Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of:	)	
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98
	)	
Joint Petition of BellSouth, SBC, and Verizon for Elimination of Mandatory Unbundling of High-Capacity Loops and Dedicated Transport	)	

REPLY COMMENTS OF THE UNITED STATES TELECOM ASSOCIATION

INTRODUCTION

The United States Telecom Association ("USTA") hereby files it reply comments. Attached to USTA's reply comments is the Rebuttal Declaration of Robert W. Crandall.[1] The data submitted in this proceeding by Crandall demonstrates that the impairment standard of Section 251(d)(2) is not met for ILEC high-capacity loops and dedicated transport facilities used to serve the exchange access market. In addition, as a general matter, the impairment standard of Section 251(d)(2) is not met for high-capacity loops or dedicated transport facilities used to serve the local exchange market. Accordingly, ILECs should not be required to make high-capacity

[1] USTA supports the *Crandall Rebuttal Declaration* which is being filed by USTA on behalf of BellSouth, SBC and Verizon. Similarly, USTA supports the *Rebuttal Report Regarding Competition for Special Access Service, High-Capcaity Loops, and Interoffice Transport prepared by Evan Leo of Kellogg Huber on behalf of BellSouth, SBC, and Verizon* filed by those parties in support of their Joint Petition opposing mandatory unbundling of high-capacity loops and dedicated transport.

loops or dedicated transport available as UNEs under Section 251(c)(3) of the Act. For some transitional period, CLECs should be permitted to demonstrate impairment in specific markets for access to ILEC high-capacity loops and dedicated transport for use in the lcoal exchange market. Commission regulations that require ILECs to provide unbundled loop and transport combinations for special access and high-capacity loops and dedicated transport for local exchange service would unreasonably and unlawfully burden ILECs with unbundling requirements where the Section 251(d)(2) impairment standard is not met.

I. MANDATORY LOOP AND TRANSPORT UNES FOR SPECIAL ACCESS OR LOCAL EXCHANGE SERVICE FAIL THE IMPAIRMENT STANDARD

Whether special access services should be converted to UNEs, and whether ILECs must continue to unbundle high-capacity loops and dedicated transport involves nothing more than the Commission applying the impairment test in Section 251(d)(2) of the 1996 Act as interpreted by the Suprme Court in *AT&T v. Iowa Utilities Board.*[2] ILEC are only require to provide a specific UNE when a competitive carrier would be impaired in its ability to provide competitive service without the UNE. According to the Court, "the Act requires the FCC to apply some limiting standard, rationally related to the goals of the Act ..."[3] when applying the impairment test to ILEC obligations to provide specific UNEs to competitive carriers.

When stripped bare of rhetoric and self-serving statements, comments opposing the *Crandall Reply Declaration* present no evidence that rebutt the fundamental conclusions reached by Crandall about the competitive special access market. The *Crandall Reply Declaration*

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2 *AT&T v. Iowa Utilities Board*, 525 U.S. 366 (1999).

3 *Id.* at 525 U.S.388.

correctly concluded that the special access market is distinguishable from the local exchange market for several reasons. Unlike local exchange customers, special access customers are large business customers who spend significant revenue on telecommunications services.[4] Moreover, special access customers "tend to be clustered in certain areas – for example, downtown, industrial parks, or college campuses." [5] The distinct characteristics of the special access market provide "a strong economic incentive" for CLECs "to use their own facilities to serve the special access market." [6] Neither IXCs nor competitive carriers have demonstrated in this or any other Commission proceeding that through self-provisioning or use of non-ILEC loops and transport UNEs that they are impaired in terms of cost, timeliness, quality, ubiquity and impact on network operation, or in terms of any of the other factors identified as part of the Commission's unbundling analysis. As *Crandall's Reply Declaration* stated:

> Because the large majority of potential special access customers and central offices are addressable by existing CLEC facilities, and because CLECs continue to deploy new facilities at a rapid pace, it is impossible for the Commission to conclude that the lack of access to unbundled loop-transport combinations would materially diminish the ability of CLECs to provide high capacity special access services." [7]

As discussed below, the *Crandall Rebuttal Declaration* reaffirms that the special access market is fully competitive and that competitive carriers are not impaired, absent access to ILEC unbundled loop and transport combinations, to self provision or use third party alternatives to provide special access services to customers. The *Crandall Rebuttal Declaration* and the *Rebuttal Report on Special Access, High-Capcity Loops and Dedicated Transport* ("Rebuttal

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4 *Crandall Reply Declaration* at ¶17.

