Exhibit No.:	
Issue:	DS3 and Dark Fiber Loop (Potential Deployment)
Witness:	Gary O. Smith
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Southwestern Bell Telephone, L.P. d/b/a SBC Missouri
Case No.:	TO-2004-0207 Phase III
Date Testimony Prepared:	January 12, 2004

SOUTHWESTERN BELL TELEPHONE, L.P. D/B/A

SBC MISSOURI

CASE NO. TO-2004-0207

DIRECT TESTIMONY

OF

GARY O. SMITH

ST. LOUIS, MISSOURI

NON PROPRIETARY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of a Commission Inquiry into the Possibility of Impairment without Unbundled Local Circuit Switching When Serving the Mass Market	))))	Case No. TO-2004-0207

AFFIDAVIT OF GARY O. SMITH

STATE OF MISSOURI

COUNTY OF JACKSON

I, Gary O. Smith, of lawful age, being duly sworn, depose and state:

My name is Gary O. Smith. I am presently Area Manager Engineering/Construction – SBC Southwest

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony.

3 I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Gary O. Smith

Gary O. Smith

Subscribed and sworn to before me this 8th day of January, 2004

Notary Public

My Commission Expires:

June 4, 2004

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Gary O. Smith. My business address is 9444 Nall, Overland Park, Kansas 66207.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Southwestern Bell Telephone, L.P. d/b/a SBC Missouri ("SBC Missouri") as Area Manager Engineering/Construction, in the Engineering and Construction organization.

Q. WHAT ARE YOUR DUTIES AND RESPONSIBILITIES IN THAT CAPACITY?

A. As Area Manager, I am responsible for the administration of the budget, personnel, contractors, and other functions related to engineering, placing and maintaining new and existing facilities including copper cable, fiber cable and pair gain within the Kansas City metropolitan area.

Q. HOW LONG HAVE YOU SERVED IN THAT CAPACITY?

A. I have been in my current position for approximately seven years.

Q. WHAT IS YOUR TELECOMMUNICATIONS EXPERIENCE?

A. I have over 23 years of experience in the telecommunications industry. I spent three years with GTE of the Midwest as a lineman and installer. I worked for Southwestern Bell for two and a half years as a lineman and cable splicer and for eighteen years as a Splicing

Manager, Placing Manager, Installation Manager, Engineer and Area Manager Engineering/Construction with responsibility to both engineer and place telecommunication facilities. I am experienced in identifying, designing and budgeting for telecommunications facilities. I have been trained in bidding and awarding construction contracts. I have experience in placing practices and in coordinating with placing contractors. I am experienced in working with municipalities in rights-of-way and utility and private easements. I and my staff are responsible for obtaining access to private buildings, negotiating placing arrangements, placing terminating equipment and arranging for placement of optronics.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have a Bachelor of Science Degree in Management from Tarkio University in Tarkio, Missouri.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to apply the various criteria specified by the Federal Communications Commission's ("FCC's") *Triennial Review Order* [1] so as to assess what the *Triennial Review Order* refers to as the "potential deployment" of DS3 and dark fiber

1 In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, CC Docket No. 01-338, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147 (FCC 03-36), rel. August 21, 2003 ("*Triennial Review Order*").

loops by "competing providers."[2] I will discuss the various engineering and construction considerations applicable to deploy those facilities. I will demonstrate that these factors have not prevented, nor do they prevent, competing telecommunication carriers from deploying or potentially deploying their own facilities for DS3 and/or dark fiber loops at the specific customer locations specified in the attachments to the direct testimony of SBC Missouri witness, Mr. J. Gary Smith, regarding loops.

II. DS3 AND DARK FIBER LOOPS

Q. WHAT IS A LOOP?

A. A loop is a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC ("ILEC") central office and the loop demarcation point ("DMARC") at an end-user customer premise.[3] Loops in their simplest form are the transmission facilities between a central office and the customer's premises, i.e., "the last mile" of a carrier's network that enables the end-user customer to receive, for example, a telephone call or a facsimile, as well as to originate similar communications.[4]

Q. WHAT IS A DS3 LOOP?

A. A DS3 loop is a digital local loop provided over fiber optic cable having a total digital

2 *Triennial Review Order*, Appendix B, Final Rules, § 51.319(a)(5)(ii); § 51.319(a)(6)(ii).

3 § 51.319(a).

4 See *Triennial Review Order*, ¶ 203.

speed of 44.736 megabytes per second ("Mbps").[5] A DS3 loop is part of the family of loops called "high-capacity loops" which encompass a range from DS1 to OCn.[6]

Q. WHAT IS A DARK FIBER LOOP?

A. Dark fiber loops are strands of fiber optic "pairs" within a fiber optic cable that carry no light transmission (the fiber optic strands have no transmission equipment attached and are therefore not "lit"). The FCC defines dark fiber as fiber within an existing fiber optic cable that has not yet been activated through certain equipment, called "optronics," that render the fiber capable of carrying communications services.[7]

Q. YOU MENTIONED A CAPACITY FOR DS3 LOOPS (44.736 MBPS), BUT YOU DID NOT MENTION A CAPACITY FOR DARK FIBER. IS THERE A CAPACITY FOR DARK FIBER?

