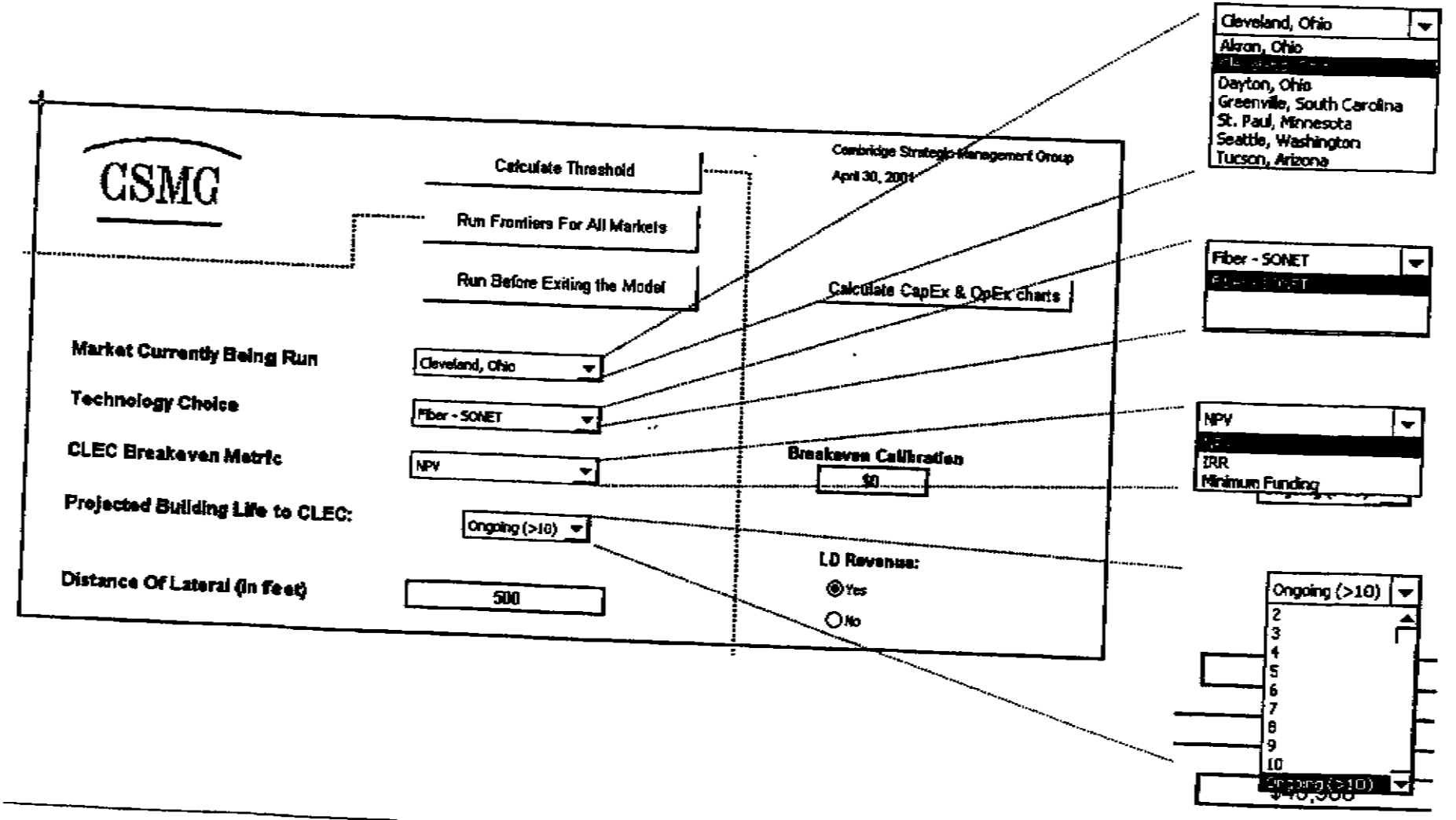
Primary Drivers

- Customer Premise costs have the greatest impact on OpEx differences across markets
  - Variations in rent to building owners account for much of this variation
  - Rents for Tier 1 cities can be 50% more than those for a Tier 3 city due to demand
- Differences in franchise agreements also account for a significant portion of the variation
  - Cleveland, Dayton, St. Paul, and Seattle do not have any franchise agreements (but have higher upfront for permitting costs)
  - Tucson has a very high franchise agreement cost at 5.5% of annual revenues
  - Greenville charges an annual fee of $1,000 in lieu of a percent of revenues