5 *Crandall Reply Declaration* at ¶19.

6 *Crandall Reply Declaration* at ¶20.

7 *Crandall Reply Declaration* at ¶50.

Report") support the Joint Petition filed by BellSouth, SBC and Verizon that application of the impairment test does not support mandatory ILEC unbundling of high-capacity loops and dedicated transport. The impairment standard of Section 251(d)(2) is not met for high-capacity loops or dedicated transport facilities used to serve the local exchange market. USTA, however, supports the Commission establishing an expedited process that would permit any competitive carrier, in any specific market, to provide evidence supporting its claim of impairment and the need for access to ILEC unbundled high-capacity loops and/or dedicated transport.[8] As USTA proposed in its comments "it seems appropriate to USTA that for some transitional period CLECs ought to have the ability to demonstrate, on an exception basis, that the impairment standard can be met as to high-capacity loops and/or dedicated transport for a particular geographic segment of the local exchange market. Incorporating such a transitional safety mechanism will allow any anomalous market failures as to CLEC access to alternative high-capacity facilities to be addressed on a limited and precise local market-by-local market basis." [9]

A. CRANDALL REBUTTAL DECLARATION

The *Crandall Rebuttal Declaration* concludes that the special access market is competitive based upon irrefutable market data. This data demonstrates that through collocated facilities, massive fiber deployments, and actual deployments of facilities in the six cities described in the *Crandall Reply Declaration* establishes that CLECs are not impaired in their ability to provide special access services without ILEC high-capacity loops and dedicated transport.[10]

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8 USTA Comments at 16-17, June 11, 2001.

9 USTA Comments at 16, June 11, 2001.

10 *Crandall Rebuttal Declaration* at ¶2.

The assertions made by AT&T, WorldCom and Sprint, that the study of competition in six cities and supporting data relied upon in the *Crandall Reply Declaration* is in a number of ways flawed and the conclusions reached are not to be believed by the Commission, are unfounded. As demonstrated in the *Crandall Rebuttal Declaration*, the study of special access competition was based upon CLEC facilities-based collocated facilities and CLEC fiber deployments. Clearly, "There is nothing theoretical about this empirical market evidence of *actual* competition."[11] The *Crandall Rebuttal Declaration* also dispels the argument that its review of special access in the six cities in the study includes fiber used for interexchange carrier traffic.[12] In addition, including fiber deployments of bankrupted CLECs in its study was appropriate because the fiber deployed is a "sunk asset" which can be used - - an argument consistent with the *Pricing Flexibility Order* which concluded that the Commission would consider a facilities-based investment as a sunk investment "if a competitive LEC has made a substantial sunk investment in equipment, that equipment remains available and capable for providing service in competition with the incumbent" or "Another firm can buy the facilities...."[13]

The argument that data reflected in maps showing evidence of CLEC fiber deployments and addressability of high-cap customers in six cities reviewed by Crandall are not representative of larger cities is also unfounded. The *Crandall Rebuttal Declaration* explains

> [C]ontrary to WorldCom's assertion ... the addressability of special access customers in smaller cities would necessarily be less than the addressability of special access customers in larger cities. Stated differently, if I had only concentrated my analysis on the very largest cities, it is likely that my estimates of addressability

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11 *Crandall Rebuttal Declaration* at ¶7.

12 *Crandall Rebuttal Declaration* at ¶10.

13 *Crandall Rebuttal Declaration* at ¶¶11-14.

> would have been *upwardly* biased and WorldCom would have been quick to point that out. Indeed, the positive relationship between city size and addressability is revealed in my results: larger cities, such as Cleveland and Seattle, have a greater degree of addressability than do mid-sized cities, such as Tucson and St. Paul.[14]

Critical comments by AT&T on the Crandall probit model ignore the basis for the model. As Crandall explains, the probit model is intended to provide a metric that would identify special access customers and demonstrate the degree to which CLEC fiber deployments reach, or could profitably be extended to reach, special access customers in the six test cities of the study.[15] Crandall further explains that the probit model is an appropriate modeling tool which accurately shows that special access customers are being served by facilities-based CLECs.[16] There is no impairment of CLECs in their ability to serve special access customers or profitably extend their networks to reach potential special access customers.

