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And Mass Market Cutover  
Witness: August H. Ankum  
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BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION

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

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Service Commission

Phase I Direct Testimony  
of  
August H. Ankum, Ph.D.  
on behalf of

MCImetro Access Transmission Services, LLC  
Brooks Fiber Communications of Missouri, Inc.  
MCI WorldCom Communications, Inc.  
Intermedia Communications, Inc.

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ATTACHMENT I: CURRICULUM VITAE OF AUGUST H. ANKUM

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Dr. August H. Ankum. I am Senior Vice President at QSI  
4 Consulting, Inc., a consulting firm specializing in economics and  
5 telecommunications issues. My business address is 1261 North Paulina, Suite #8,  
6 Chicago, Illinois.

7 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND**  
8 **PROFESSIONAL BACKGROUND.**

9 A. I received a Ph.D. in Economics from the University of Texas at Austin in 1992,  
10 an M.A. in Economics from the University of Texas at Austin in 1987, and a B.A.  
11 in Economics from Quincy College, Illinois, in 1982.

12 My professional background covers work experiences in private industry  
13 and at state regulatory agencies. As a consultant, I have worked with large  
14 companies, such as AT&T, AT&T Wireless and MCI, as well as with smaller  
15 carriers, including a variety of competitive local exchange carriers (“CLECs”) and  
16 wireless carriers. I have worked on cost proceedings and arbitrations in many  
17 states. I have also assisted public agencies, such the Office of Public Utility  
18 Counsel of Texas and the New Mexico Public Utility Regulatory Commission.

19 Prior to practicing as a telecommunications consultant, I worked for MCI  
20 as a senior economist. At MCI, I provided expert witness testimony and  
21 conducted economic analyses. Before I joined MCI in early 1995, I worked for  
22 Teleport Communications Group, Inc. (“TCG”), as a Manager in the Regulatory  
23 and External Affairs Division. In this capacity, I testified on behalf of TCG in

1 proceedings concerning local exchange competition issues, such as Ameritech's  
2 Customer First proceeding in Illinois. From 1986 until early 1994, I was  
3 employed as an economist by the Public Utility Commission of Texas ("PUCT")  
4 where I worked on a variety of electric power and telecommunications issues.  
5 During my last year at the PUCT, I held the position of chief economist. Prior to  
6 joining the PUCT, I taught undergraduate courses in economics as an Assistant  
7 Instructor at the University of Texas from 1984 to 1986.

8 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

9 A. MCI has asked me to identify the market definition that the Public Service  
10 Commission of Missouri ("PSC" or "Commission") should use in evaluating  
11 whether competitive local exchange carriers ("CLECs") in Missouri are impaired  
12 without access to unbundled switching for mass-market customers at prices based  
13 on Total Element Long Run Incremental Cost ("TELRIC").

14 My testimony presents the results of my analysis and provides supporting  
15 rationale for my recommendation of the use of the wire-center as the relevant  
16 market definition for analysis of impairment issues related to unbundled switching  
17 for mass-market customers in the subsequent phases of this proceeding.

18 I also discuss the issue of mass market cutover.

19 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

20 A. Economic theory and practice, as well as the FCC's guidance in its *Triennial*  
21 *Review Order*, all suggest that the wire center is the most appropriate starting  
22 point for an analysis of whether CLECs are impaired without access to unbundled  
23 switching for mass-market customers. Use of the wire center as the basic building

1 block for analysis accomplishes the FCC's goals of a granular analysis that  
2 maximizes accuracy of results, subject to the constraints of practicality.<sup>1</sup>

3 However, even an analysis of individual wire-center markets could lead to  
4 erroneous findings of no impairment if the Commission does not conduct its  
5 analysis in a way that accounts for existing lawful price discrimination between  
6 residential and small business customers and existing operational constraints. The  
7 Commission, therefore, should treat the market definition adopted in this phase as  
8 a provisional one, allowing for the possibility of either defining submarkets (*e.g.*,  
9 residential vs. small business) or establishing guidelines for the impairment  
10 analyses in the next phase of this proceeding that will properly reflect significant  
11 variations in economic and operational barriers to entry between customer classes  
12 and among geographic locations.

13 For all of these reasons, I urge the Commission to adopt the wire center as  
14 the starting point for all subsequent impairment analyses. I also recommend that  
15 the Commission adopt a product market definition that includes all local exchange  
16 service options that provide service at a cost, quality and maturity equivalent to  
17 the ILEC's offerings. This product market definition should explicitly exclude  
18 Commercial Mobile Radio Service ("CMRS"), fixed wireless and cable  
19 telephony.

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<sup>1</sup> *Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 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. 96-989); Deployment of Wireline Services Offering Advanced Telecommunications Capability (CC Docket No. 98-147), FCC No. 03-36, (rel. Aug. 21, 2003) (hereinafter, "Triennial Review Order"), ¶ 130.*

1           Finally, I recommend that the Commission conduct its trigger and  
2 potential deployment analyses in a way that evaluates whether (1) residential and  
3 small business customers should be treated as being in separate markets, even at  
4 the wire-center level, and (2) whether customer locations served over integrated  
5 digital loop carrier (“IDLC”) should be treated as being in a separate submarket  
6 for which unbundled switching would continue to be available, even if a finding  
7 of no impairment were otherwise justified for a given wire center. In any event,  
8 the Commission should not consider any company that is not actively providing  
9 residential service with its own switches (*i.e.*, one that is only providing business  
10 service) to be a market participant and therefore should not count such a carrier as  
11 a trigger company for mass-market switching.

12           The remainder of my testimony explains the basis for each of these  
13 conclusions and recommendations.

14 **II. THE ADOPTED MARKET DEFINITION SHOULD PERMIT**  
15 **REASONABLE CONCLUSIONS FROM BOTH TRIGGER AND**  
16 **POTENTIAL DEPLOYMENT ANALYSES.**

17 **Q. WHAT DECISIONS MUST THE COMMISSION MAKE IN THIS**  
18 **PROCEEDING?**

19 A. Although the FCC made a national finding that CLECs are impaired without  
20 unbundled access to incumbent local exchange carrier (“ILEC”) local switching to  
21 serve mass-market customers,<sup>2</sup> it delegated to this Commission the task of  
22 determining whether the national finding of impairment is overcome in any areas

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<sup>2</sup> *Id.* ¶ 419.

1 within Missouri. Specifically, the FCC has “ask[ed] the states to assess  
2 impairment in the mass market on a market-by-market basis.”<sup>3</sup> The Commission  
3 must conduct a market-by-market investigation into whether barriers to entry for  
4 mass-market switching “are likely to make entry into a market uneconomic.”<sup>4</sup>

5 **Q. PLEASE DESCRIBE THE PROCESS THE COMMISSION SHOULD**  
6 **FOLLOW IN REACHING THESE DECISIONS.**

7 A. The first step in the analytical process, logically (although it need not be  
8 procedurally), is to define the markets in which the Commission will consider  
9 evidence of impairment on a “granular basis to each identifiable market.”<sup>5</sup>  
10 Establishing a market definition, at least on a tentative basis, is the task that the  
11 Commission has designated for this first phase of the proceeding.<sup>6</sup>

12 I recommend that the Commission adopt a market definition that permits  
13 the most unambiguous and accurate answer to the question of whether CLECs are  
14 impaired without access to unbundled switching in a given market. Implicitly,  
15 therefore, the market definition and every step of the subsequent analysis should  
16 allow this Commission to assess whether there is evidence that demonstrates the  
17 basis for the national finding of impairment does not apply in a specific defined  
18 market.

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<sup>3</sup> *Id.* ¶¶ 476 and 493.

<sup>4</sup> *Id.* ¶ 84.

<sup>5</sup> *Id.* ¶ 495.

<sup>6</sup> Order Establishing Procedural Schedule (12/1/2003).



1           Once the Commission has defined the relevant markets, it must then  
2           “identify where competing carriers are not impaired without unbundled switching,  
3           pursuant to the triggers and analysis of competitors’ potential to deploy.”<sup>7</sup> Both  
4           the “trigger” analysis and the analysis of potential deployment apply on a market-  
5           by-market basis, and the FCC has specified that states must use the same market  
6           definition in conducting both analyses.<sup>8</sup> Hence, the task before the Commission  
7           in this phase is to determine what market definition is most appropriate, given that  
8           the same definition will be used to conduct both “trigger” and potential  
9           deployment analyses.

10   **Q.   PLEASE ELABORATE ON THE FIRST USE OF THE MARKET**  
11   **DEFINITION IN THIS PROCEEDING.**

12   A.   The separate markets defined by the Commission will first be used to identify  
13   market participants that may count toward satisfaction of self-provisioning and  
14   wholesale triggers. The *Order*’s trigger analysis is intended to provide “bright-  
15   line rules” that “can avoid the delays caused by protracted proceedings and can  
16   minimize administrative burdens.”<sup>9</sup> The correct functioning of these “bright-line  
17   rules” depends crucially on the markets the Commission defines for use in  
18   “market-by-market” analysis.

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<sup>7</sup> *Triennial Review Order* ¶ 473.

<sup>8</sup> *Id.* ¶ 495.

<sup>9</sup> *Id.* ¶ 498.

1           In particular, for the trigger analysis to correctly serve its function,  
2 markets must be defined so that “[i]f the triggers are satisfied, the states need not  
3 undertake any further inquiry, because no impairment should exist in that  
4 market.”<sup>10</sup> That is, markets must be defined so that if the triggers are satisfied and  
5 the Commission reaches a finding of no impairment for a market, customers in the  
6 market have real choice, and competitive carriers are not impaired in their ability  
7 to reach the customers in the defined market. Otherwise, the triggers could  
8 appear to be satisfied when customers have no alternative choice of providers and  
9 indeed where competitors are impaired. The FCC made clear the importance of  
10 firms serving as actual alternatives when it explained that existing firms can only  
11 be counted toward satisfaction of a trigger if they are “currently offering and able  
12 to provide service, and likely to continue to do so.”<sup>11</sup>

13           The triggers merely identify whether CLECs in a market are clearly not  
14 impaired without access to the local switching UNE. Failure to meet the triggers  
15 results in further analysis of potential deployment.