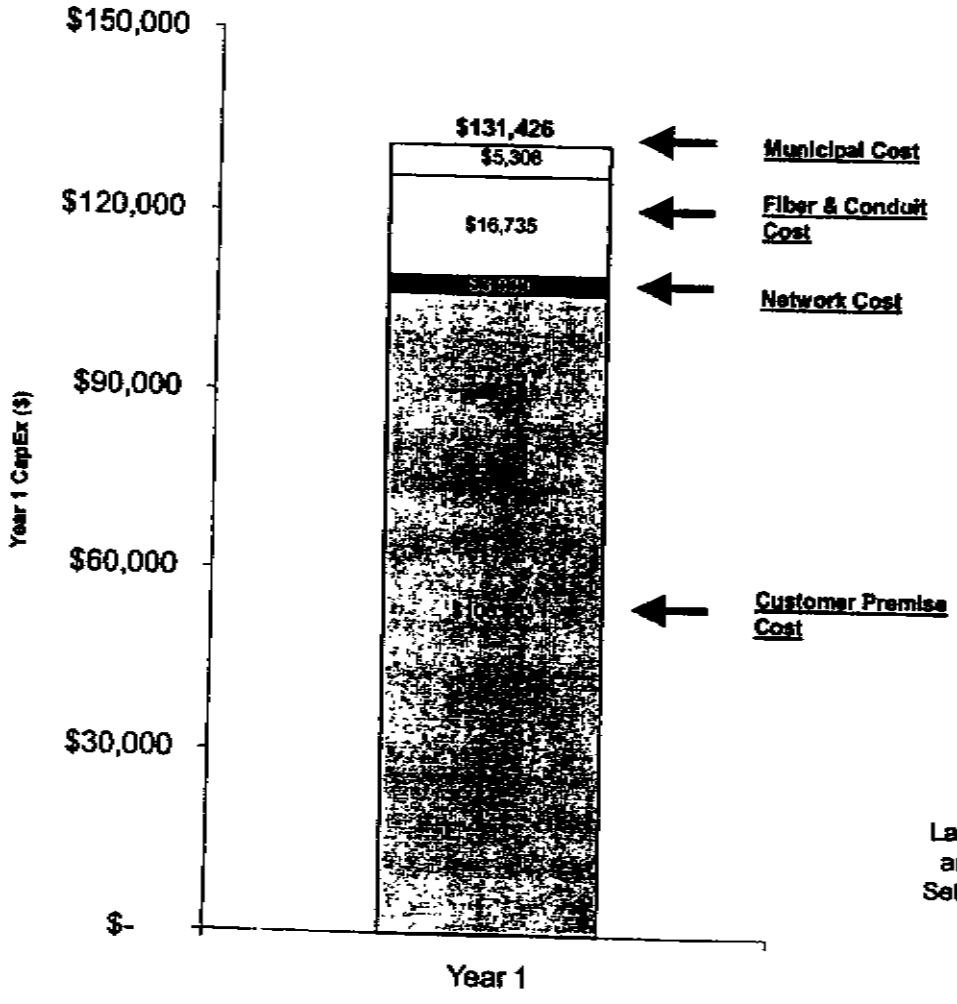
Today's discussion

- Background & Introduction
- Current Results
- **Model Architecture Design**
- Assumptions and Sources

The model builds on a choice of city, a choice of technology, what we define as "breakeven", and a lateral distance

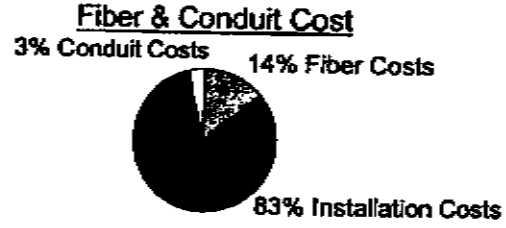


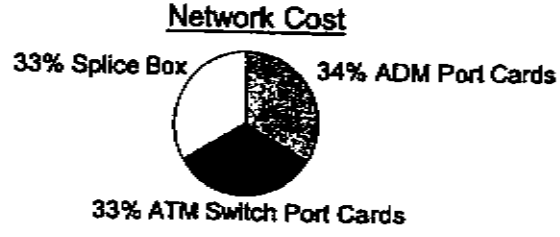
For a building in Cleveland at 500 feet from CLEC fiber, we have the following capital expenditures...