Competitive carriers also claim that other obstacles impair their ability to serve special access customers. Arguments by CLECs that barriers to accessing buildings, fluctuations in the financial markets which make capital less available, negative customer perceptions of the quality of CLEC services, difficulty in self provisioning, and the need to ensure TELRIC pricing for competition to grow have nothing to do with the application of the impairment standard.[17] These

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[14] *Crandall Rebuttal Declaration* at ¶15.

[15] *Crandall Rebuttal Declaration* at ¶¶17-18.

[16] *Crandall Rebuttal Declaration* at ¶¶19-40. The Crandall study accurately estimates the cost of trenching, capital expenditures, and the potential revenues to be derived by CLECs from extending their networks to serve potential special access customers. The opposition theories of AT&T and WorldCom to Crandall's study are little more than frivolous complaints that do not change the outcome of Crandall's conclusions that facilities-based CLECs are profitably serving special access customers and can reach potential customers without financial hardship.

[17] *Crandall Rebuttal Declaration* at ¶¶41-52.

arguments are attempts by competitive carriers to "offer a handful of anecdotes that attempt to prove that CLECs are impaired in the delivery of special access services without access to ILEC facilities."[18] As Crandall explains "Those obstacles, to the extent that they exist, are ... irrelevant to the question of whether UNEs should be available. The bottom line is that such anecdotal evidence - - or what AT&T calls "hard factual evidence" - - cannot refute the systematic evidence of CLEC facilities-based deployment."[19]

Competitive carriers have made no showing in this or any other proceeding that the impairment standard in section 251(d)(2) has been meet for special access. Mandatory ILEC unbundling of high-capacity loops and dedicated transport for special access services provided by competitive carriers would be inconsistent with section 251(d)(2) as interpreted by the Supreme Court in *AT&T v. Iowa Utilities Board.*

B. REBUTTAL REPORT ON COMPETITION FOR SPECIAL ACCESS SERVICE AND HIGH CAPACITY LOOPS AND DEDICATED TRANSPORT

The *Rebuttal Report* reaffirms that the evidence of competitive carriers collocated in ILEC central offices, fiber deployments and market share and revenue data demonstrates that CLECs are not impaired when providing special access services. The *Rebuttal Report* concludes

> This rebuttal report demonstrates that most of these criticisms are without merit, and that to the extent some criticisms are valid, they do not materially alter the Fact Report's overall showing that competition for special access service, interoffice transport, and high-capacity loops is widespread and growing rapidly. [20]

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18 *Crandall Rebuttal Declaration* at ¶41.

19 *Crandall Rebuttal Declaration* at ¶41.

20 *Rebuttal Report* at 2.

II. TIMELINESS OF REGULATORY RELIEF

Mandatory ILEC unbundling of loop and transport elements for special access is not supported under the impairment standard. The exchange access market is distinct from the local exchange market. USTA believes that the distinct nature of these markets permits the Commission to conclude that the impairment standard of Section 251(d)(2) cannot be met regarding the interexchange market. Contrary to some comments,[21] the Joint ILEC Petition to eliminate mandatory unbundling of high-capacity loops and dedicated transport is timely and should be granted. The impairment standard may be met on a specific geographic market basis for ILEC unbundling of high-capacity loops and/or dedicated transport for the local exchange market.

The Commission's January 24, 2001 Public Notice sought comment on whether special access should be unbundled. In addition, the Commission's Public Notice sought comment on the competitive nature of the market for high-capacity loops and dedicated transport. As the Commission stated: "in some markets, particularly those markets serving high-volume business customers, it may be practical and economical for carriers to compete using self-provisioned facilities.... We seek comment on the nature of the special access and private line market in terms of the types of end user customers carriers typically serve in this market. Do these customers use high capacity facilities that carriers can self-provision or obtain without being impaired in terms of cost, timeliness, quality, ubiquity and impact on network operation, or in terms of any of the other factors identified as part of the Commission's unbundling analysis."[22] Clearly, the Commission's Public Notice placed under review (1) whether ILECs should provide

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[21] *See, e.g.*, AT&T Comments at 3-5; WorldCom Comments at 5-6; Sprint Comments at 16-17; Covad Comments at 3-5; ALTS Letter at 1; CompTel Comments at 3-4.

[22] FCC *Public Notice* DA 01-169 at 2-3.

unbundled loop and transport UNEs for special access and (2) whether mandatory ILEC unbundling of high-capacity loops and dedicated transport should be continued. The April 5, 2001 Joint ILEC Petition seeking elimination of mandatory unbundling of high-capacity loops and dedicated transport is thus timely filed and in direct response to the Commission's own inquiry.