16           As a result, the role of market definition in the trigger analysis should be  
17 to identify the scope of telecommunications services and locations for which a  
18 market participant’s switching capacity clearly shows the absence of impairment  
19 because customers already have real alternatives. Market definition should ensure  
20 that a qualifying market participant provides an acceptable alternative to

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<sup>10</sup> *Id.* ¶ 494.

<sup>11</sup> *Id.* ¶ 500.

1 qualifying service provided at a geographic location that actually serves the  
2 customers in the market. The new entrant's service must be an acceptable  
3 substitute, and the location at which service is offered must encompass the areas  
4 in which the customers require service. Successful entry into a different market,  
5 where the entrant's offering is not a close substitute for service provided with the  
6 incumbent's local switching or where the entrant is unable to provide service to  
7 the customers, offers no such evidence of non-impairment. Only if the qualifying  
8 participant has succeeded in overcoming operational and economic barriers to  
9 entry into a properly defined market, which recognizes buyers' product and  
10 location substitution possibilities, can the Commission be confident that the new  
11 entrant offers evidence of no impairment in provision of the specified service at  
12 the specified location.

13 **Q. PLEASE ELABORATE ON THE SECOND USE OF THE MARKET**  
14 **DEFINITIONS.**

15 A. If the triggers are not satisfied in a market, analysis at some point (not necessarily  
16 in this case) proceeds to the possibility of potential deployment to test whether  
17 barriers to entry without unbundled access to a network element are "likely to  
18 make entry into a market uneconomic," or whether the market in question is  
19 "suitable for 'multiple, competitive supply.'"<sup>12</sup> This analysis must also be  
20 conducted on a market-by-market basis, analyzing the same markets that are used

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<sup>12</sup> *Id.* ¶¶ 84, 506.

1 in the trigger analysis. At this stage of the analysis, the Commission must  
2 consider any local switching capacity of market participants identified in the  
3 trigger analysis in concert with analysis of operational and economic barriers to  
4 entry. As with the triggers, it is critical that markets not be defined too broadly;  
5 otherwise, the Commission could end up finding non-impairment in many areas in  
6 which competitors are in fact impaired, leaving customers with no choice among  
7 providers.

8 **Q. IS YOUR RECOMMENDED APPROACH TO MARKET DEFINITION**  
9 **EQUALLY APPLICABLE TO BOTH THE WHOLESALE AND SELF-**  
10 **PROVISIONING TRIGGERS?**

11 A. Yes. As I explain in more detail below, the same approach to market definition  
12 applies to evidence of no impairment presented with respect to wholesale and  
13 self-provided switching.

14 **Q. YOU INDICATED ABOVE THAT THE MARKET DEFINITION SHOULD**  
15 **PERMIT THE MOST UNAMBIGUOUS AND ACCURATE ANSWER TO**  
16 **THE QUESTION OF WHETHER CLECS ARE IMPAIRED WITHOUT**  
17 **ACCESS TO UNBUNDLED SWITCHING IN A PARTICULAR MARKET.**  
18 **PLEASE EXPLAIN IN MORE DETAIL WHAT YOU MEAN BY THAT**  
19 **STATEMENT.**

20 A. The FCC has observed that “[i]t is fundamental to our general impairment  
21 analysis to consider whether alternative facilities deployment shows a lack of

1 impairment in serving a particular market.”<sup>13</sup> This means that the markets as  
2 defined should be sufficiently uniform that evidence of (actual or potential)  
3 facilities-based competition in any part of a given market implies the ability to  
4 provide service to all (or nearly all) customers in that market without access to  
5 unbundled switching.

6 Specifically, the *Order* calls for this Commission to conduct its  
7 investigation “on the most accurate level possible, while still preserving  
8 administrative practicality.”<sup>14</sup> Accuracy is essential to carrying out the pro-  
9 competitive purposes of the Telecommunications Act of 1996 (“Act”). As I  
10 explained in more detail above, if markets are not defined correctly, the  
11 Commission could mistakenly find no impairment where, in fact, customers are  
12 left without competitive alternatives; or, a faulty market definition could lead the  
13 Commission to find impairment where none exists.

14 **Q. HAS THE FCC ESTABLISHED ANY GUIDELINES OR PARAMETERS**  
15 **FOR THE MARKET DEFINITION TO BE USED IN TRIGGER AND**  
16 **POTENTIAL DEPLOYMENT ANALYSES?**

17 A. Yes. The rules that the FCC adopted in its *Triennial Review Order* specify that:

18 A state commission shall define the markets in which it will  
19 evaluate impairment by determining the relevant geographic area  
20 to include in each market. In defining markets, a state commission  
21 shall take into consideration the locations of mass market  
22 customers actually being served (if any) by competitors, the

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<sup>13</sup> *Id.* n. 1536.

<sup>14</sup> *Id.* ¶ 130.

1 variation in factors affecting competitors' ability to serve each  
2 group of customers, and competitors' ability to target and serve  
3 specific markets profitably and efficiently using currently available  
4 technologies. A state commission shall not define the relevant  
5 geographic area as the entire state.<sup>15</sup>

6 The *Order* also presents examples of the factors that may vary  
7 geographically, such as "how the cost of serving customers varies according to  
8 the size of the wire center and the location of the wire center, and the variations in  
9 the capabilities of wire centers to provide adequate collocation space and handle  
10 large number of hot cuts."<sup>16</sup> Significantly, these criteria for market definition are  
11 not limited to variations in potential profitability that might be captured, at least in  
12 part, by grouping together wire centers that fall into the same UNE and/or retail  
13 rate bands. Instead, consistent with the operational basis for the FCC's national  
14 finding of impairment for mass-market switching, the FCC suggests that the  
15 market consider variations in the ability of wire centers to handle large numbers  
16 of hot cuts. I interpret this language to reference what I understand has been  
17 termed the "mass-market migration hot cut process" or "MMMHCP" and not just  
18 the batch cut procedure that the FCC has directed state commissions to develop in  
19 the nine-month impairment proceedings. The ongoing ability of the ILECs to  
20 perform hot cuts as mass-market customers change carriers (only one or a handful  
21 of lines per location, but potentially and collectively hundreds of lines each day in  
22 a given wire center) is critical to the success of switch-based competition and

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<sup>15</sup> 47 C.F.R. § 51.319(d)(2)(i).

<sup>16</sup> *Triennial Review Order* ¶ 496.

1 must be considered at all phases of the impairment analysis, beginning with  
2 market definition.

3 **Q. DOES ECONOMIC THEORY PROVIDE ANY GUIDANCE WITH**  
4 **RESPECT TO MARKET DEFINITION?**

5 A. Yes. There is a body of economic analysis that applies to the question of defining  
6 markets. Much of the economic literature on market definition has focused on  
7 facilitating the assessment of market power in merger and antitrust proceedings.  
8 The FCC noted in its *Triennial Review Order* that the market power question is  
9 somewhat different from the impairment question before the Commission in this  
10 proceeding.<sup>17</sup> Nonetheless, the FCC also acknowledged that the market definition  
11 literature developed in the context of merger and antitrust analyses provides  
12 helpful guidance for market definition in the impairment context.<sup>18</sup> Hence, as I  
13 describe in more detail in a following section, I have taken this economic  
14 literature into account in developing my recommended market definition.

15 The essential economic criterion for whether a product belongs in a  
16 relevant market is whether the product can serve as an alternative to consumers in  
17 that market. Thus, for example, an apartment in Jefferson City is not in the same  
18 geographic market as an apartment in Kansas City, because the Jefferson City  
19 apartment does not serve as a meaningful alternative for Kansas City consumers.  
20 I elaborate on this economic criterion in Section III below.

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<sup>17</sup> *Id.* ¶¶ 74 and 109.

<sup>18</sup> *Id.* n. 439.

1 **Q. WHAT CONCLUSIONS HAVE YOU REACHED BASED ON YOUR**  
2 **APPLICATION OF THE GUIDANCE IN THE *TRIENNIAL REVIEW***  
3 ***ORDER* AND ECONOMIC THEORY CONCERNING MARKET**  
4 **DEFINITION?**

5 A. I have concluded that criteria of “accuracy” as well as “practicality” argue for the  
6 Commission to begin its analysis with the presumption that wire centers establish  
7 the appropriate level of granularity.

8 Wire centers are the most natural geographic boundaries for purposes of  
9 defining markets for several reasons. First, the costs of providing service vary  
10 widely from one wire center to another; it is not possible draw conclusions about  
11 one wire center from an analysis of another wire center. Second, once a CLEC is  
12 serving some customers in a wire center, it will face relatively lower cost of  
13 serving other customers in the same wire center, compared to the cost of entering  
14 a new wire-center market. Third, it is administratively feasible to administer the  
15 requirements of the *Order* on a wire-center basis, because data on CLEC activity,  
16 including collocation, and other cost information is available on this basis.

17 **III. THE APPROPRIATE MARKET DEFINITION IS THE WIRE CENTER**

18 A. Market Definition Analysis Starts with a Specific Service or Product  
19 Offering in a Narrow Geographic Market and Then Expands the  
20 Relevant Market to Incorporate Substitutes

21 **Q. HOW DO ECONOMISTS TYPICALLY DEVELOP MARKET**  
22 **DEFINITIONS?**

23 A. The process of defining a market invariably requires answering questions as to  
24 whether a particular product or location belongs in the market, or falls outside its



1 boundaries. These questions are properly answered by starting with a single  
2 firm's product, offered at a specific location, and then expanding beyond this  
3 point to see whether customers regard products from the expanded product set or  
4 geographic area as substitutes or alternatives for the original product.

5 **Q. IS THIS APPROACH USED IN ANY OTHER REGULATORY**  
6 **CONTEXT?**

7 Yes, the market definition approach I have just outlined is the same as the one  
8 used in the *Horizontal Merger Guidelines* ("HMG") of the U.S. Department of  
9 Justice ("DOJ") and the Federal Trade Commission ("FTC").<sup>19</sup> The HMG state  
10 that

11 [a] market is defined as a product or group of products and a  
12 geographic area in which it is produced or sold such that a  
13 hypothetical profit-maximizing firm, not subject to price  
14 regulation, that was the only present and future producer or seller  
15 of those products in that area likely would impose at least a "small  
16 but significant and nontransitory" increase in price, assuming the  
17 terms of sale of all other products are held constant. *A relevant*  
18 *market is a group of products and a geographic area that is no*  
19 *bigger than necessary to satisfy this test.*<sup>20</sup>

20 The HMG approach "begin[s] with each product (narrowly defined) produced or  
21 sold by each merging firm" for the product dimension and "the location of each

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<sup>19</sup> The full text of the *Horizontal Merger Guidelines* of the U.S. Department of Justice and Federal Trade Commission, issued April 2, 1992, and revised April 8, 1997, (hereinafter, "HMG") is available online at [http://www.usdoj.gov/atr/public/guidelines/horiz\\_book/10.html](http://www.usdoj.gov/atr/public/guidelines/horiz_book/10.html).