A. Dark fiber has virtually unlimited capacity, but it is the optronics attached to the fiber that defines its capacity. [8]

5 § 51.319 (a)(5).

6 See, *Triennial Review Order*, ns. 624, 631; see also, § 51.319(a)(4). High-capacity loops range from DS1 to OCn. A DS1 loop as a digital local loop having a total digital signal speed of 1.544 megabytes per second. OCn is an acronym for "Optical Carrier" loop, with "n" as a placeholder for the type of circuit. For example, OC3 would be the equivalent of three DS3's (155.52 Mbps), OC12 would be the equivalent of 12 DS3's (622.08 Mbps), and so on.

7 § 51.319 (a)(6).

8 *Triennial Review Order*, n. 909.

Q. ARE ILECS, SUCH AS SBC MISSOURI, ALWAYS OBLIGATED TO PROVIDE UNBUNDLED ACCESS TO DS3 AND DARK FIBER LOOPS TO A COMPETITIVE LOCAL EXCHANGE CARRIER ("CLEC")?

A. No. SBC Missouri is only required to unbundle DS3 and dark fiber loops where a CLEC would be "impaired" without such access. In its *Triennial Review Order,* the FCC ruled that a state commission shall find that CLECs are not impaired for DS3 and dark fiber loops where certain "triggers" have been satisfied by the existence of competitive carrier facilities that have already been deployed. These triggers include a "self-provisioning" trigger for both DS3 and dark fiber loops, and a "wholesale" trigger for DS3 loops,[9] and are discussed in the loop testimony of Mr. J. Gary Smith. However, the FCC also ruled that if these triggers are not satisfied, then "a state commission shall consider whether other evidence shows that a requesting telecommunications carrier is not impaired without access to an unbundled [DS3 or dark fiber loop] at a specific customer location."[10] This examination is referred to as a "potential deployment analysis."

Q. DO CERTAIN CUSTOMER LOCATIONS MEET THE SELF-PROVISIONING AND/OR WHOLESALE TRIGGERS AS SPECIFIED IN THE FCC'S TRIENNIAL REVIEW ORDER?

A. Yes. Mr. J. Gary Smith's testimony presents the evidence demonstrating that certain customer locations meet the FCC's trigger analysis.

9 § 51.319 (a)(5)(i)(A) & (B); § 51.319 (a)(6)(i).

10 § 51.319(a)(5)(ii); § 51.319(a)(6)(ii).

Q. IN ADDITION TO THE TRIGGER ANALYSIS, IS SBC MISSOURI PRESENTING EVIDENCE INDICATING THAT A NON-IMPAIRMENT FINDING SHOULD ALSO BE MADE FOR CERTAIN CUSTOMER LOCATIONS?

A. Yes. I believe that my testimony demonstrates that the FCC's criteria for meeting a potential deployment analysis have been met for certain customer locations.

Q. CAN YOU PLEASE IDENTIFY THE SPECIFIC CUSTOMER LOCATIONS FOR WHICH SBC MISSOURI SEEKS A POTENTIAL DEPLOYMENT ANALYSIS?

A. Yes. These specific customer locations (or "buildings") are identified in Schedule JGS-10L (NP) of Mr. J. Gary Smith's loop testimony. I believe that all of the locations included in this list satisfy the FCC's potential deployment analysis. These locations also share the following common characteristics: 1) they are located within (or immediately adjacent to) SBC Missouri, St. Louis and Kansas City wire centers in densely populated areas with large commercial buildings; 2) they are located within 300 feet of fiber facilities deployed by one or more alternative providers; and 3) the generate an estimated total annual telecommunications revenue stream of at least $50,000. These facts are explained in Mr. J. Gary Smith's direct testimony pertaining to unbundled loops. Because SBC Missouri is requesting a potential deployment determination only for certain locations within narrow geographic areas, I refer to this as a "corridor" approach to potential deployment analysis. My role in this proceeding is to explain from a

construction and engineering perspective why, under the factors established by the FCC, CLECs can deploy their own DS3 and dark fiber loop facilities to the specific customer locations within the defined corridors.

Q. PLEASE EXPLAIN WHY SBC MISSOURI FOCUSED ON THESE "CORRIDORS" IN SELECTING LOCATIONS FOR ANALYSIS OF POTENTIAL DEPLOYMENT.

A. The buildings within the corridors have much in common with one another. For example, they are located within 300 feet of the alternative fiber facilities of at least one CLEC. In addition, the buildings within the corridor are large enough to have tenants that spend a significant amount of money on telecommunication services. Consequently, the Commission is able to fairly assess the potential deployment criteria for several hundred buildings in a streamlined fashion.