Arguments that reference the Commission's prior order restricting review of its UNE Remand Order as a basis for arguing that the Joint Petition is procedural defective as to the timeliness of Commission review are unsupportable. The Commission has an ongoing obligation to address any request for relief by any carrier subject to regulations under the 1996 Act without that carrier waiting for an arbitrary Commission date in an order to lapse. In *AT&T v. FCC*,[23] a federal appeals court considered whether the Commission's order denying US West's request for regulatory forbearance under Section 10 of the 1996 Act, and to be regulated as a non-dominate provider of high-capacity services in markets where such service are competitive, was arbitrary and capricious. The court concluded that "the availability of the *Pricing Flexibility Order* as an alternative route for seeking pricing flexibility does not diminish the Commission's responsibility to fully consider petitions under §10."[24] The Commission has no more authority to ignore the ILEC Joint Petition in favor of its *UNE Remand Order* time table for reviewing ILEC unbundling obligations then the Commission could ignore US West's forbearance petition in favor of its *Pricing Flexibility Order* timetable. Based upon the evidence in the record establishing that the impairment standard has not been met regarding CLEC access

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[23] 236 F.3d 729 (D.C. Cir. January 23, 2001).

[24] 236 F.3d at 738.

to high-capacity loops and dedicated transport for local exchange service, then mandatory unbundling of these UNEs should be terminated.

CONCLUSION

The *Crandall Rebuttal Declaration* demonstrates that the special access market is competitive. CLECs are not impaired in providing special access services without ILEC UNEs. In addition, it has not been demonstrated by competitive carriers that mandatory unbundling of high-capacity loops and dedicated transport should continue. ILEC high-capacity loops and dedicated transport facilities should no longer be required as UNEs on a mandatory basis. Mandatory unbundling of ILEC facilities for special access, and continuation of mandatory unbundling of high-capacity loops and dedicated transport for local exchange service, would be inconsistent with Section 251(d)(2) of the 1996 Act and the Supreme Court's decision in *AT&T v. Iowa Utilities Board.*

Respectfully submitted,

UNITED STATES TELECOM ASSOCIATION

June 25, 2001 **By:** Keith Townsend

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ATTACHMENT 1

Rebuttal Declaration of Robert W. Crandall

June 25, 2001

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REBUTTAL DECLARATION OF ROBERT W. CRANDALL

INTRODUCTION

1. I have been asked by BellSouth, SBC, and Verizon to respond to the comments filed by AT&T,[1] WorldCom,[2] and Sprint[3] (the "opponents") that address my economic analysis.

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1. An Economic and Engineering Analysis of Dr. Robert Crandall's Theoretical "Impairment" Study, on behalf of AT&T (June 11, 2001) [hereinafter *AT&T "Economic" Study*].

I demonstrate that the opponents ignore the market evidence on competitive fiber networks, and mischaracterize the metric that I used to characterize actual and potential competition in the special access services market. Finally, I show that the opponents seek to confound the impairment decision with superfluous information.

SUMMARY OF CONCLUSIONS

2. In part I of my declaration, I explain how AT&T argues for a market-based evidentiary standard for the impairment decision on the one hand, but ignores the overwhelming market-based evidence on the other—namely, facilities-based collocation, massive fiber deployment, and in particular, iMapData's depiction of the *actual* deployment of CLEC fiber networks in a variety of cities.[4] I explain in detail why each of the three criticisms of the fiber maps is without merit. Finally, I embrace the AT&T market-based standard (with one important caveat), and ask the Commission to reconcile the overwhelming evidence of facilities-based deployment with the notion that CLECs need access to ILEC high-capacity loops and transport.

3. In part II, I explain the one important caveat to my support of AT&T's market-based standard: some modeling tools can help inform the Commission's impairment decision. The models help the Commission avoid baseless assumptions that could lead the Commission to understate the degree of actual and potential competition in the special access services market.[5]

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2. Comments of WorldCom Inc. (June 11, 2001) [hereinafter *WorldCom Comments*].
3. Comments of Sprint Corporation (June 11, 2001) [hereinafter *Sprint Comments*].
4. AT&T also ignores the data on fiber-based collocation that was presented in the *Fact Report*. *See* Competition for Special Access Services, High-Capacity Loops, and Interoffice Transport, Submitted by the United States Telecom Association, Prepared for BellSouth, SBC, Qwest, and Verizon, CC Dkt. No. 96-98, at 4 (Apr. 5, 2001) [hereinafter SPECIAL ACCESS FACT REPORT].
5. In my reply declaration, I defined the special access services market as traditional special access, dedicated transport used in conjunction with switched access, and private line services. In particular, I focused

Next, I respond to the critiques of the metric that I used to characterize actual competition—that is, the extent to which CLECs can currently reach special access customers. I also respond to the critiques of the metric that I used to characterize potential competition—that is, the extent to which CLECs will have an incentive to reach special access customers in the future.