<sup>20</sup> HMG, Section 1.0, emphasis added.

1 merging firm (or each plant of a multiplant firm)” for the geographic dimension.<sup>21</sup>

2 This initial tentative market definition is expanded by asking whether consumers  
3 regard other products or locations as close enough substitutes that a price increase  
4 in the narrowly defined tentative market definition would be met by consumers  
5 switching to other products or locations.

6 The notion of “close enough” substitutes is given precision by asking  
7 whether a “small but significant and nontransitory” price increase in the narrowly  
8 defined tentative market definition would be met by a strong enough substitution  
9 response by consumers to make the price increase unprofitable, if it were  
10 implemented by a hypothetical monopoly provider controlling all of the products  
11 and locations in the tentative narrow market definition. The tentative market  
12 definition is too narrow if it fails to incorporate substitutes that consumers regard  
13 as “close enough,” as measured by consumers switching to a substitute in  
14 response to a price increase. If a tentative market definition is found to be too  
15 narrow, the definition is expanded to incorporate the next best products or  
16 locations that consumers regard as “close enough” substitutes, but stops as soon  
17 as the market definition is sufficiently expansive to meet the price increase test I  
18 cited above.

19 In short, the analysis of market definition under the HMG is essentially the  
20 same as the one that I have outlined.

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<sup>21</sup> HMG, 1.11 *Product Market Definition General Standards*, and 1.21 *Geographic Market Definition General Standards*.

1 **Q. YOU INDICATED ABOVE THAT THE CHOSEN MARKET DEFINITION**  
2 **MUST BE APPROPRIATE FOR BOTH TRIGGER AND POTENTIAL**  
3 **DEPLOYMENT ANALYSES. DOES THE HMG APPROACH TO**  
4 **MARKET DEFINITION WORK IN BOTH THESE CONTEXTS?**

5 A. Yes. The concept of market participants in the HMG provides a straightforward  
6 basis for linking the geographic market definition to the trigger analysis. The  
7 *Horizontal Merger Guidelines* state that:

8 Participants include firms currently producing or selling the  
9 market's products in the market's geographic area. In addition,  
10 participants may include other firms depending on their likely  
11 supply responses to a "small but significant and nontransitory"  
12 price increase. A firm is viewed as a participant if, in response to a  
13 "small but significant and nontransitory" price increase, it likely  
14 would enter rapidly into production or sale of a market product in  
15 the market's area, without incurring significant sunk costs of entry  
16 and exit. Firms likely to make any of these supply responses are  
17 considered to be "uncommitted" entrants because their supply  
18 response would create new production or sale in the relevant  
19 market and because that production or sale could be quickly  
20 terminated without significant loss.<sup>22</sup>

21 In the context of impairment analysis, firms counted toward the trigger  
22 analysis should be participants in the geographic market. A CLEC serving a  
23 group of customers in a specific geographic area would only be counted as a  
24 participant in another geographic market if it were currently offering service in  
25 that market or would promptly extend service to that market in response to a  
26 "small but significant nontransitory" price increase.

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<sup>22</sup> *Id.*, Section 1.0, footnote omitted.

1           This is one reason that it is important not to adopt too broad a geographic  
2 market definition. As the FCC has observed, “if competitors with their own  
3 switches are only serving certain geographic areas, the state commission should  
4 consider establishing those areas to constitute separate markets.”<sup>23</sup> Using market  
5 definitions that correspond to the geographies over which competitors are actually  
6 serving customers will ensure that the trigger analysis works as intended,  
7 identifying cases in which multiple, competitive supply within a single  
8 geographic area is already a reality, not just a possibility. It would be wrong as a  
9 matter of economic principles, and contrary to the purpose of the trigger analysis,  
10 to lump together multiple geographic areas, each of which has fewer than three  
11 competitive suppliers, and treat those as a single geographic market in which the  
12 trigger is met.

13           Defining markets in this manner does not require a finding of impairment  
14 in every geographic market that currently lacks multiple, competitive supply. As  
15 the HMG indicate in a footnote to the passage concerning market participants  
16 quoted above:

17           Probable supply responses that require the entrant to incur  
18 significant sunk costs of entry and exit are not part of market  
19 measurement, but are included in the analysis of the significance of  
20 entry. See Section 3. Entrants that must commit substantial sunk  
21 costs are regarded as “committed” entrants because those sunk  
22 costs make entry irreversible in the short term without foregoing

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<sup>23</sup> *Triennial Review Order n. 1537.*

1           that investment; thus the likelihood of their entry must be  
2           evaluated with regard to their long-term profitability.<sup>24</sup>

3           The potential deployment analysis described in the *Triennial Review Order*  
4           corresponds closely to this HMG approach of examining “committed entry” based  
5           on long-term profitability analysis. Only through the detailed business case  
6           analysis of potential long-term profitability and an operational impairment  
7           analysis can the Commission determine whether firms that have not yet actually  
8           entered a particular geographic market are likely to enter, even in the presence of  
9           sunk costs (such as the costs of acquiring and equipping collocation space in a  
10          previously unserved wire center) and other entry barriers. A market definition  
11          that inappropriately lumps together geographic areas already served by switch-  
12          based competitors with areas that have little or no current competitive supply  
13          could short-circuit the analysis required under the *Triennial Review Order* and  
14          inappropriately eliminate access to unbundled switching in substantial geographic  
15          areas that are not feasible for competitors to serve using their own switches.

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<sup>24</sup> *Id.* n. 7.

1        **B.     The Geographic Market Definition Should Reflect the Customer**  
2        **Locations to which Competitors Now Provide Switching, Not the**  
3        **Physical Location or Potential Reach of Their Switches**

4        **Q.     WHAT IS THE RELATIONSHIP BETWEEN THE SWITCH LOCATION**  
5        **AND THE MARKET DEFINITION FOR PURPOSES OF AN**  
6        **IMPAIRMENT ANALYSIS?**

7        A.     The Commission should not focus on the location of the competitor's switch as  
8        the relevant indicator of how to define the market. The Commission should note  
9        the FCC's statement to that effect:

10                [B]ecause we measure alternative 'switching' in a given market,  
11                not switches located in that market, *the physical location of the*  
12                *switch is not necessarily relevant to defining the geographic*  
13                *market.* For example, a switch located in Rhode Island could  
14                satisfy the switching trigger in Massachusetts if it is serving  
15                customers in the relevant market in Massachusetts.<sup>25</sup>

16                Because a triggering switch need not be located in the defined geographic  
17                market, it also follows that the geographic market need not correspond to the  
18                physical area that a switch can serve. Thus, I believe that it would incorrect to  
19                focus on the physical location of the switches that CLECs deploy and the physical  
20                area that those switches can serve.

21                Instead, the Commission should focus on where CLECs actually provide  
22                *switching* in lieu of the unbundled switching that the ILEC provides throughout  
23                specific wire-center boundaries. That is, I believe that the Commission should  
24                focus on the actual customer locations that CLECs serve using their own  
25                switches.

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<sup>25</sup> *Triennial Review Order*, n. 1536, emphasis added.

1           **C.     The Product Market Should Include All Alternatives Comparable in**  
2           **Cost, Quality and Maturity to the ILEC's Local Voice Services**

3           **Q.     HOW SHOULD THE COMMISSION IDENTIFY THE PRODUCT OR**  
4           **PRODUCTS INCLUDED IN THE RELEVANT MARKET?**

5           A.     The Commission should identify the product or products included in the initial  
6           tentative market based on the *Triennial Review Order's* discussion of qualifying  
7           services: in short, "those services that have been traditionally the exclusive or  
8           primary domain of the incumbent LECs."<sup>26</sup> As I will discuss below, it may be  
9           necessary to subdivide the ILECs' customers into two different markets,  
10          residential and business, even though most of the same products are sold to these  
11          two classes of customers. The reason is that lawful price discrimination can be  
12          enforced between the two market segments.

13          **Q.     BASED ON THE ABOVE DISCUSSION, WHAT PRODUCT MARKET**  
14          **DEFINITION DO YOU RECOMMEND FOR COMMISSION ADOPTION?**

15          A.     In the product market dimension, the Commission should include any alternative  
16          to the ILEC's local voice service, including vertical features and access service,  
17          that is comparable in "cost, quality and maturity" to the ILEC's own retail local  
18          exchange services.<sup>27</sup> This product definition includes traditional circuit-switched  
19          local exchange services provided by competitors that self-deploy switches (or use  
20          third-party switches) in conjunction with the incumbent's voice-grade UNE loops

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<sup>26</sup> *Id.* ¶ 135.

<sup>27</sup> *Id.* ¶ 97.

1 (what is sometimes described as a “UNE-L” entry strategy) and may include  
2 packet-switched local service or “intermodal” alternatives when such services  
3 meet the “cost, quality and maturity” requirements of the *Triennial Review Order*.  
4 Consistent with the FCC’s own findings, my product definition excludes CMRS<sup>28</sup>  
5 and fixed wireless services.<sup>29</sup>

6 **Q. SHOULD CABLE TELEPHONY BE INCLUDED IN THE PRODUCT**  
7 **MARKET?**

8 A. No. As the FCC acknowledged, cable telephony fails to serve the “crucial  
9 function” of affording access to the incumbent’s loops,<sup>30</sup> and therefore “provides  
10 no evidence that competitors have successfully self-deployed switches as a means  
11 to access the incumbents’ local loops, and have overcome the difficulties inherent  
12 in the hot cut process.”<sup>31</sup> Cable telephony’s strategy is to “bypass the incumbent  
13 LECs’ networks entirely.”<sup>32</sup> This strategy is only available to a single firm in any  
14 market because cable TV companies, due to “unique economic circumstances of  
15 first-mover advantages and scope economies, have access to customers that other  
16 competitive carriers lack.”<sup>33</sup> As a result, neither cable telephony nor CMRS “can

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<sup>28</sup> *Id.* ¶ 445 and n. 1549.