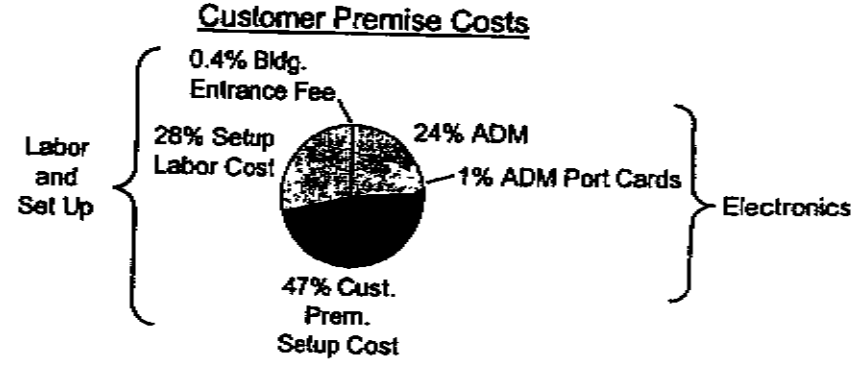


Municipal Cost

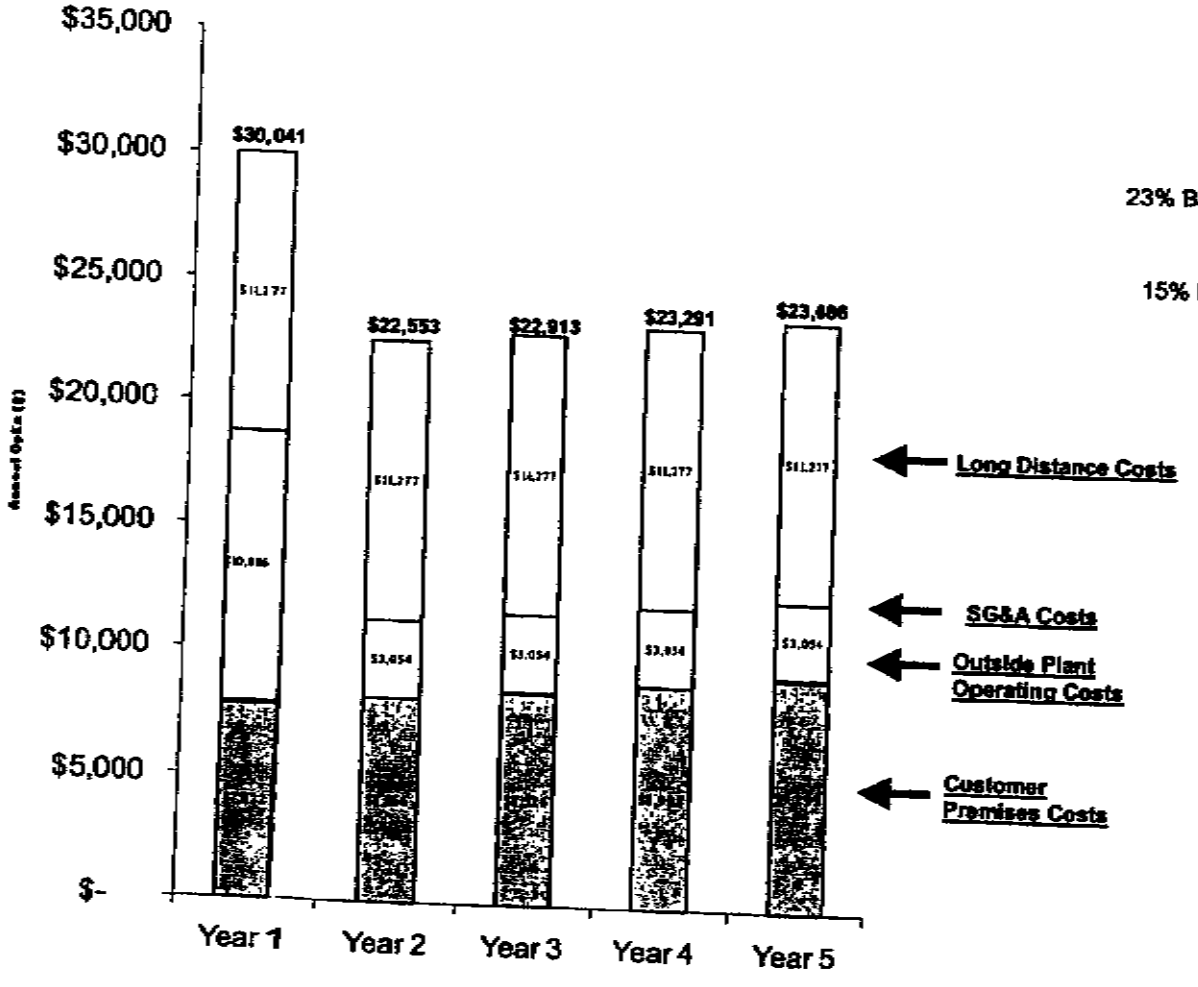
- Application Fee
- Per Foot Trenching Fee
- Inspection Fee
- Other