Q. BUT ISN'T EACH BUILDING UNIQUE IN SIZE AND LOCATION?

A. While there are differences in size and location among the buildings on the list, those buildings have important characteristics in common and the differences are not significant in terms of the criteria that must be analyzed under the FCC's potential deployment rules applicable to DS3 and dark fiber loops. Under these rules, for example, the Commission must analyze "the cost of equipment needed for transmission." These costs do not vary in any meaningful way among the St. Louis and Kansas City area buildings identified in Schedule JGS-10L (NP) of Mr. J. Gary Smith's loop testimony.

Similarly, the Commission must examine "local topography such as hills and rivers," as well as "availability of reasonable access to rights-of- way." These factors likewise do not vary in any meaningful way among the buildings identified in Schedule JGS-10L (NP).

Q. WHAT DO YOU CONCLUDE FROM THIS APPROACH?

A. I conclude that the Commission should analyze all of the buildings listed on Schedule JGS-10L (NP) of Mr. J. Gary Smith's loop testimony as a single group. This approach is fair and is the most practical, since a building-by-building inquiry would require the parties and the Commission to expend critical resources in a time-consuming review process for hundreds or even thousands of buildings, which would be unrealistic.

Q. WHAT ARE THE SPECIFIC FCC RULES FOR THE ANALYSIS OF POTENTIAL DEPLOYMENT OF DS3 AND DARK FIBER LOOPS?

A. For DS3 loops, the applicable rule is 47 C.F.R. §51.319(a)(5)(ii), which provides as follows:

> Where neither trigger in paragraph (a)(5)(i) of this section is satisfied, a state commission shall consider whether other evidence shows that a requesting telecommunications carrier is not impaired without access to an unbundled DS3 loop at a specific customer location. To make this determination, a state must consider the following factors: evidence of alternative loop deployment at that location; local engineering costs of building and utilizing transmission facilities; the cost of underground or aerial laying of fiber or copper; the cost of equipment needed for transmission; installation and other necessary costs involved in setting up service; local topography such as hills and rivers; availability of reasonable access to rights-of-way; building access restrictions/costs; and availability/feasibility of similar quality/reliability alternative transmission technologies at that particular location.

Potential deployment of dark fiber is governed by 47 C.F.R. § 51.319(a)(6)(ii), which provides:

> Where the trigger in paragraph (a)(6)(i) of this section is not satisfied, a state commission shall consider whether other evidence shows that a requesting telecommunications carrier is not impaired without access to an unbundled dark fiber loop at a specific customer location. To make this determination, a state must consider the following factors: evidence of alternative loop deployment at that location; local engineering costs of building and utilizing transmission facilities; the cost of underground or aerial laying of fiber; the cost of equipment needed for transmission; installation and other necessary costs involved in setting up service; local topography such as hills and rivers; availability of reasonable access to rights-of-way; building access restrictions/costs; and availability/feasibility of similar quality/reliability alternative transmission technologies at that particular location.

As the text of these rules show, the same factors must be examined for both DS3 loops and dark fiber loops.

Q. DOES SBC MISSOURI ADDRESS EACH OF THESE FACTORS?

A. All of the relevant factors are addressed in my testimony, the loop testimony of Mr. J. Gary Smith, and the testimony of Mr. Joseph Ramatowski. The relevant factors addressed are:

- Evidence of alternative loop deployment at that location.
- Local engineering costs of building and utilizing transmission facilities.
- The cost of laying underground or aerial fiber or copper.
- The cost of equipment needed for transmission.

- Installation and other necessary costs involved in setting up service.
- The local topography such as hills and rivers.
- Availability of reasonable access to rights-of-way.
- Building access restrictions/costs.

Q. THE FCC NOTED THAT FIVE OF THESE FACTORS MUST BE EVALUATED FROM A COST PERSPECTIVE. DOES SBC MISSOURI ADDRESS THIS COST PERSPECTIVE?

A. Yes. Mr. Joseph Ramatowski identifies the relevant costs in his testimony. I use those costs in the overall analysis of the factors that must be considered in the potential deployment analysis.

III. POTENTIAL DEPLOYMENT ANALYSIS CRITERIA FOR DS3 AND DARK FIBER LOOPS

Q. CAN YOU PLEASE EXPLAIN HOW A COMPETING CARRIER WOULD DEPLOY ITS OWN DS3 AND DARK FIBER LOOP FACILITIES TO CUSTOMER LOCATIONS WITHIN THE "CORRIDORS" DEFINED BY SBC MISSOURI?