<sup>29</sup> *Id.*, ¶ 310 (fixed wireless has “not proven to be viable or deployable on a mass market scale”).

<sup>30</sup> *Id.*, ¶ 439.

<sup>31</sup> *Id.*, ¶ 440.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*, ¶ 310.



1 be used as a means of accessing the incumbents' wireline voice-grade local loops.  
2 .... Accordingly, neither technology provides probative evidence of an entrant's  
3 ability to access the incumbent LEC's wireline voice-grade local loop and thereby  
4 self-deploy local circuit switches."<sup>34</sup> Any competitive facilities that allow access  
5 to some customer locations but not others clearly cannot be regarded as probative  
6 evidence of no impairment concerning those customer locations that cannot be  
7 reached by the competitive facilities. Cable telephony is at most an alternative to  
8 the ILEC's local voice service for the specific customer locations served via the  
9 cable company's facilities, which typically do not reach all of the ILEC's mass-  
10 market customer locations. (For example, cable facilities frequently do not serve  
11 the central business districts in which many mass-market small business  
12 customers may be located.<sup>35</sup>)

13 For similar reasons, the FCC determined that the availability of cable  
14 telephony does not eliminate impairment with respect to the ILEC's voice-grade  
15 loop facilities.<sup>36</sup> Because cable telephony offers an alternative to the ILEC's  
16 mass-market switching facilities only where it also offers an alternative to the  
17 ILEC's loop facilities, it logically follows that cable telephony does not cure  
18 impairment with respect to mass-market switching, either.

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<sup>34</sup> *Id.* ¶ 446.

<sup>35</sup> *Id.* n. 1349.

<sup>36</sup> *Id.* ¶¶ 228, 229 and 245.

1           In addition, cable telephony does not unambiguously fulfill the “cost,  
2           quality and maturity” criteria established by the FCC. Cable telephony services  
3           (particularly the recent variants provided using Voice over Internet Protocol, or  
4           VoIP, technology) are relatively new; it is not yet clear whether most consumers  
5           perceive such services to be comparable to local telephone service, especially  
6           with respect to reliability issues such as E-911 and backup power in  
7           emergencies.<sup>37</sup>

8           Thus, I believe that a reasoned analysis disqualifies cable telephony from  
9           being considered as a “close enough” substitute for the ILEC’s local voice  
10          services to be included in the product market for the mass-market switching  
11          impairment analysis.

12          **D. Last, the Geographic Market Should Allow the Most Accurate**  
13          **Analysis Possible, Consistent with Administrative Practicality**

14          **Q. HOW DO YOU RECOMMEND THE COMMISSION DETERMINE THE**  
15          **RELEVANT GEOGRAPHIC MARKETS?**

16          A. As I mentioned above, the *Triennial Review Order* requires that the Commission  
17          conduct its impairment analyses “on the most accurate level possible, while still  
18          preserving administrative practicality.”<sup>38</sup> Market definition at the most accurate  
19          level of granularity, whether for application of the prescribed triggers or for

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<sup>37</sup> See, for example, Alan Breznick, “Backup Power Reemerges as Issue for Cable VoIP Service,” *Cable Datacom News*, October 2003.

<sup>38</sup> *Id.* ¶ 130.

1 analysis of potential deployment, would be conducted on a customer-by-customer  
2 basis.

3 This is precisely the approach that the FCC specifies in defining the  
4 geographic markets for application of trigger analysis to enterprise loops, for  
5 which impairment analyses must be conducted on a “customer-by-customer  
6 location basis.”<sup>39</sup> It takes only a moment’s reflection to recognize that mass-  
7 market consumers of qualifying telecommunications services also will not accept  
8 any substitutes that do not deliver service to the customer’s premises. Because  
9 qualifying services provided to a location other than to a customer’s own premises  
10 will not generally be a satisfactory substitute, the “most accurate” level of  
11 granularity would address switching capability for particular customer premises.

12 Although mass-market customers are tied to their locations just as tightly  
13 as enterprise customers, the FCC observes that considerations of practicality will  
14 not permit a customer-by-customer analysis, for at least some mass-market  
15 investigations.<sup>40</sup> Fortunately, subject to certain important limitations I discuss  
16 below, it is possible to analyze customer-specific locations in large numbers,  
17 achieving administrative practicality with little or no loss of accuracy.

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<sup>39</sup> *Id.* ¶ 307.

<sup>40</sup> *Id.* ¶ 309.

1                                   **1. In Most Circumstances, Wire Centers Provide a**  
2                                   **Reasonable Starting Point for a Mass-Market Switching**  
3                                   **Impairment Analysis**

4 **Q. WHAT AGGREGATIONS OF CUSTOMER LOCATIONS MAKE SENSE**  
5 **FOR AN IMPAIRMENT ANALYSIS OF MASS-MARKET SWITCHING?**

6 A. Recognizing the limited role that can be fulfilled by non-incumbent mass-market  
7 loop facilities,<sup>41</sup> impairment analysis for mass-market switching must identify  
8 substitutes to the incumbent’s local circuit switch “as a means of accessing the  
9 local loop.”<sup>42</sup> Wire centers are the centers of outward-radiating ILEC loop  
10 facilities, and determine the point at which access to the incumbent’s loops must  
11 occur. Because impairment regarding the local switching UNE is so closely  
12 related to access to the incumbent’s loops, the wire center provides a natural unit  
13 of analysis. *Insofar as an entrant in a particular wire center is not impaired in its*  
14 *ability to expand service to all customers served by loops in that wire center, it is*  
15 *reasonable to aggregate customers and consider impairment issues at the wire-*  
16 *center level. There are, however, exceptions to this rule based on operational and*  
17 *technical impairment issues, as I explain below.*

18 **Q. WHAT LIMITATIONS MUST BE IMPOSED ON THE AGGREGATION**  
19 **OF CUSTOMER LOCATIONS TO THE WIRE-CENTER LEVEL?**

20 A. The crucial limitation is that a UNE-L CLEC’s entry in a wire center must afford  
21 that CLEC the opportunity to expand to serve any customer in that wire center.

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<sup>41</sup> *Id.* ¶ 439.

<sup>42</sup> *Id.*, ¶ 429.

1 The failure of this condition implies that aggregation of customers to the wire-  
2 center level will introduce misleading evidence and lead the Commission to  
3 mistaken conclusions about impairment. The nature of this requirement is  
4 explained in the following quotation from a popular antitrust law text:

5 Competitors, supply substitution, and entry. (a) Expansion by  
6 immediate competitors. The demand for Alpha Company's  
7 product is obviously affected by the ability of its direct competitors  
8 to deliver the same product. But if the others are to limit Alpha's  
9 actions, they must be able to expand their production when Alpha  
10 increases its prices because consumers cannot turn to other  
11 suppliers if those suppliers are unable to expand their output.<sup>43</sup>

12 I will discuss below several specific conditions that can limit the ability of  
13 a CLEC in a particular wire center to serve certain customers in that wire center.

14 I simply note here that aggregating customers to the level of the wire center  
15 presumes the absence of one overarching limitation on the CLEC's ability to  
16 expand. That overarching limitation is the possibility that there are operational  
17 barriers to the CLEC's expansion. If a CLEC that has entered a particular wire  
18 center cannot adequately expand its operations in that wire center, due to the  
19 presence of operational barriers such as the hot-cut limitation that is the basis for  
20 the national finding of impairment, then it is not reasonable to aggregate  
21 customers and consider the question of impairment at the wire-center level.

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<sup>43</sup> Phillip Areeda and Louis Kaplow, *Antitrust Analysis: Problems, Text, and Cases*, Fifth Edition, 1997, Aspen Publishers, p. 570, ¶ 342.

1 **Q. ARE THERE OTHER FACTORS THAT SUPPORT A MARKET**  
2 **DEFINITION AT THE WIRE-CENTER LEVEL?**

3 A. Yes. The *Triennial Review Order* specifically requires state commissions “to  
4 define each geographic market on a granular level and direct[s] them to take into  
5 consideration the locations of customers actually being served by competitors, the  
6 variation in factors affecting competitors’ ability to serve each group of customers  
7 and competitors’ ability to target and serve specific markets economically and  
8 efficiently using currently available technologies.”<sup>44</sup> Many of these factors vary  
9 at the wire-center level.

10 In most cases, CLEC self-provisioning of local switching will require  
11 collocation at each wire center the CLEC intends to serve. In those cases in  
12 which all competitive facilities deployed are available to serve any loop in the  
13 wire centers in which they offer service, *i.e.*, where there are no operational  
14 barriers to such expansion throughout the wire center, trigger analysis can proceed  
15 with the wire center as the geographic market definition with little or no loss of  
16 accuracy.<sup>45</sup>

17 The wire center also provides a natural unit of analysis for the  
18 investigation of potential deployment. First, because a portion of the costs of  
19 establishing service in a previously un-served wire center will be sunk costs,

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<sup>44</sup> *Triennial Review Order*, n. 1536.

<sup>45</sup> As I discuss further below, there is an important caveat to this discussion. It may be necessary to distinguish between business and residential customers because of the prevalence of price discrimination, as well as other differences, between the two groups.

1 CLEC entry decisions will have to be justified at the wire-center level. This  
2 justification will require the CLEC to compare the stream of net operating income  
3 projected for a wire center to the sunk cost that must be incurred to establish the  
4 collocation or other arrangements needed to offer service in the wire center.  
5 Further, various costs and revenues that must be considered in analysis of  
6 potential net operating revenue vary, sometimes dramatically, between wire  
7 centers. As examples, potential revenue from serving a wire center will vary with  
8 the number of lines in the wire center and the profile of the typical customer at the  
9 wire center; also, the cost of backhauling traffic from the wire center will vary  
10 with the wire center's proximity to other elements of the CLEC's network.

11 **Q. IS IT PRACTICAL TO CONDUCT IMPAIRMENT ANALYSIS AT THE**  
12 **WIRE-CENTER LEVEL?**

13 A. Yes. For the analysis of triggers, the logical data to rely on initially – facilities in  
14 place in the incumbent's wire centers, capabilities of competitors' facilities,  
15 capacity available for expansion – are data that are available and most accurately  
16 interpreted at the wire center level. ILEC tariff data needed for the impairment  
17 analysis – UNE loop rates and retail rates - are also readily available on a wire-  
18 center basis. Also, information on customer demographics can be obtained on a  
19 wire-center basis, either from the data collected for universal service models or  
20 from other public sources.