The same Cleveland building results in the following operating expenses through year 5...

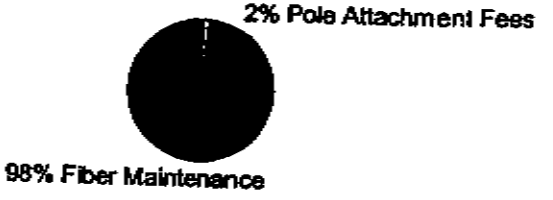


LD Costs

- Customer Care & Retention Expense
- Cost of Goods Sold
- Access
- POP-to-POP Transport
- Other

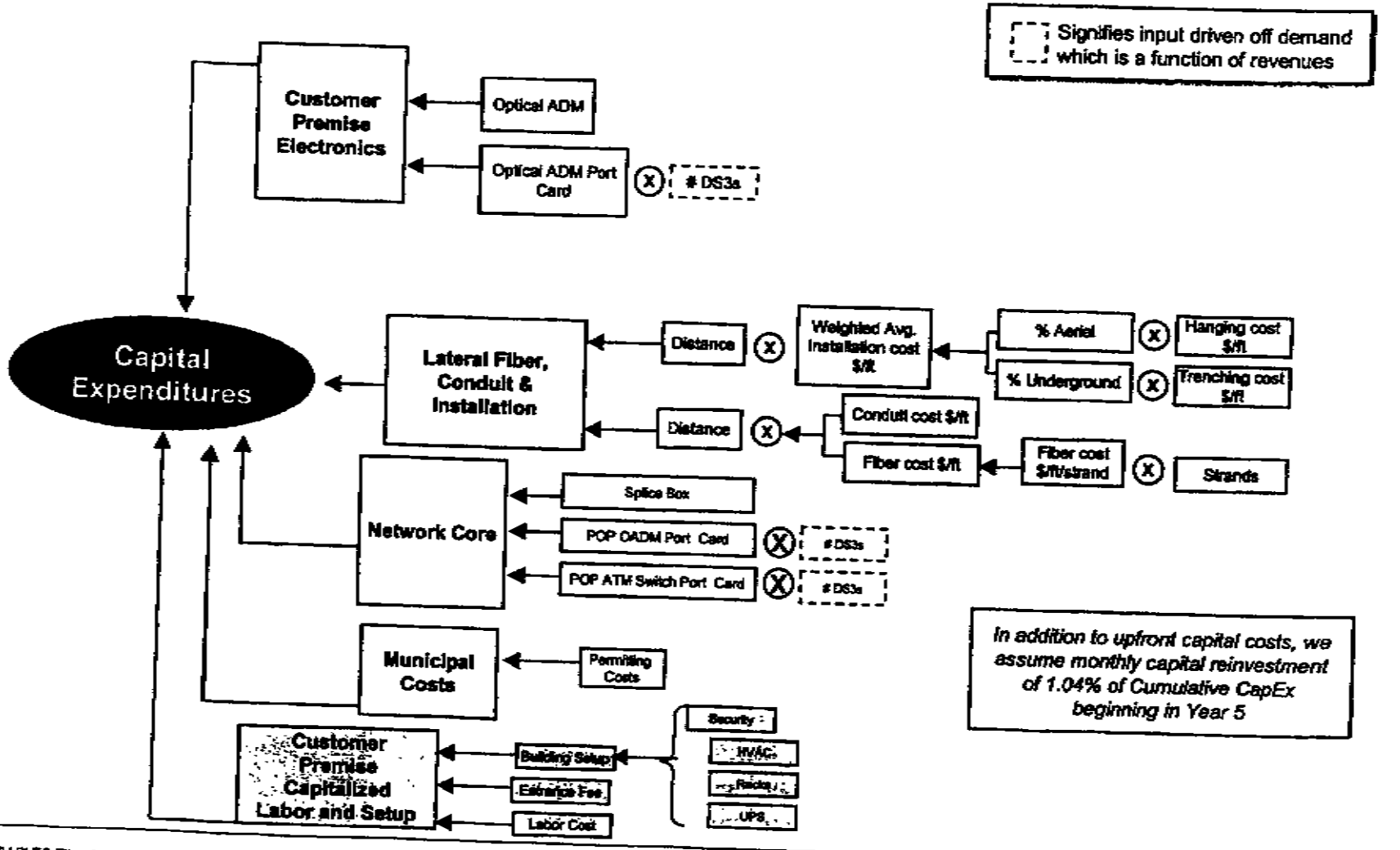