4. In part III, I explain how the opponents seek to confound the impairment decision with superfluous information. A handful of anecdotes cannot substitute for comprehensive market-based evidence. I demonstrate that neither dubious claims about capital market imperfections nor customer perceptions of CLEC quality should inform the impairment decision. I also explain why the delay associated with extending one's network to serve "off-net" customers cannot justify the unbundling of an ILEC's high-cap loops and transport elements.

5. Finally, I explain the fallacy of the opponents' contention that CLECs need access to ILEC facilities at total element long-run incremental cost (TELRIC) prices. Regardless of the precision of my cost estimates of network expansion, those costs are presumably the very basis for TELRIC—by design, TELRIC is supposed to reflect the cost of a brand new, efficiently-deployed network. It would be illogical to conclude that the forward-looking costs of building connections to customers are so high that CLECs need access to ILEC networks at rates based on these same forward looking costs. The Commission should, by now, recognize that it is being told by AT&T, WorldCom, and Sprint that the prices of unbundled network elements (UNEs) have been set *too low*, not that CLECs are impaired by lack of access to UNEs at costs that they can readily replicate.

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on the high-capacity segment, at speeds of DS-1 or above. This treatment is supported by the fact that between 78 and 89 percent of the special access revenues earned by the Bell companies is generated by customers using

I. THE OPPONENTS IGNORE THE MARKET EVIDENCE ON ACTUAL COMPETITION

6. AT&T's criticism of my study boils down to one point: the Commission should reject the conclusions of my study because they are entirely based on "theoretical models," which, AT&T argues, should not serve as the basis for an impairment decision under 47 U.S.C. § 251(d)(2).[6] Instead, AT&T points out, impairment decisions should be based on "market evidence."[7] To reach my conclusions about impairment, however, I relied on the very type of market-based evidence that AT&T purports to favor. For example, I relied on facilities-based collocation by CLECs and on evidence of fiber deployment from the *Fact Report*.[8] Facilities-based collocation provided the basis for the FCC's conclusion that there is no longer any need for price cap and other rate regulation for a significant portion of the special access market. As I explained in my reply declaration, with facilities-based collocation so widespread in so many places, competitive carriers cannot be impaired.

7. I also relied on evidence of actual CLEC fiber deployment to date. Indeed, the first half (28 of the 35 pages) of my study documents the extensive local fiber networks that CLECs have deployed in six cities across the United States. There is nothing theoretical about this empirical market evidence of *actual* competition. Thus, AT&T's assertion that I "[do] not

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DS-1 circuits or above. *See* Reply Declaration of Robert W. Crandall, filed on behalf of United States Telecom Association, at ¶ 14 (Apr. 30, 2001) [hereinafter *Crandall Reply Declaration*].

6. *AT&T "Economic" Study*, *supra* note 1, at 2 (citing Third Report and Order and Fourth Further Notice of Proposed Rulemaking, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, 15 FCC Rcd. 3696, ¶ 66 (1999) [hereinafter *UNE Remand Order*].

7. *AT&T "Economic" Study*, *supra* note 1, at 2. *See also* Comments of Mpower Communications Corp., at 7 (July 11, 2001) [hereinafter *Mpower Comments*] ("... [T]he Crandall Declaration doesn't try to present data for analysis. Instead, it presents a pyramid of theories and assumptions. . . . [The Crandall Declaration] might make an interesting academic treatise, but [its theories] are not well founded in fact and do not provide meaningful support for the Three RBOC Petition.").

offer any marketplace evidence"[9] simply blinks at reality. The overwhelming *market-based* evidence of extant CLEC fiber networks is further proof that CLECs are not impaired in the delivery of special access services without access to the incumbents' high-capacity loops and transport facilities.