1 **Q. IS IT IMPORTANT TO CONDUCT AN IMPAIRMENT ANALYSIS AT A**  
2 **LEVEL AS GRANULAR AS THE WIRE CENTER?**

3 A. Yes. As I show in discussing specific evidence below, examination of pertinent  
4 data at a higher level of aggregation will be less helpful at best, and very possibly  
5 misleading.

6 For example, it would be an error to conclude that entry is feasible in two  
7 wire centers because the combined present value of potential revenues net of  
8 operating costs in the two wire centers exceeds the combined sunk costs of  
9 entering the two wire centers. The two wire centers may be like a bucket of ice  
10 water and a bucket of boiling water, which, on average, are a comfortable  
11 temperature. The fact that entry is feasible in one wire center but not the other  
12 will not be revealed from examination of average or total costs for the two wire  
13 centers. If the Commission finds no impairment in both wire centers, the result  
14 will be that end users in at least one of the wire centers will lose the competitive  
15 alternatives that would be available to them if CLECs were to retain unbundled  
16 access to the incumbent's local circuit switch.

17 If the Commission conducted its trigger analyses under a market definition  
18 that lumps together more than one wire center, it would need criteria to determine  
19 whether competitive facilities satisfy the requirement of the trigger or not. The  
20 analysis would nevertheless be likely to result in error. The trigger analysis treats  
21 each qualifying competitive carrier as evidence that barriers to entry have been  
22 overcome and no impairment exists. In fact, in a collection of two wire centers, a  
23 competitive switching provider that is offering service to customers in one wire



1 center does not show absence of impairment in the other wire center. As  
2 suggested above, analysis of potential deployment in the wire center that has not  
3 experienced actual deployment may show that competitive entry without access to  
4 the local switching UNE is extremely unlikely because of the cost and revenue  
5 characteristics of the wire center. A finding of no impairment in such a wire  
6 center, based on actual deployment in another wire center, would result in  
7 customers in that wire center losing competitive alternatives based on availability  
8 of the local switching UNE, with no prospect of switch-based competitors  
9 actually overcoming operational and economic barriers to entry.

10 A market definition that ignored these factors would fly in the face of the  
11 entire foundation of antitrust and regulatory economics. It is nonsensical to  
12 ignore the costs and entry barriers faced by CLECs wishing to expand service to  
13 new locations and define away these important cost differences by simply  
14 declaring a large group of customers to be in the same geographic market.

15 **Q. HAVE ANY REGULATORY BODIES RECOGNIZED THAT THE WIRE**  
16 **CENTER IS AN APPROPRIATE BASIS FOR CONDUCTING**  
17 **IMPAIRMENT ANALYSES?**

18 A. Yes. The Connecticut Department of Public Utility Control has already  
19 determined that the wire center is the appropriate unit of analysis. Specifically,  
20 the Department noted:

21 It is the opinion of the Department that the FCC intended to  
22 perform the granularity analysis at the lowest reasonable level  
23 possible. The Department believes that since data is collected and  
24 compiled at the wire center level as well as the fact that the wire  
25 center level is the principal point of interconnection with  
26 competitive providers, it represents a consistent point of analysis

1 and comparison for this exercise. After considering the questions  
2 raised by the parties at the Technical Meeting, the Department  
3 finds no compelling reason for further discussion on this matter  
4 from any party or to delay the definition to a later date. By  
5 adopting a definition that directly corresponds to the principal  
6 building block of the ILEC's network the Department is confident  
7 that it will have sufficient empirical evidence upon which it can  
8 form its judgment regarding the state of competitive presence in  
9 Connecticut[.]<sup>46</sup>

10 For the reasons that I outlined above, several of which are affirmed by the  
11 Connecticut Department of Public Utility Control, I recommend that this  
12 Commission adopt the wire center as its principal unit of analysis for determining  
13 whether competitors are impaired without access to unbundled switching.

14 **2. Under Certain Circumstances, a More Granular**  
15 **Market Definition than the Wire Center May Be**  
16 **Appropriate.**

17 **Q. DO ALL CUSTOMER LOCATIONS IN A WIRE CENTER**  
18 **NECESSARILY FALL INTO THE SAME MARKET?**

19 A. Not necessarily. There are at least two circumstances when a finer level of  
20 disaggregation may be necessary. The first is where there is a longstanding  
21 practice of price discrimination between two groups of customers. The second is  
22 where the CLEC is unable to access a subset of the ILEC loops within the wire  
23 center without access to unbundled switching.

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<sup>46</sup> *Procedural Order* in Connecticut Department of Public Utility Control Docket No. 03-09-01, Ph. 01, October 8, 2003, at 5.

1 **Q. PLEASE EXPLAIN THE ROLE THAT PRICE DISCRIMINATION**  
2 **PLAYS IN DEFINING MARKETS.**

3 A. Basic economic principles require a departure from the ordinary process of  
4 market definition in the presence of price discrimination – “charging different  
5 prices for the same product, for example.”<sup>47</sup> If the characteristics of the product  
6 and its buyers permit profitable price discrimination, then market definition must  
7 recognize “particular use or uses by groups of buyers” and “particular locations of  
8 buyers” that would be targeted for higher prices.<sup>48</sup>

9 This situation arises whenever the hypothetical monopolist in a tentatively  
10 defined market “can identify and price differently to those buyers (‘targeted  
11 buyers’) who would not defeat the targeted price increase by substituting to other  
12 products.” When this situation arises, the tentative market has been defined too  
13 broadly, and must be divided to recognize “targeted buyers,” whether identified  
14 by location, by the nature of their use of the product, or by membership in an  
15 identifiable group of buyers.<sup>49</sup>

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<sup>47</sup> HMG 1.12, *Product Market Definition in the Presence of Price Discrimination*.

<sup>48</sup> HMG 1.12, *Product Market Definition in the Presence of Price Discrimination*, and  
HMG 1.22, *Geographic Market Definition in the Presence of Price Discrimination*.

<sup>49</sup> The use of the term “targeted buyers” in the HMG is the inverse of the way in which the  
FCC uses the term “targeted customers.” In the HMG, the targeted buyers are the ones who lack  
competitive options, whereas in the FCC’s parlance, the targeted customers are the ones singled out  
for competitive supply. The fundamental logic of the HMG’s discussion of price discrimination,  
however, aligns precisely with the FCC’s identified concern about targeted customers.

1 **Q. HOW DOES THE POSSIBILITY OF PRICE DISCRIMINATION**  
2 **AFFECT THE MARKET DEFINITION YOU HAVE JUST DESCRIBED?**

3 A. As I discussed above, market definition in the presence of price discrimination  
4 must treat as separate markets those groups of “targeted buyers” who cannot  
5 effectively avoid a “targeted price increase by substituting to other products.”<sup>50</sup>  
6 The price difference between small business customers and residential customers  
7 receiving essentially identical service is a classic example of this form of price  
8 discrimination.

9 The FCC specifically directs state commissions to recognize, for market  
10 definition purposes, that “competitors often are able to target particular sets of  
11 customers.”<sup>51</sup> CLECs provisioning their own switches can, and do, target  
12 business customers, even to the exclusion of residential customers.

13 This targeting of switch-based service to business, rather than residential,  
14 customers occurs in part because the characteristics of business customers, even  
15 very small ones, are different from those of residential customers, suggesting  
16 differences in CLECs’ abilities to serve these different groups of customers – a  
17 factor this Commission must consider in defining markets. Further, because of  
18 the longstanding ILEC practice of targeting business customers for higher rates  
19 than residential customers, CLECs can also target this group and price differently  
20 to residential and small business customers.

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<sup>50</sup> HMG 1.12 *Product Market Definition in the Presence of Price Discrimination*.

<sup>51</sup> *Triennial Review Order*, n. 1539, interpreting accompanying text at ¶ 495.

1           The FCC recognized the “swing” role of small business customers in the  
2           distinctions it drew between “mass market” and “enterprise market” customers,  
3           noting:

4           Very small businesses typically purchase the same kinds of  
5           services as do residential customers, and are marketed to, and  
6           provided service and customer care, in a similar manner.  
7           Therefore, we will usually include very small businesses in the  
8           mass market for our analysis. We note, however, that there are  
9           some differences between very small businesses and residential  
10          customers. For example, very small businesses usually pay higher  
11          retail rates, and may be more likely to purchase additional services  
12          such as multiple lines, vertical features, data services, and yellow  
13          page listings. Therefore, we may include them with other  
14          enterprise customers, where it is appropriate in our analysis.<sup>52</sup>

15          This statement, in combination with the FCC’s observations on the use of  
16          actual marketplace deployment as evidence that barriers to entry are  
17          surmountable, suggests that the Commission should allow the empirical evidence  
18          to dictate its view of whether residential and small business customers are in the  
19          same market for purposes of the trigger analysis. If a carrier serves small  
20          business customers but not residential customers using its own switch, that very  
21          fact implies that there is a meaningful difference between small business and  
22          residential customers. If that pattern is repeated, so that multiple carriers serve  
23          small business customers but not residential customers using their own switches,  
24          the evidence for distinct customer class markets becomes even more compelling.

25          Clearly, the Commission should hold open the possibility of subdividing  
26          the mass market for purposes of its trigger analysis in the next phase of this

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<sup>52</sup> *Triennial Review Order* n. 432.

1 proceeding. To not do so would possibly lead to a grave public policy error of  
2 basing a finding of no impairment solely or largely on evidence of carriers self-  
3 deploying switching to serve small business customers, leaving Missouri  
4 residential customers with no meaningful competitive alternative.

5 In short, the Commission should require evidence that both residential and  
6 small business customers have competitive choices before it decides to eliminate  
7 CLECs' access to unbundled switching in any geographic market. Thus, a  
8 company that is not actively providing residential service with its own switches  
9 (*i.e.*, one that is only providing business service) should not be counted as a  
10 trigger company for mass-market switching.