A. The wire centers noted in the attachments to Mr. J. Gary Smith's direct loop testimony serve areas which include fiber facilities owned and operated by competitive carriers. As shown in Schedule JGS-8L and Schedule JGS-9L of his testimony, the fiber facilities of one or more alternative carriers have been placed in most of the main streets or rights-of-

way in the downtown St. Louis and Kansas City areas.[11] As a result, a CLEC's deployment of DS3 or dark fiber loops is not a matter of constructing a fiber facility spanning several thousands of feet. To the contrary, it is only a matter of extending a short "lateral"[12] facility to connect the existing fiber facility (i.e., the "backbone") in the middle of the street or right-of-way to a building that adjoins that street. Thus, from a competitive carrier's own existing fiber facility, a competitive carrier need only extend a short fiber lateral from an access point (such as a "slack loop" in the cable, or a splice) off of the backbone to the desired building.[13]

A. EVIDENCE OF ALTERNATIVE LOOP DEPLOYMENT AT THAT LOCATION

Q. WHAT EVIDENCE DOES SBC MISSOURI HAVE CONCERNING ALTERNATIVE LOOP DEPLOYMENT AT THE SPECIFIC CUSTOMER LOCATIONS FOR WHICH IT SEEKS A FINDING OF NON-IMPAIRMENT UNDER THE POTENTIAL DEPLOYMENT ANALYSIS?

A. As discussed in Mr. J. Gary Smith's direct loop testimony, some of the buildings which SBC Missouri is including in its potential deployment analysis are already served by a competing carrier's high capacity loops.

11 Although placing fiber facilities in the street or right-of-way has historically been the method of choice, later in my testimony I will show that carriers are also using other means to deploy fiber facilities other than the traditional telecom conduit, innerduct, and manhole.

12 The term "Lateral" is recognized within the telecommunications industry as an extension from the main fiber feeder cable. See http://www.level3.com/userimages/DotCom/pdf/offnlateral_useng_global_letter_forscreen.pdf. "(3)Link Dark Fiber Off-Net Lateral helps companies connect their key locations and control their own networks without the hassle of managing or constructing last-mile solutions. Level 3 has the experience, assets, and dedicated team to connect these locations quickly and efficiently." See also http://www.lglass.net/network/realestate.jsp. "We offer owners…building lateral conduits and fiber. We solve customer frustrations, thus providing you with satisfied tenants."

13 See Schedule GOS-1 for an illustration.

Q. WHY IS IT SIGNIFICANT THAT AT LEAST ONE CLEC HAS DEPLOYED A FIBER LOOP TO THESE BUILDINGS?

A. The best evidence that CLECs do not face any material economic or operational barriers in the deployment of loop facilities is that a CLEC has, in fact, already deployed loop facilities to the building. In order to show that loop deployment can potentially be made to a building, there is really no better proof than to show where it has already been done. As the FCC itself found, "actual competitive deployment is the best indicator that requesting carriers are not impaired."[14]

B. LOCAL ENGINEERING COSTS OF BUILDING AND UTILIZING TRANSMISSION FACILITIES

Q. WHAT ARE THE ENGINEERING ACTIVITIES INVOLVED IN BUILDING TRANSMISSION FACILITIES (EXTENDING A LATERAL FROM THE BACKBONE TO A BUILDING) FOR DS3 AND DARK FIBER LOOPS?

A. The activities typically include the following:

- Determine the location of the fiber access point and the path from the backbone fiber cable to the building.
- Determine the type of optronics to be used based on methods and procedures for anticipating future need.

14 *Triennial Review Order*, ¶ 335.

- Visit the customer premise to determine the location of equipment, the availability and location of the Sub-Owned conduit from the equipment room to the property line, the availability of customer power and a power ground source.
- Evaluate the central office for available space, power, LGX space (fiber termination and cross connect frame), ground, alarm devices, timing source, connection to data network, etc.
- Design an undertaking to place a short fiber lateral, innerduct and/or conduit connecting the access point to the building.
- Design and order necessary optronics.
- Issue work order to central office and construction technicians on how equipment is to be installed and configured.

Q. DO YOU HAVE ANY REASON TO BELIEVE THAT THE SBC MISSOURI ENGINEERING ACTIVITIES YOU DESCRIBE ARE DIFFERENT FROM THOSE OF A CLEC?

A. No. The underlying engineering activities that each company must perform are the same In my experience, the specifications used by the competing carrier for placing steel or PVC conduit, handholes, manholes, minimum depth of cover, buried cable warning tape, innerduct, and cable warning signs are also designed by SBC Missouri engineers into undertakings that place fiber facilities.

Q. DO YOU HAVE INFORMATION CONCERNING THE COSTS OF PERFORMING THESE ENGINEERING ACTIVITIES?

A. Yes. I discuss this evidence in Part IV, below.

C. THE COST OF UNDERGROUND OR AERIAL LAYING OF FIBER OR COPPER

Q. WHAT HAVE YOU DETERMINED AS TO WHETHER UNDERGROUND OR AERIAL LAYING OF FIBER HAS OCCURRED IN ST. LOUIS AND KANSAS CITY?