Year 5 SG&A Costs

Year 5 Outside Plant Operating Costs

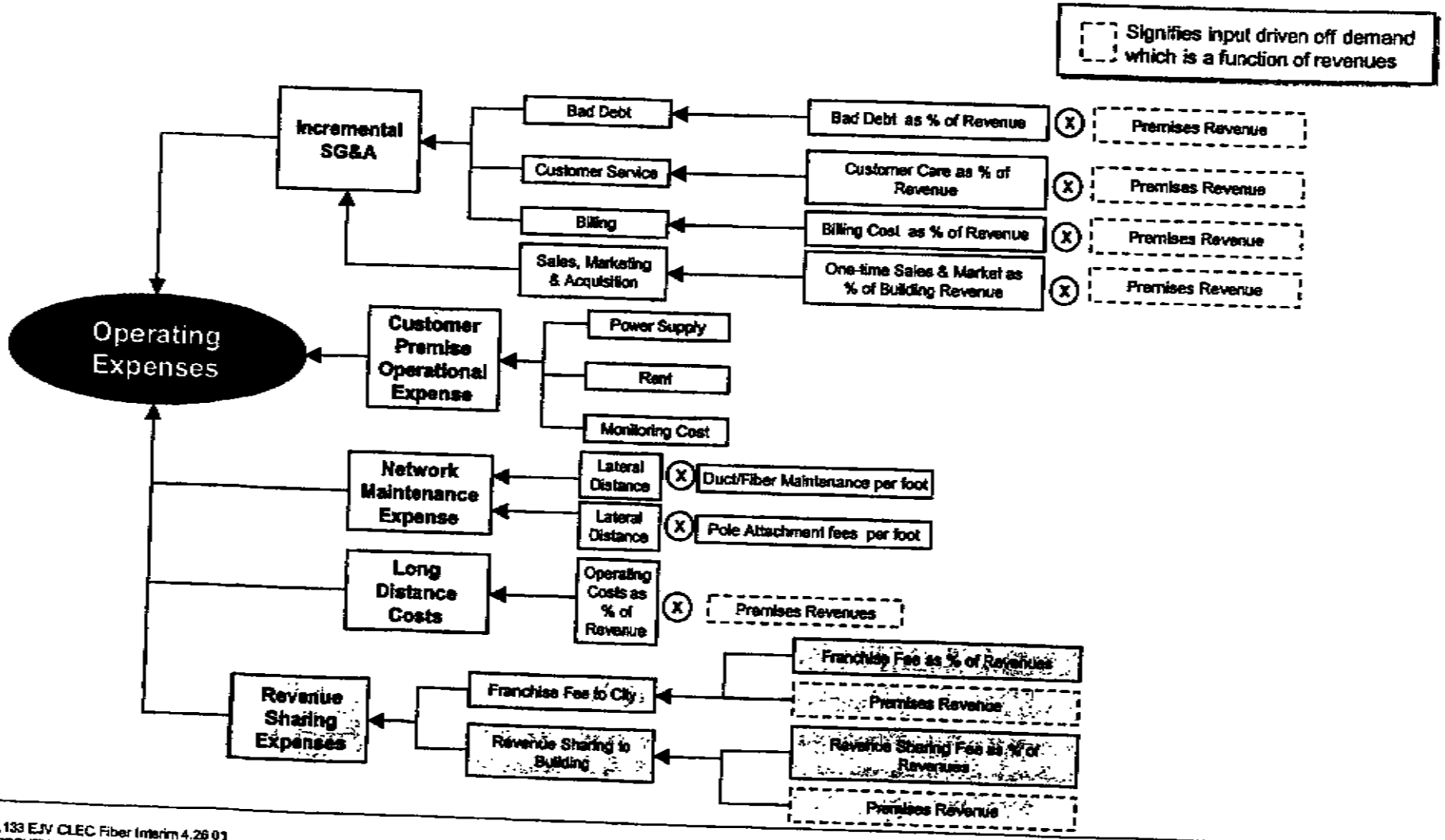


Year 5 Customer Premises Costs

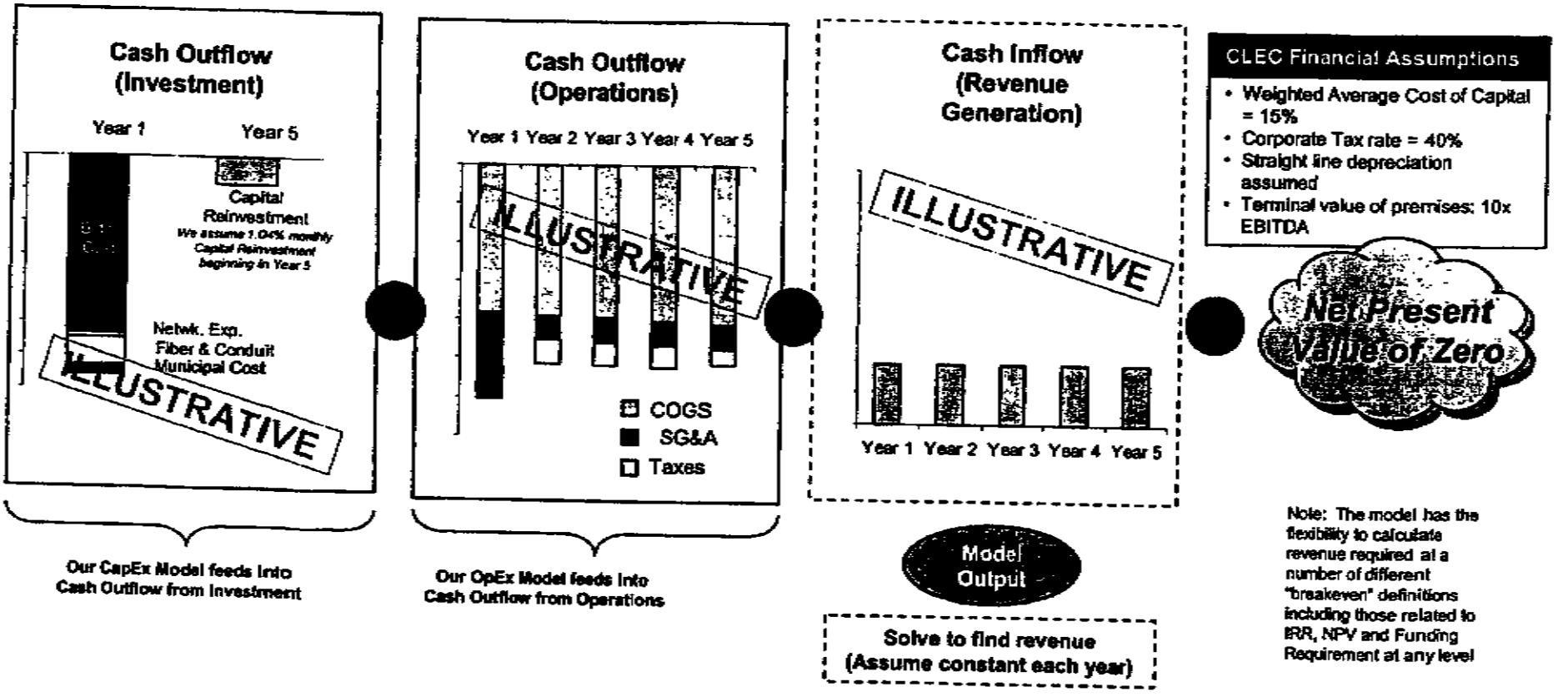
The capital expenditures are driven by five main investment components: building electronics, lateral fiber and conduit, network core, municipal costs, and capitalized labor and setup



Operating expenses are driven by five components: SG&A, customer premise expenses, maintenance expense, long distance costs and revenue sharing