11 **Q. PLEASE EXPLAIN THE CIRCUMSTANCES UNDER WHICH THE**  
12 **CLEC WILL BE UNABLE TO ACCESS A SUBSET OF THE ILEC**  
13 **LOOPS WITHIN THE WIRE CENTER WITHOUT ACCESS TO**  
14 **UNBUNDLED SWITCHING.**

15 A. As the Commission knows, SBC deploys fiber based loops on Integrated Digital  
16 Loop Carrier ("IDLC") systems that CLECs using their own switches cannot  
17 serve mass-market customers via IDLC, although they can serve mass-market  
18 customers over IDLC when they obtain UNE-P from SBC Missouri.

19 Over time, SBC Missouri will be deploying more IDLC because loops  
20 with fiber feeder and IDLC are generally considered to be a forward-looking  
21 technology. Hence, the portion of the market that CLECs using their own  
22 switches cannot reach equally efficiently as does SBC Missouri (or, as CLECs  
23 can today, using UNE-P) will grow. Furthermore, I also expect that the

1 percentage of IDLC varies significantly depending on the population density of  
2 the wire center. This likelihood further justifies examining impairment on a  
3 geographic scope no larger than the wire center.

4 **IV. A GEOGRAPHICALLY BROAD DEFINITION, SUCH AS THE MSA,**  
5 **DOES NOT PROVIDE AN APPROPRIATE BASIS FOR THE**  
6 **COMMISSION'S IMPAIRMENT ANALYSIS.**

7 **A. CLECs Do Not Tend To Serve All Wire Centers in a MSA**

8 **Q. WHY IS THE MSA NOT AN APPROPRIATE GEOGRAPHIC MARKET**  
9 **DEFINITION?**

10 A. I do not believe that the typical CLEC intends to serve all wire centers within the  
11 MSAs in which they have a switch-based presence. Instead, I believe that CLECs  
12 tend to target specific wire centers, perhaps because the profitability of switch-  
13 based entry is greatest in those wire centers or perhaps because operational  
14 barriers to entry inhibit their expansion into other wire centers within the MSA.  
15 In any event, without an extensive potential deployment analysis conducted at the  
16 wire-center level, it would be entirely premature to conclude that entry is equally  
17 feasible throughout the MSA. Hence, the Commission should designate the wire  
18 center as the initial or provisional market definition, which will facilitate the  
19 analysis necessary to determine precisely where CLECs are and are not impaired  
20 without access to unbundled switching for mass-market customers. Any grouping  
21 of wire centers into larger markets should occur only if a complete and detailed  
22 review of the evidence concerning economic and operational barriers to entry  
23 establishes that the proposed groupings each constitute a single market with  
24 comparable prospects for competitive entry throughout the specified geography.

1        **B.     The FCC Does Not, in Fact, Suggest Such a Large Market Definition**

2        **Q.     DOES THE FCC’S LANGUAGE CONCERNING ECONOMIES OF**  
3        **SCALE AND SCOPE SUGGEST THAT THE GEOGRAPHIC MARKET**  
4        **MUST BE AS LARGE AS THE MSA?**

5        A.     No. In the TRO, the FCC discusses the importance of considering economies of  
6        scale and scope in the impairment analysis. However, the need to exhaust  
7        economies of scope, as discussed by the FCC, cannot imply a single market, the  
8        way economists use the term, because by definition scope economies refer to  
9        economies across several products, which would necessarily extend beyond a  
10       single product market.

11                Economies of scale and scope occur at many levels of the CLEC’s  
12        operations, not just at the switch itself. As just one example, a CLEC must  
13        accomplish interoperability with the ILEC’s Operations Support Systems (“OSS”)  
14        in a way that allows the CLEC to order and access the ILEC’s stand-alone  
15        unbundled loops. The necessary work effort typically applies throughout the  
16        ILEC’s footprint, creating scale and scope economies that a CLEC can only fully  
17        exploit by offering service ubiquitously throughout, *e.g.*, all of the SBC local  
18        service territories nationwide. But, no one suggests that the appropriate  
19        geographic market definition is the entire SBC footprint. In fact, the FCC has  
20        ruled that the geographic market definition must be smaller than the entire state.<sup>53</sup>

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<sup>53</sup> 47 C.F.R. § 51.319(d)(2)(i).



1 Further, if the FCC had believed that the appropriate market definition  
2 should be the MSA in view of economies of scale and scope, then presumably it  
3 would have prescribed an MSA market definition, rather than delegating the task  
4 of geographic market definition to the states. The FCC did not hesitate to  
5 prescribe a market definition for impairment analysis where it felt the evidence  
6 justified such a choice. As I noted above, the FCC has required states to conduct  
7 impairment analyses for high-capacity loops on a customer-location-by-location  
8 basis.<sup>54</sup> It could just as easily have required states to conduct impairment analyses  
9 for mass-market switching on an MSA basis.

10 Instead, the FCC left the determination of geographic market definition to  
11 the states, subject to specific guidance found in the *Triennial Review Order*. A  
12 pertinent aspect of the *Triennial Review Order*'s guidance is that states *must*  
13 consider competitors' ability to target certain markets; moreover, the FCC  
14 specifically observed that competitors may be able to target specific wire  
15 centers.<sup>55</sup> States also *may* consider certain factors on a wire-center level,  
16 including whether costs of serving customers vary by wire center and the  
17 capabilities of wire centers to provide adequate collocation and handle large  
18 numbers of hot cuts.<sup>56</sup> Each of these considerations seems to support the wire

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<sup>54</sup> *Triennial Review Order* ¶ 307. High-capacity loops are used to provide local exchange services to enterprise customers.

<sup>55</sup> *Id.* n. 1539, commenting on the text at ¶ 495.

<sup>56</sup> *Id.* ¶ 496.

1 center as a reasonable starting point for a mass-market switching impairment  
2 analysis.

3 The FCC cited the extreme variations in population density and hence  
4 wire-center line densities as the reason it was unable to establish a single national  
5 geographic market definition for the mass-market switching analysis.<sup>57</sup>

6 Therefore, it seems evident that the FCC intends that states take these variations  
7 into account in establishing geographic market boundaries.

8 In view of this, my approach calls for the Commission to take wire centers  
9 as the starting point for its analysis. Further investigation may show that certain  
10 groups of wire centers are sufficiently similar to be treated as if they were all in  
11 the same geographic market, but any conclusion about groupings of wire centers  
12 can only be reached after a detailed review demonstrating near-uniformity of the  
13 economic *and operational* conditions in those wire centers. Without such a  
14 detailed review, it is impossible for the Commission to know whether, *e.g.*, there  
15 are variations in the ILEC's ability to perform the mass-market hot cut procedure  
16 that is the basis for the national finding of impairment.

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<sup>57</sup> *Id.* n. 1536.

1           C.     **The MSA Is Neither a Natural Nor a Stable Unit for Analyzing**  
2                     **Impairment Issues**

3     **Q.     ARE THERE OTHER REASONS THAT THE COMMISSION SHOULD**  
4           **REJECT THE PROPOSED MSA MARKET DEFINITION?**

5     A.     Yes. The MSA is neither a natural nor a stable unit for analyzing impairment  
6           issues.

7     **Q.     WHY DO YOU SAY THAT THE MSA IS NOT A NATURAL UNIT FOR**  
8           **ANALYZING IMPAIRMENT ISSUES RELATED TO UNBUNDLED**  
9           **SWITCHING?**

10    A.     MSA boundaries reflect county lines, not the physical boundaries of the wire  
11          centers where the incumbents' switches are located.

12                 Moreover, MSA boundaries may cross state lines and, even within  
13                 Missouri, could be served by more than one ILEC. In defining MSAs, the Office  
14                 of Management and Budget does not consider a host of telecommunications-  
15                 related factors potentially relevant to the current impairment inquiry, including  
16                 the ILEC's network configuration, LATA boundaries, the geographic region for  
17                 assigning NXX codes, the ILEC's and CLECs' cost to serve customers in the  
18                 geographic area, the V and H coordinates of switching facilities, and the volume  
19                 of ported numbers. Nor has SBC Missouri taken MSA boundaries into account in  
20                 building out its network, requesting NXX assignments, setting retail prices and  
21                 pricing UNEs.<sup>58</sup> In contrast, wire centers (and sometimes groupings of wire

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<sup>58</sup> *Id.*, Tr. 47:6-25.

1 centers) capture variations in these potentially relevant factors, allowing the  
2 Commission to assess more precisely whether impairment varies from one  
3 geographic area to another.

4 **Q. IN WHAT SENSE IS THE MSA NOT A STABLE UNIT FOR AN**  
5 **IMPAIRMENT ANALYSIS?**

6 A. MSA boundaries are not fixed and invariant. Instead, the MSA boundaries and  
7 even the number of MSAs in Missouri may change due to, for example, the 2000  
8 Census. In contrast, central office boundaries do not usually change, although  
9 new central offices may be added over time.

10 **V. MASS MARKET CUT-OFF**

11 **Q. PLEASE DISCUSS THE IMPORTANCE OF DIFFERENTIATING**  
12 **BETWEEN MASS MARKET CUSTOMERS AND ENTERPRISE**  
13 **CUSTOMERS FOR PURPOSES OF THE TRIGGER ANALYSIS.**

14 A. As determined by the Commission in its Procedural Order, one aspect of Phase I  
15 of this proceeding is the determination of the breakpoint between mass market  
16 and enterprise customers. This is a critical issue because for companies to be  
17 counted as either retail or wholesale triggers, they must be actively serving the  
18 mass market.

19 **Q. DOES THE FCC DISCUSS THE MASS-MARKET CUTOFF ISSUE IN**  
20 **THE TRO?**

21 A. Yes. In paragraph 497 of the *Triennial Review Order*, the FCC notes that mass  
22 market customers “are analog voice customers that purchase only a limited

1 number of POTS lines, and can only be economically served via DS0 loops.” The  
2 FCC notes that POTS lines (DS0 loops) are used by both residential and very  
3 small business customers. It then goes on to discuss the issue of the mass-market  
4 cutoff as a means of differentiating enterprise customers from mass-market  
5 customers.

6 **Q. DID THE FCC DIRECT THE STATES TO DETERMINE THE MASS-**  
7 **MARKET CUTOFF LEVEL?**

8 A. Yes. In paragraph 497, the FCC finds the following:

9 Therefore, as part of the economic and operational analysis  
10 discussed below, *a state must determine* the appropriate cut-off for  
11 multi-line DS0 customers as part of its more granular review.