A. While there is a small amount of aerial fiber cable in downtown Kansas City, it is not the first choice for SBC Missouri and would be the rare exception, rather than the rule. By far, the predominant method of placing fiber cable in both cities is underground. This has been accomplished through the use of conduit or innerduct.

Q. WHAT ACTIVITIES ARE INVOLVED IN LAYING UNDERGROUND FIBER IN AN AREA LIKE DOWNTOWN ST. LOUIS OR KANSAS CITY?

A. Underground cable is typically contained within some type of conduit (usually PVC or steel), innerduct, or both, and the conduit or innerduct is accessible in manholes or handholes. It is often necessary to place the conduit or innerduct from the Sub-Owned conduit ("SOC") to the point of access The actual "laying" (i.e., placing) of underground fiber cable in downtown St. Louis or Kansas City includes, but is not limited to, the following activities:

- If manholes are in the street, lane closures are an issue. Construction crews would first have to obtain the necessary city permits for lane closures.
- Permits for lane closures in hand, the construction crews would travel to the job site and set up traffic control, not only to protect themselves but to protect the general public.
- Once traffic control is established, the construction crews would access the necessary manholes for placing the conduit, innerduct or fiber cable. This activity would typically include the following:
  - Pull the manhole lid;
  - Test the manhole environment for earth gases;
  - Pump out any water in the manhole;
  - Ventilate the manhole.
  - Set up excavation equipment outside of the manhole in the ROW to bury the conduit or innerduct.
- Once declared safe for entry, construction crews could then enter the manhole and set up equipment for placing the conduit or innerduct from the manhole to the SOC. Once this conduit or innerduct is in place, they then would proceed with setting up the equipment for pulling the cable.
- Construction crews would also simultaneously set up equipment in the building terminal room. Typically the cable (housed on a steel reel) is adjacent to the manhole, and equipment is set up in the terminal room to pull the cable from the manhole to the terminal room. However, this process could be reversed and is wholly contingent on which method is the easiest.
- Typically fiber cable is placed in innerduct, and the innerduct may be contained within a larger duct. For example, the conduit between manholes is

usually four inches (4") in diameter, and the conduit from the manhole to the building may be either two inches (2") or four inches (4") in diameter. Within the four-inch (4") conduit, you can place up to three (3) one-and-one-quarter inch (1.25") innerduct. This practice of placing innerduct within the main duct is common throughout the industry. Thus, if there is no innerduct in the conduit between the manhole and the building terminal room, the construction crew will generally place it. Not only does innerduct maximize the efficient use of the conduit, but using innerduct also provides a safe pulling environment for the fiber cable.

As noted in Schedule GOS-1, there are generally two placement options to choose from when deciding how to extend fiber facilities into a specific customer location for DS3 service. The first is to extend the SOC (conduit placed by the owner of the building from the DMARC to the property line) to a pull-through manhole, and then pull a fiber cable from an access manhole through the pull-through manhole into the DMARC. The second is to extend the SOC all the way to the access manhole, then pull fiber cable from the access manhole to the DMARC. The selection of the appropriate option depends on a range of factors including, but not limited to, the distance between the SOC and the

access manhole, the number and type of existing utilities in the street or rights-of-way that would be encountered during construction, or any municipality restrictions.[15]

Q. DO YOU HAVE ANY REASON TO BELIEVE THAT SBC MISSOURI'S ACTIVITIES FOR LAYING UNDERGROUND FIBER CABLE ARE DIFFERENT FROM THOSE OF THE CLECS?

A. Based on my experience, if a CLEC decides to utilize underground conduit, the underlying work activities that the CLEC would perform are typically the same as those that would be performed by SBC Missouri. It is possible, however, that a CLEC might choose an alternative method, such as pulling the fiber cable into the building through a live natural gas line. While SBC Missouri does not do that, some alternative fiber providers do.[16]

Q. DO YOU HAVE INFORMATION CONCERNING THE COSTS OF PERFORMING THESE INSTALLATION ACTIVITIES?

A. Yes. I discuss these costs in Part IV, below.

15 A carrier could also, at its option, choose to splice a lateral into a building from a non-traditional access point, such as making a sheath opening in a pull through manhole and splicing the lateral segment into the fiber at that point. Doing so could reduce the amount of construction and engineering.

16 See Outside Plant Magazine, October 2003, page 25. See also Sempra Fiber Links web site http://www.semprafiberlinks.com/. Sempra Fiber Links states, "This new solution to the last mile bottleneck safely delivers services directly from metropolitan fiber optic networks through virtually any commercial building's existing natural gas service lines. Planning is simplified. Installation is faster, with less disruption to the environment. Construction costs are lowered. Plus, with the fiber connections protected within both fiber conduit AND utility service lines, optic

D. THE COST OF EQUIPMENT NEEDED FOR TRANSMISSION

Q. WHAT CONSIDERATIONS ARE EVALUATED FROM A CONSTRUCTION AND ENGINEERING PERSPECTIVE FOR THE EQUIPMENT NEEDED FOR TRANSMISSION?