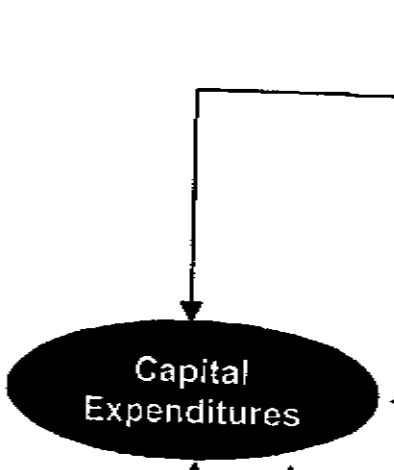
From the CapEx and OpEx models we develop cash outflows from investment and operations and then solve to find the breakeven revenue that results in net present value of zero



Today's discussion

- Background & Introduction
- Current Results
- Model Architecture Design
- Assumptions and Sources

The following are the specific market inputs for capital expenditures…



Customer Premise Electronics

Customer Premise Electronics	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Optical ADM (Cisco 15454 or 15327)	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
Optical ADM Port Card (per DS-3)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000

Sources: Interview with facilities-based provider; Interviews with network engineers; CSMG analysis

Lateral Fiber, Conduit & Installation

Lateral Fiber, Conduit & Installation	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
%Age Underground Conduit	93%	93%	100%	90%	100%	100%	88%
Cost of Fiber (per strand per foot)	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03
Number of Strands per cable	144	144	144	144	144	144	144
Cost of Terrestrial Conduit (per duct per foot)	$1.28	$1.28	$1.28	$1.28	$1.28	$1.28	$1.28
Cost of Fiber Trenching (per foot)	$21	$30	$16	$17	$24	$30	$21
Cost of Aerial Fiber Install (per foot)	$3.58	$3.30	$3.00	$2.86	$3.10	$3.37	$2.63
Minimum Cost of Installation	$1,789	$1,648	$1,500	$1,429	$1,552	$1,683	$1,313

Sources: Interviews with city officials for each market; Interview with facilities-based provider; Quotes from equipment vendors; Interviews with fiber installer contractors from various markets; Bureau of Labor Statistics; CSMG analysis

Network Core

Network Core	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Splice Box	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
POP Optical ADM Port Card (per DS-3)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
POP ATM Switch Port Card (per DS-3)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000

Sources: Interview with facilities-based provider; Interviews with network engineers; CSMG analysis

Municipal Costs

Municipal Costs	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Permitting Costs	$510	$5,308	$865	$35	$1,227	$7,668	$85

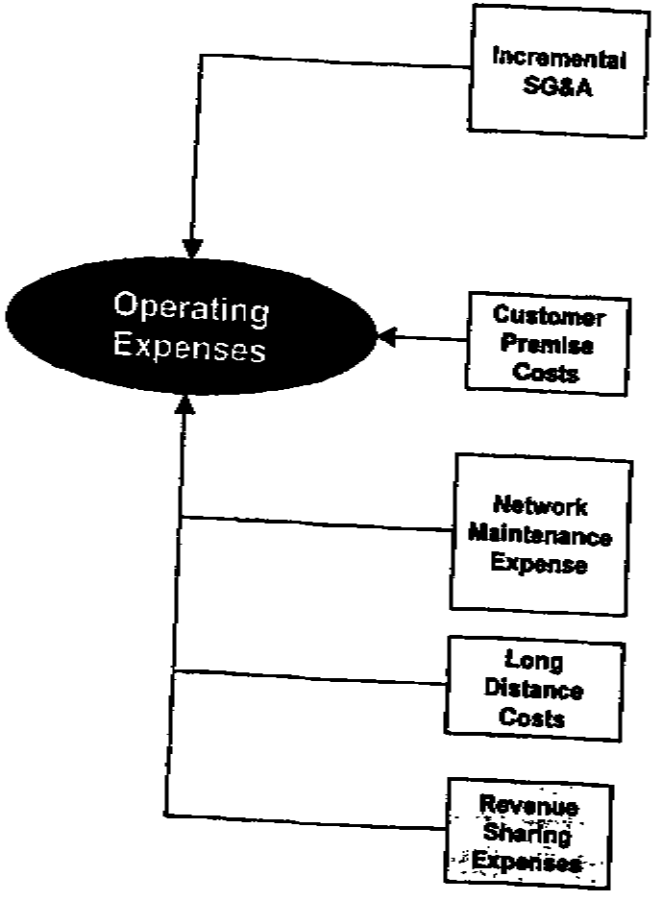
Sources: Interviews with city officials from each market; CSMG analysis