12

13 **Q. WHAT MASS-MARKET CUTOFF LEVEL DO YOU RECOMMEND?**

14 A. I am unable at this time to recommend a specific mass market cut off level.  
15 Before being able to make such a recommendation, I will need to review SBC’s  
16 initial testimony and also review responses to data requests that I expect will  
17 result from the parties’ evidentiary filings. I expect to be able to recommend a  
18 mass market / enterprise breakpoint in my responsive testimony.

19 However, as I have stated previously in this testimony, a company that is  
20 not actively providing residential service with its own switches (i.e., only  
21 providing small business service) should not be counted as a trigger company for  
22 mass markets switching.

1 **VI. SUMMARY AND CONCLUSION**

2 **Q. PLEASE BRIEFLY SUMMARIZE YOUR RECOMMENDATIONS WITH**  
3 **RESPECT TO MARKET DEFINITION.**

4 A. I recommend that the Commission adopt the wire center as a provisional  
5 geographic market definition for its subsequent trigger and potential deployment  
6 analyses.

7 I also recommend that the Commission adopt a product market definition  
8 that includes all local exchange service options that provide service at a cost,  
9 quality and maturity equivalent to the ILEC's offerings. This product market  
10 definition should explicitly exclude CMRS, fixed wireless and cable telephony.

11 Finally, I recommend that the Commission conduct its trigger and  
12 potential deployment analyses in a way that evaluates whether (1) residential and  
13 small business customers should be treated as being in separate markets, even at  
14 the wire-center level, and (2) whether customer locations served over IDLC  
15 should be treated as being in a separate submarket for which unbundled switching  
16 would continue to be available, even if a finding of no impairment were otherwise  
17 justified for a given wire center. In any event, the Commission should not  
18 consider any company that is not actively providing residential service with its  
19 own switches (*i.e.*, one that is only providing business service) to be a market  
20 participant and therefore should not count such a carrier as a trigger company for  
21 mass-market switching.

22 **Q. DOES THAT CONCLUDE YOUR TESTIMONY AT THIS TIME?**

23 A. Yes, it does.

**Curriculum Vitae**  
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I am an economist and consultant, specializing in public utility regulation. In this capacity, I have provided consulting services in the major telecommunications markets of the United States, such as New York, Texas, Illinois, Michigan, Tennessee, Georgia, and in a variety of smaller states. My consulting activities focus mostly on telecommunications regulation. Specifically, I work with large corporate clients, such as MCIWorldCom, AT&T, AT&T Wireless, and a variety of smaller competitive local exchange carriers and PCS providers. I have represented these clients before state and federal regulatory agencies in various proceedings concerning the introduction of competition in telecommunications markets. Recently, these proceedings focus largely on the implementation of the pro-competition provisions of Telecommunications Act of 1996.

*Professional experience:*

My professional background includes work experiences in private industry and state government. I have worked for MCI Telecommunications Corporation (? MCI?) as a senior economist. At MCI, I provided expert witness testimony and conducted economic analyses for internal purposes. Prior to joining MCI in early 1995, I worked for Teleport Communications Group, Inc. (? TCG?), as a Manager in the Regulatory and External Affairs Division. In this capacity, I testified on behalf of TCG in proceedings concerning local exchange competition issues. From 1986 until early 1994, I was employed as an economist by the Public Utility Commission of Texas (? PUCT?) where I worked on a variety of electric power and telecommunications issues. During my last year at the PUCT I held the position of chief economist. Prior to joining the PUCT, I taught undergraduate courses in economics as an Assistant Instructor at the University of Texas from 1984 to 1986.

*Education:*

I received a Ph.D. in Economics from the University of Texas at Austin in 1992, an M.A. in Economics from the University of Texas at Austin in 1987, and a B.A. in Economics from Quincy College, Illinois, in 1982.

**PROCEEDINGS IN WHICH DR. ANKUM HAS FILED EXPERT WITNESS TESTIMONY:**

**New York**

*Commission Investigation into Resale, Universal Service and Link and Port Pricing*, New York Public Service Commission, Case Nos. 95-C-0657, 94-C-0095, and 91-C-1174, July 4, 1996. On behalf of MCI Telecommunications Corporation.

*In the Matter of Proceeding on Motion of the Commission To Reexamine Reciprocal Compensation*, New York Public Service Commission, Case 99-C-0529. Direct Testimony, July 1999. On Behalf Of Cablevision LightPath, Inc.

*Proceeding on the Motion of the Commission To Examine New York Telephone Company's Rates for Unbundled Network Elements*, New York Public Service Commission, Case 98-C-1357. Direct Testimony, October 1999. On behalf of Corecomm New York, Inc.

*Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, New York Public Service Commission Case 98-C-1357, Direct Testimony, June 2000, on behalf of MCIWorldCom.

**New Jersey**

*Petition of Focal Communications Corporation of New Jersey For Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Bell Atlantic – New Jersey Board of Public Utilities*, May 2000. On behalf of Focal Communications Corporation of New Jersey.

*I/M/O the Board's Review of Unbundled Network Elements Rates, Terms and Conditions of Bell Atlantic-New Jersey, Inc.* New Jersey Board of Public Utilities, Docket No. TO00060356. 2000. On behalf of WorldCom, Inc.

**Delaware**

*Petition of Focal Communications Corporation of Pennsylvania For Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Bell Atlantic – Delaware, Inc.* Delaware Public Service Commission, PSC Docket No. 00-025. Direct Testimony, May 2000. On behalf of Focal Communications Corporation of Pennsylvania.

**Texas**



*Petition of The General Counsel for an Evidentiary Proceeding to Determine Market Dominance, PUC of Texas, Docket No. 7790, Direct Testimony, June 1988. On behalf of the Public Utility Commission of Texas.*

*Application of Southwestern Bell Telephone Company for Revisions to the Customer Specific Pricing Plan Tariff, PUC of Texas, Docket No. 8665, Direct Testimony, July 1989. On behalf of the Public Utility Commission of Texas.*

*Application of Southwestern Bell Telephone Company to Amend its Existing Customer Specific Pricing Plan Tariff: As it Relates to Local Exchange Access through Integrated Voice/Data Multiplexers, PUC of Texas, Docket No. 8478, Direct Testimony, August 1989. On behalf of the Public Utility Commission of Texas.*

*Application of Southwestern Bell Telephone Company to Provide Custom Service to Specific Customers, PUC of Texas, Docket No. 8672, Direct Testimony, September 1989. On behalf of the Public Utility Commission of Texas.*

*Inquiry of the General Counsel into the Reasonableness of the Rates and Services of Southwestern Bell Telephone Company, PUC of Texas, Docket No. 8585, Direct Testimony, November 1989. On behalf of the Public Utility Commission of Texas.*

*Southwestern Bell Telephone Company Application to Declare the Service Market for CO LAN Service to be Subject to Significant Competition, PUC of Texas, Docket No. 9301, Direct Testimony, June 1990. On behalf of the Public Utility Commission of Texas.*

*Petition of Southwestern Bell Telephone Company for Authority to Change Rates, PUC of Texas, Docket No. 10382, Direct Testimony, September 1991. On behalf of the Public Utility Commission of Texas.*

*Application of Southwestern Bell Telephone Company, GTE Southwest, Inc., and Contel of Texas, Inc. For Approval of Flat-rated Local Exchange Resale Tariffs Pursuant to PURA 1995 Section 3.2532, Public Utility Commission of Texas, Docket No. 14658, January 24, 1996. On behalf of Office of Public Utility Counsel of Texas.*

*Application of Southwestern Bell Telephone Company, GTE Southwest, Inc., and Contel of Texas, Inc. For Interim Number Portability Pursuant to Section 3.455 of the Public Utility Regulatory Act, Public Utility Commission of Texas, Docket No. 14658, March 22, 1996. On behalf of Office of Public Utility Counsel of Texas.*

*Application of AT&T Communications for Compulsory Arbitration to Establish an Interconnection Agreement Between AT&T and Southwestern Bell Telephone Company, and Petition of MCI for Arbitration under the FTA96, Public Utility Commission of Texas, Consl. Docket Nos. 16226 and 16285. September 15, 1997. On behalf of AT&T and MCI.*

*Proceeding to examine reciprocal compensation pursuant to section 252 of the Federal Telecommunications of 1996, Public Utility Commission of Texas, Docket No. 21982. May 2000. On behalf of Taylor Communications.*

## **Iowa**

*US West Communications, Inc., Iowa Department of Commerce – Utilities Board, Docket No: RPU – 00 – 01. Direct Testimony, July 2000. On behalf of McLeodUSA.*

## **Illinois**

*Adoption of Rules on Line-Side Interconnection and Reciprocal Interconnection, Illinois Commerce Commission, Docket No. 94 -0048. September 30, 1994. On behalf of Teleport Communications Group, Inc.*

*Proposed Introduction of a Trial of Ameritech's Customer First Plan in Illinois, Illinois Commerce Commission, Docket No. 94 -0096. September 30, 1994. On behalf of Teleport Communications Group, Inc.*

*Addendum to Proposed Introduction of a Trial of Ameritech's Customer First Plan in Illinois, Illinois Commerce Commission, Docket No. 94 -0117. September 30, 1994. On behalf of Teleport Communications Group, Inc.*

*AT&T's Petition for an Investigation and Order Establishing Conditions Necessary to Permit Effective Exchange Competition to the Extent Feasible in Areas Served by Illinois Bell Telephone Company, Illinois Commerce Commission, Docket No. 94 -0146. September 30, 1994. On behalf of Teleport Communications Group, Inc.*

*Proposed Reclassification of Bands B and C Business Usage and Business Operator Assistance/Credit Surcharges to Competitive Status, Illinois Commerce Commission, Docket No. 95 -*

0315, May 19, 1995. On behalf of MCI Telecommunications Corporation.