A First, as I earlier noted, dark fiber, per se, has no equipment associated with it. That is to say, there are no "optronics" attached to the fiber to provide an optical transmission signal. Dark fiber only becomes capable of transmission once it becomes "lit" when the CLEC attaches its own optronics. Thus, the cost of optronics is not a consideration for the potential deployment of dark fiber loops. Transmission equipment is needed, however, for DS3 loops. The particular transmission equipment to be used depends on a variety of factors that include.

- Customer requested service (the capacity, such as DS1, DS3, or OCn).
- Available space at the building location terminal room.
- Central office (or, for this example, CLEC POP) equipment needed.
- Remote or local testing capabilities.
- Protection and back-up features.
- Upgrade/expansion capabilities for future.
- Alarm and monitoring capabilities.

cable is less prone to unexpected cuts, increasing long-term reliability. Network owners can offer superior benefits and reliability that appeal to a wide variety of metro service providers - not just ISP's, but local exchange and inter-exchange carriers, cable television operators, and others."

Q. DO YOU HAVE ANY REASON TO BELIEVE THAT SBC MISSOURI'S CONSIDERATIONS FOR EQUIPMENT NEEDED FOR TRANSMISSION ARE DIFFERENT THAN THAT OF THE CLECS?

A. No. Based on my experience, both SBC Missouri and CLECs must evaluate the factors noted above and make their equipment choices accordingly.

Q. ASSUMING THAT SBC MISSOURI AND COMPETING PROVIDERS SELECT THE SAME TRANSMISSION EQUIPMENT FOR A JOB, DO YOU HAVE ANY REASON TO BELIEVE THAT SBC MISSOURI'S COSTS FOR BUYING THIS EQUIPMENT ARE DIFFERENT THAN THAT OF THE CLECS?

A. No. While I do not know what specific prices CLECs pay to vendors for equipment, I can say that CLECs such as AT&T and MCI are large purchasers of telecommunications equipment and are able to seek volume discounts from equipment vendors.

Q. DO YOU HAVE INFORMATION CONCERNING SBC MISSOURI'S EQUIPMENT COSTS?

A. Yes. I discuss these costs in Part IV, below.

E. INSTALLATION AND OTHER NECESSARY COSTS INVOLVED IN SETTING UP SERVICE

Q. WHAT INSTALLATION AND OTHER ACTIVITIES ARE NECESSARY TO PROVIDE A WORKING DS3 LOOP?

A. For DS3 loops, the installation and other activities would include the following:

- Splicing all fiber strands to ensure a good path back to the central office.
- Installing the equipment/frame at the customer premise (and, if necessary, in the CO – or, in the case of a CLEC, at the POP).
- Connecting the fiber strands to the optronics equipment.
- Placing the necessary equipment cards to provide the desired service.
- Connecting power to the equipment and attaching a grounding source.
- Connecting the equipment to an alarming source and data network.
- Testing the equipment to ensure that efficient point-to-point transmission signals fall within acceptable loss limits.

Q. ARE THE SAME ACTIVITIES NECESSARY FOR DARK FIBER?

A. No, not all of them. As an initial matter, I should explain that SBC Missouri does not install fiber cable for the direct use as dark fiber. When SBC Missouri decides to build fiber facilities, it does so with the intent of maximizing use of those facilities as quickly and as efficiently as possible to serve existing and/or future customer demand. However, installation of dark fiber would involve pulling the fiber cable from point-to-point (such as an access manhole outside of the building to a terminal room) and splicing the fiber strands together. Since dark fiber has no optronics (no equipment), installation activities are limited to placing and splicing.

Q. DO YOU HAVE ANY REASON TO BELIEVE THAT THE ACTIVITIES YOU DESCRIBE ARE DISSIMILAR BETWEEN SBC MISSOURI AND THE CLECS?

A. No. CLECs and ILECs, including SBC Missouri, typically use the same type of equipment (often the same vendors) for deriving DS3 loops and dark fiber loops, and thus I do not believe the activities would be different.

Q WHAT IS THE AVERAGE LENGTH OF THE FIBER TRANSMISSION CABLE THAT SBC MISSOURI PLACES IN A LATERAL TO REACH A BUILDING LOCATED WITHIN 300-FEET OF AN EXISTING FIBER BACKBONE?

A. In evaluating these dense urban corridors, where backbone fiber is so close to the building, it is my experience that the average distance to reach an access point typically will not exceed 500 feet. When you factor in the location of the nearest access point in the fiber backbone, the fact that the cable will not necessarily be placed in a direct line of sight to the building and the distance cable is placed inside the building, the typical length of fiber will be somewhat greater than the distance to the backbone fiber.