Customer Premise Capitalized Labor and Setup

Customer Premises Capitalized Labor & Setup	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Building Setup (Racks, HVAC, Security, UPS, Risers	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Labor Cost for Setup	$32,562	$29,963	$27,298	$26,008	$28,239	$30,628	$23,699
Initial Entrance Fee	$250	$400	$325	$250	$250	$400	$325

Sources: Interviews with network engineers; Interview with national building owner/operator; Bureau of Labor Statistics; CSMG analysis

The following are the specific market inputs for operating expenses…



Incremental SG&A Expenses	
Customer Care Expense	
Billing Expense	4%
Bad Debt Expense	1%
Sales & Marketing Expense (As a multiple of 1st month's revenue)	1.5%
	2.00

Sources: CLEC Annual Reports; CSMG analysis

Customer Premise Costs	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Electricity Cost (per bldg. per year)	$1,523	$1,523	$1,523	$1,210	$1,293	$1,064	$1,398
Annual Power Rate Increase	7%	7%	7%	7%	7%	7%	7%
Rent (per bldg.)	$3,000	$4,800	$3,000	$3,000	$3,900	$4,800	$3,900
Annual Rent Increase	4%	4%	4%	4%	4%	4%	4%
Monitoring Cost (per bldg.)	$1,626	$1,499	$1,365	$1,300	$1,412	$1,531	$1,195
Annual Monitoring Cost Increase	3%	3%	3%	3%	3%	3%	3%

Sources: Interviews with fiber installer contractors; Energy Information Association; Interview with national building owner/operator; Bureau of Labor Statistics; CSMG analysis

Network Maintenance Expenses	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Fiber Maintenance (per foot)	$0.12	$0.11	$0.10	$0.10	$0.10	$0.11	$0.09
Pole Attachment Fees (per foot)	$0.03	$0.03	$0.03	$0.03	$0.03	$0.04	$0.05

Sources: Bureau of Labor Statistics; Interviews with facilities-based providers; CSMG analysis

Long Distance Costs	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Long Distance Revenue as % of total Revenue	30%	30%	30%	30%	30%	30%	30%
Long Distance Cost as % of LD Revenue	60%	60%	60%	60%	60%	60%	60%

Sources: CSMG analysis

Revenue Sharing Costs	Akron	Cleveland	Dayton	Greenville	St. Paul	Seattle	Tucson
Ongoing Revenue Sharing (%age of Revenue)	0%	0%	0%	0%	0%	0%	0%
Franchise Agreements (% of rev. per year)	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%
Flat Franchise Agreement ($ per Year)	$0	$0	$0	$1,000	$0	$0	$0

Sources: Interview with national building owner/operator; Interviews with city officials from each market; CSMG analysis

Note that we assume there is no existing conduit available for lease, a relatively conservative assumption. If we run the model assuming a CLEC leases conduit, the revenue breakeven frontiers are substantially reduced, especially at longer distances…

Annual Revenue Breakeven Threshold (NPV = 0) by Distance per Building

Market	500 feet	1,000 feet	1,500 feet	2,000 feet	2,500 feet	3,000 feet	3,500 feet	4,000 feet	4,500 feet
Akron, Ohio	$43,657	$44,624	$45,592	$46,559	$47,527	$48,495	$49,462	$50,430	$51,397
Cleveland, Ohio	$44,126	$45,030	$45,934	$46,838	$47,742	$48,646	$49,550	$50,453	$51,357
Dayton, Ohio	$38,597	$39,533	$40,469	$41,405	$42,341	$43,277	$44,213	$45,149	$46,085
Greenville, South Carolina	$38,867	$39,768	$40,670	$41,571	$42,472	$43,374	$44,276	$45,178	$46,079
St. Paul, Minnesota	$40,219	$41,277	$42,335	$43,393	$44,451	$45,509	$46,568	$47,626	$48,684
Seattle, Washington	$43,925	$44,844	$45,763	$46,682	$47,601	$48,520	$49,440	$50,359	$51,278
Tucson, Arizona	$42,180	$43,164	$44,151	$45,137	$46,124	$47,109	$48,089	$49,068	$50,092