*Investigation Into Amending the Physical Collocation Requirements of 83 Ill. Adm. Code 790, Illinois Commerce Commission, Docket 94-480, July 13, 1995. On behalf of MCI Telecommunications Corporation.*

*Petition for a Total Local Exchange Wholesale Tariff from Illinois Bell Telephone Company d/b/a Ameritech Illinois and Central Telephone Company Pursuant to Section 13-505.5 of the Illinois Public Utilities Act, Illinois Commerce Commission, Docket No. 95-0458, December 1995. On behalf of MCI Telecommunications Corporation.*

*Citation to Investigate Illinois Bell Telephone Company's Rates, Rules and regulations For its Unbundled Network Component Elements, Local Transport Facilities, and End office Integration Services, Illinois Commerce Commission, Docket No. 95-0296, January 4, 1996. On behalf of MCI Telecommunications Corporation.*

*In the Matter of MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Illinois Bell Telephone Company d/b/a Ameritech Illinois, Illinois Commerce Commission, Docket No. 96-AB-006, October, 1996. On behalf of MCI Telecommunications Corporation.*

*In the Matter of MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Central Telephone Company of Illinois (? Sprint?), Illinois Commerce Commission, Docket No. 96-AB-007, January, 1997. On behalf of MCI Telecommunications Corporation.*

*Investigation into forward looking cost studies and rates of Ameritech Illinois for interconnection, network elements, transport and termination of traffic. Illinois Commerce Commission, Docket No. 96-0486, February, 1997. On behalf of MCI Telecommunications Corporation.*

*Phase II of Ameritech Illinois TELRIC proceeding. Illinois Commerce Commission Docket No. 98-0396, May 2000. On behalf of MCIWorldCom.*

*Illinois Commerce Commission On its Motion vs Illinois Bell Telephone Company Investigation into Tariff Providing Unbundled Local Switching with Shared Transport, Illinois Commerce Commission, Docket No. 00-0700. October 2001. On behalf of AT&T Communications of Illinois, Inc. and WorldCom, Inc.*

## **Massachusetts**

*NYNEX/MCI Arbitration, Common Wealth of Massachusetts, Department of Public Utilities, D.P.U.*

96-83, October 1996. On behalf of MCI Telecommunications Corporation.

*Investigation into Pricing based on TELRIC for Unbundled Network Elements and Combinations of Unbundled Networks Elements and the Appropriate Avoided Cost Discount for Verizon New England, Inc. d/b/a Verizon Massachusetts' Resale Services.* Massachusetts Department of Energy and Transportation, Docket 01 -20. On behalf Allegiance, Network Plus, Inc., El Paso Networks, LLC, and Covad Communications Company. July 2001.

*Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Regulatory Plan to succeed Price Cap Regulation for Verizon New England, Inc. d/b/a Verizon Massachusetts' intrastate retail telecommunications services in the Commonwealth of Massachusetts.* Massachusetts Department of Energy and Transportation, Docket 01 -03. On behalf of Network Plus, Inc., August 2001.

## **New Mexico**

*Brooks Fiber Communications of New Mexico, Inc. Petition for Arbitration,* New Mexico State Corporation Commission, Docket No. 96 -307-TC, December, 1996. On behalf of Brooks Fiber Communications of New Mexico, Inc.

## **Michigan**

*In the Matter of the Application of City Signal, Inc. for an Order Establishing and Approving Interconnection Arrangements with Michigan Bell Telephone Company,* Michigan Public Service Commission, Case No. U-10647, October 12, 1994. On behalf of Teleport Communications Group, Inc.

*In the Matter, on the Commission's Own Motion, to Establish Permanent Interconnection Arrangements Between Basic Local Exchange Providers,* Michigan Public Service Commission, Case No. U-10860, July 24, 1995. On behalf of MCI Telecommunications Corporation.

*In the Matter, on the Commission's Own Motion, to consider the total service long run incremental costs and to determine the prices for unbundled network elements, interconnection services, resold services, and basic local exchange services for Ameritech Michigan,* Michigan Public Service Commission, Case No. U-11280, March 31, 1997. On behalf of MCI Telecommunications Corporation.

*In the matter of the application under Section 310(2) and 204, and the complaint under Section 205(2) and 203, of MCI Telecommunications Corporation against AMERITECH requesting a reduction in intrastate switched access charges,* Case No. U-11366. April, 1997. On behalf of MCI

Telecommunications Corporation.

## **Ohio**

*In the Matter of MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Ameritech Ohio, The Public Utilities Commission of Ohio, Case No. 96-888-TP-ARB, October, 1996. On behalf of MCI Telecommunications Corporation.*

*In the matter of the review of Ameritech Ohio's economic costs for interconnection, unbundled network elements, and reciprocal compensation for transport and termination of local telecommunications traffic, The Public Utilities Commission of Ohio, Case No. 96-922-TP-UNC, Jan 17, 1997. On behalf of MCI Telecommunications Corporation.*

*In the Matter of the Review of Ameritech Ohio's Economic Costs for Interconnection, Unbundled Network Elements, and Reciprocal Compensation for Transport and Termination of Local Telecommunications Traffic. Case No. 96-922-TP-UNC and In the Matter of the Application of Ameritech Ohio for Approval of Carrier to Carrier Tariff. Case No. 00-1368-TP-ATA. Ohio Public Utilities Commission. Direct Testimony, October 2000. On behalf of MCIWorldCom and ATT of the Central Region.*

## **Indiana**

*In the matter of the Petition of MCI Telecommunications Corporation for the Commission to Modify its Existing Certificate of Public Convenience and Necessity and to Authorize the Petitioner to Provide certain Centrex-like Intra-Exchange Services in the Indianapolis LATA Pursuant to I.C. 8-1-2-88, and to Decline the Exercise in Part of its Jurisdiction over Petitioner's Provision of such Service, Pursuant to I.C. 8-1-2.6., Indiana Regulatory Commission, Cause No. 39948, March 20, 1995. On behalf of MCI Telecommunications Corporation.*

*In the matter of the Petition of Indiana Bell Telephone company, Inc. For Authorization to Apply a Customer Specific Offering Tariff to Provide the Business Exchange Services Portion of Centrex and PBX Trunking Services and for the Commission to Decline to Exercise in Part Jurisdiction over the Petitioner's Provision of such Services, Pursuant to I.C. 8-1-2.6, Indiana regulatory Commission, Cause No. 40178, October 1995. On behalf of MCI Telecommunications Corporation.*

*MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Indiana Bell Telephone Company d/b/a Ameritech Indiana, Indiana Public Utility Regulatory Commission, Cause No. 40603-INT-01, October 1996. On behalf of MCI Telecommunications Corporation.*

*In the matter of the Commission Investigation and Generic Proceeding on Ameritech Indiana's Rates for Interconnection Service, Unbundled Elements and Transport and Termination under the Telecommunications Act of 1996 and Related Indiana Statutes, Indiana Public Utility Regulatory Commission, Cause No. 40611. April 18, 1997. On behalf of MCI Telecommunications Corporation.*

*In the Matter of the Commission Investigation and Generic Proceeding on GTE's Rates for Interconnection, Service, Unbundled Elements, and Transport under the FTA 96 and related Indiana Statutes, Indiana Public Utility Regulatory Commission, Cause No. 40618. October 10, 1997. On behalf of MCI Telecommunication Corporation.*

*In the matter of the Commission Investigation and Generic proceeding on the Ameritech Indiana's rates for Interconnection, Unbundled Elements, and Transport and Termination Under the Telecommunications Act of 1996 and Related Indiana Statutes, Indiana Utility Regulatory Commission, Cause No. 40611-S1. October 2001. On behalf of WorldCom, Inc., AT&T Communications of Indiana, G.P.*

### **Rhode Island**

*Comprehensive Review of Intrastate Telecommunications Competition, State of Rhode Island and Providence Plantations Public Utilities Commission, Docket No. 2252, November, 1995. On behalf of MCI Telecommunications Corporation.*

### **Vermont**

*Investigation into NET's tariff filing re: Open Network Architecture, including the Unbundling of NET's Network, Expanded Interconnection, and Intelligent Networks, Vermont Public Service Board, Docket No. 5713, June 8, 1995. On behalf of MCI Telecommunications Corporation.*

### **Wisconsin**

*Investigation of the Appropriate Standards to Promote Effective Competition in the Local Exchange Telecommunications Market in Wisconsin, Public Service Commission of Wisconsin, Cause No. 05-TI-138, November, 1995. On behalf of MCI Telecommunications Corporation.*

*Matters relating to the satisfaction of conditions for offering interLATA services (Wisconsin Bell, Inc. d/b/a Ameritech Wisconsin) Wisconsin Public Service Commission, 670-TI-120, March 25, 1997. On behalf of MCI Telecommunications Corporation.*



*In the Matter of MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Wisconsin Bell, Inc. d/b/a Ameritech Wisconsin, Wisconsin Public Service Commission, Docket Nos. 6720-MA-104 and 3258-MA-101. On behalf of MCI Telecommunications Corporation.*

*Investigation Into The Establishment of Cost-Related Zones For Unbundled Network Elements, Docket No. 05 -TI-349. Rebuttal Testimony, September 2000. On behalf of AT&T Communications of Wisconsin, McLEODUSA Telecommunications Services, Inc., TDS MetroCom, Inc., and Time Warner Telecom.*

### **Pennsylvania**

*In Re: Formal Investigation to Examine Updated Universal Service Principles and Policies for telecommunications Services in the Commonwealth Interlocutory order, Initiation of Oral Hearing Phase, Pennsylvania Public Utility Commission, Docket No. I-00940035, February 28, 1996. On behalf of MCI Telecommunications Corporation.*

*Structural Separation of Verizon, Pennsylvania Public Utility Commission- Docket No. M-0001352. Direct Testimony, October, 2000. On behalf of MCI WorldCom.*

### **Georgia**

*AT&T Petition for the Commission to Establish Resale Rules, Rates and terms and Conditions and the Initial Unbundling of Services, Georgia Public Service Commission, Docket No. 6352 -U, March 22, 1996. On behalf of MCI Telecommunications Corporation.*

### **Tennessee**

*Avoidable Costs of Providing Bundled Services for Resale by Local Exchange Telephone Companies, Tennessee Public Service Commission, Docket No. 96 -00067, May 31, 1996. On behalf of MCI Telecommunications Corporation.*

### **Commonwealth of Puerto Rico**

*Petition for Arbitration Pursuant to 47 U.S.C. & (b) and the Puerto Rico Telecommunications Act of 1996, regarding Interconnection Rates Terms and Conditions with Puerto Rico Telephone Company, Puerto Rico Telecommunications Regulatory Board, Docket No. 97 -0034-AR, April 15, 1997. On*

behalf of Cellular Communications of Puerto Rico, Inc.