Q. DO YOU HAVE INFORMATION CONCERNING THE COST OF THESE INSTALLATION AND OTHER ACTIVITIES?

A. Yes. I discuss these costs in Part IV, below.

F. THE LOCAL TOPOGRAPHY SUCH AS HILLS AND RIVERS

Q. WHAT DID YOU CONCLUDE AFTER CONSIDERING LOCAL TOPOGRAPHY?

A. I concluded that there are no local topography concerns, barriers, or obstacles that would prevent competitive carriers from deployment of DS3 or dark fiber loops. I based this conclusion on my review of the building addresses and after having consulted the maps attached to Mr. J. Gary Smith's direct loop testimony (Schedules JGS-8L, -9L & -10L (NP)), which show one or more competitive carrier fiber facilities within 300 feet of each building. Downtown St. Louis and Kansas City are similar in that they both border major rivers, and they both have major business area layouts that are relatively flat. In addition, both cities have uniform soil conditions. Moreover, the fact that extensive CLEC fiber facilities already provide high-capacity loops within downtown St. Louis and Kansas City indicates that topology concerns, if they exist at all, have been successfully overcome. Finally, at least one carrier touts the fact that its facilities can overcome local topography concerns by using a high speed free space optics ("fiberless") connection to the building.[17]

G. AVAILABILITY OF REASONABLE ACCESS TO RIGHTS-OF-WAY

Q. WHAT ARE RIGHTS-OF-WAY?

A. The term refers to public property (owned and controlled by a political subdivision), such as streets and alleys, and is property granted to competitive carriers, utilities, etc., for placing facilities that benefit the general public, such as electric, water, gas, sewer, cable television, and telecommunications. In some cases, but not always, the right-of-way will be the distance between the center line of a public street and a private property line.

17 *See* http://www.lastmile2.com.

Q. IS ACCESS TO RIGHTS-OF-WAY A CONCERN IN DOWNTOWN ST. LOUIS AND KANSAS CITY?

A. No, not according to the best available indicators. CLECs have already obtained access to the public rights-of-way in both cities, as shown by the extensive web of CLEC fiber facilities that are placed up and down the streets. This is obvious when reviewing the map attachments (Schedules JGS-8L and -9L) to Mr. J. Gary Smith's direct loop testimony, which show the deployment of CLEC fiber facilities.[18]

Q. ARE YOU AWARE OF ANY GENERAL RULES THAT REQUIRE MUNICIPALITIES TO PERMIT COMPETING CARRIERS TO ACCESS THEIR RIGHTS-OF-WAY ON REASONABLE TERMS AND CONDITIONS?

A. I am aware of both federal and state laws that apply. Although I am not a lawyer and cannot discuss the fine points that surround these laws, I know that Section 253 of the Telecommunications Act of 1996 (47 U.S.C. Section 253) says that a municipality can manage the public rights-of-way to require fair and reasonable compensation from telecommunications providers, but must do so on a competitively neutral and nondiscriminatory basis. In addition, under Section 392.080 RSMo 2000, all telecommunications companies are permitted to utilize the public rights of way, subject

18 Additionally, right-of-way was not a concern for AboveNet, who claims that "Over the last several years Abovenet has focused on the last mile, laying thousands of miles of fiber-optic cable in major metropolitan areas throughout the US and Europe. Abovenet has delivered metropolitan area optical networking to bandwidth-starved businesses previously boxed in by copper, complexity, and high cost." See http://www.abovenet.com/products/access-darkfiber.html.

to limited control by municipalities. Further, Section 67.1840 RSMo 2000 provides limits on municipalities in collecting fees for the use of public rights of way.

H. BUILDING ACCESS RESTRICTIONS/COSTS

Q. WHAT IS "BUILDING ACCESS"?

A. Building access refers to the ability of a carrier to gain entry into a building in order to bring fiber cable into an equipment room, which houses the equipment needed for transmission.

Q. WHAT IS YOUR UNDERSTANDING OF ANY BUILDING ACCESS RESTRICTIONS IN DOWNTOWN ST LOUIS AND KANSAS CITY?

A. In general, carriers must have the permission of the owner of the building to get access to the building. I have found that building owners are willing to negotiate agreeable access arrangements to their property.

Q. BASED ON YOUR OBSERVATIONS, HAVE CLECS BEEN ABLE TO ACCESS BUILDINGS?

A. Yes. Schedules JGS-4L and -7L to Mr. J. Gary Smith's direct loop testimony lists buildings to which at least two competitive carriers have deployed their own loop facilities. Schedule JGS-10L (NP) to Mr. J. Gary Smith's direct loop testimony identifies several additional buildings in downtown St. Louis and Kansas City to which at least one competitive carrier has deployed its own loop facilities. This demonstrates that, in

general, competitive carriers are able to gain entry into buildings by negotiating mutually agreeable access arrangements.[19]

Q. WHAT DO YOU CONCLUDE REGARDING BUILDING ACCESS ISSUES AND WHETHER THEY PRESENT A MATERIAL BARRIER TO A CLEC'S ABILITY TO DEPLOY LOOPS?

A. Based on my experience, I don't know of any reason why a CLEC would be any less able to obtain building access than SBC Missouri. Both would have to negotiate this access based on the type of facility they were placing and the tenants they were wanting to provide service to. Both would be required to negotiate with the building owner and terminate their facilities at the location provided by the building owner. The service path to a particular tenant would also be part of this negotiation.

IV. POTENTIAL DEPLOYMENT COST CRITERIA

Q. DO ALL OF THE FCC'S POTENTIAL DEPLOYMENT CRITERIA REQUIRE THE STATE COMMISSION TO EVALUATE COSTS?

A. No, only five of the nine criteria relate to costs. Those five criteria are as follows:

1. Local engineering costs of building and utilizing transmission facilities.
2. The cost of laying underground or aerial fiber or copper.

19 See also http://xo.com/products/large/data/sonet/index.html, who claims that "XO™ SONET lets you connect multiple offices in a metropolitan area to create a dedicated, high-bandwidth fiber-optic network that can handle even the most demanding applications." Obviously if

3. The cost of equipment needed for transmission.
4. Installation and other necessary costs involved in setting up service.
5. Building access restrictions/costs.

Q. HAS SBC MISSOURI CONDUCTED AN ANALYSIS TO DETERMINE WHAT COSTS MIGHT BE INCURRED BY CLECS TO DEPLOY FIBER FACILITIES FOR DS3 AND DARK FIBER LOOPS?

A. Yes. SBC Missouri is utilizing a TELRIC cost study to support its current rates for DS3 UNE loops. This is explained further in the direct testimony of Mr. Joseph Ramatowski.

Q. WHAT ARE THE TELRIC COSTS FOR DEPLOYMENT OF DS3 AND DARK FIBER LOOPS AS IDENTIFIED IN THAT TELRIC STUDY?

A. As explained in the direct testimony of Mr. Ramatowski, the total estimated cost to deploy one OC3 system from a building to an existing fiber facility located within 300 feet of the building is **_____** . While I defer to Mr. Ramatowski to discuss the specifics of the cost study, I believe that figure represents a "turn-key" job (i.e., all costs related to local engineering, laying of fiber, equipment needed for transmission and installation).

XO can "connect multiple offices in a metropolitan area," then building access does not, nor has not, prevented deployment of fiber facilities.

HC

Q. WHAT IS YOUR CONCLUSION REGARDING WHETHER THE VARIOUS COST CONSIDERATIONS YOU TESTIFY ABOUT CONSTITUTE A BARRIER TO LOOP DEPLOYMENT BY THE CLECS?

A. From a construction and engineering perspective, I conclude that there are no cost barriers for loop deployment. For any cost that would be incurred by a CLEC, SBC Missouri would also incur a similar cost. Both would incur similar costs in designing, placing, purchasing and installing cable and equipment. This indicates to me that there are no barriers that would affect either a CLEC or SBC Missouri disproportionately

Q. BASED ON YOUR CONSTRUCTION AND ENGINEERING EXPERIENCE, DO YOU HAVE ANY OTHER OBSERVATIONS ABOUT A COMPETING CARRIER'S ABILITY TO DEPLOY FIBER LOOP FACILITIES?

A. Yes. First, in my experience, all carriers (whether they be a CLEC or an ILEC) deploy facilities in a manner that allows them to maximize the use of those facilities. The reason a carrier goes to the time and expense of placing fiber backbones in the cities noted in the attachments to Mr. J. Gary Smith's testimony is so the carrier can serve building locations along those streets by constructing fiber loop facilities to those buildings. A competing carrier would not deploy such extensive backbone facilities unless it could foresee the opportunity and ability to extend fiber facilities into the nearby buildings. Second, based on my experience, the incremental cost to extend a fiber facility into specific customer locations is relatively small when compared to the overall cost already incurred to place the fiber backbone. A competing carrier has every incentive to extend

loop facilities into building locations in order to fully utilize the investment in the fiber backbone. Third, the majority of the indicated cost in the TELRIC study is attributable to the cost of the electronics needed to terminate the fiber on both ends. This equipment is re-usable, i.e., it can be removed from location A and installed in location B. To my mind, this reduces the risk associated with the deployment of facilities to a building because if the business opportunity does not work out for any reason, the majority of the investment can be re-deployed elsewhere in the carrier's operations.

V. CONCLUSION

Q. BASED UPON YOUR TESTIMONY IN THIS PROCEEDING, WHAT IS YOUR CONCLUSION WITH RESPECT TO THE FACTORS IDENTIFIED BY THE FCC IN ITS POTENTIAL DEPLOYMENT ANALYSIS?

A. Based on my testimony, I conclude that none of the factors identified by the FCC create a material barrier to a competing provider's deployment of its own DS3 or dark fiber loop facilities to any of the buildings identified in Schedule JGS-10L (NP) of Mr. J. Gary Smith's direct loop testimony.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.