8. My "theoretical modeling" of the special access market simply responds to arguments that, notwithstanding the existing facilities, carriers are impaired in provisioning of *additional* facilities. In particular, my breakeven model shows the degree to which CLECs profitably can expand their network to serve additional customers. This later analysis reflects the fact that the CLECs' existing networks represent just a snapshot in time. As then-Commissioner Powell observed, the deployment of alternative facilities by some CLECs in some locations "strongly suggests" that competitors "are not significantly impaired," both in areas where they have deployed "and in areas in which they have not done so."[10] While AT&T purports to dismiss the analysis as theoretical modeling (ignoring the substantial market-based evidence discussed above), its suggestion that the Commission rely instead on anecdotes and unverifiable internal assertions is hardly compelling.

A. The Opponents Cannot Dismiss the Evidence of Fiber Deployment

9. It is no accident that AT&T does not mention the evidence of fiber-based collocation nor iMapData's detailed maps of the CLECs' fiber networks until the very end of its

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8. *Crandall Reply Declaration*, *supra* note 5, at ¶ 6.
9. *AT&T "Economic"* Study, *supra* note 1, at 10.
10. *See* 1999 FCC LEXIS 5663 at **49.

comments.[11] In fact, when summarizing my methodology, AT&T casually omits the central role of the CLEC fiber maps in my allegedly "slipshod"[12] analysis:

> In order to undertake this thought experiment, Dr. Crandall developed a series of largely undocumented models intended to estimate (i) the location of possible high-capacity customers; (ii) the revenues to be gained by serving them, and (iii) the incremental costs of extending existing competitive LEC fiber facilities to reach these customers.[13]

A proper synopsis of my methodology would begin with a new part (i) entitled "the location of actual CLEC fiber networks." Clearly, AT&T is attempting to link the conclusions of my study to the model that I employ to characterize the degree of *potential* competition in the special access market. However, the first 28 pages of text, which characterize the degree of *actual* competition in the special access market, cannot be ignored. As long as the conclusions are entirely based on "three successive theoretical models,"[14] AT&T argues, the Commission should reject those conclusions under the market-based evidentiary standard established in the *UNE Remand Order*.[15] But the market-based evidence of actual competition—produced in the *Fact Report* and supplemented with fiber maps by iMapData—does not involve any theoretical modeling! Indeed, AT&T recognizes the importance of the fiber maps to my analysis when it claims weakly: "Rather than being plentiful, metropolitan fiber capacity is scarce and, as a result, the *entire* premise of Dr. Crandall's analysis and his conclusions come crashing down."[16] But it is AT&T's critique of the iMapData that is weak; that is why it is relegated to the back of its comments. I respond to the specific critique of the fiber maps below.

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11. *AT&T "Economic"* Study, *supra* note 1, at 38.
12. *Id.* at 24.
13. *Id.* at 9.
14. *Id.* at 2.
15. *UNE Remand Order*, *supra* note 6.

1. The Local Fiber Maps Produced by iMapData Do Not Include Long-Haul Fiber

10. AT&T finally acknowledges the existence of the CLEC fiber maps on page 38 of its 48-page comments, when it criticizes iMapData for including "interexchange backbone fiber" in its local fiber maps.[17] In particular, AT&T points to Level 3's downtown fiber networks in Cleveland and Seattle as evidence that iMapData included superfluous networks to inflate the impression of actual competition at the local level.[18] AT&T claims that "*none* of Level 3's fiber is local—it is all long-distance services."[19]

11. AT&T is wrong. According to Level 3's most recent 10-K filing at the Securities and Exchange Commission (SEC), the company owns and operates *both* local and intercity networks. Indeed, Level 3 devotes an entire section of its 10-K to its local market infrastructure:

> Local Market Infrastructure. The Company's local facilities include fiber optic networks connecting Level 3's intercity network Gateway sites to ILEC and CLEC central offices, long distance carrier points-of-presence or POPs, buildings housing communication-intensive end users and Internet peering and transit facilities. Level 3's high fiber count metropolitan networks allow Level 3 to extend its services directly to its customers' locations at very low costs, because the availability of this network infrastructure does not require extensive multiplexing equipment to reach a customer location, which is required in ordinary fiber constrained metropolitan networks. . . .
>
> As of December 31, 2000, the Company had operational, *facilities based local metropolitan networks* in 26 U.S. markets and six European markets.[20]

More importantly, Level 3's fiber depicted in the maps of Seattle and Cleveland (as is shown on the maps) *is* in fact used for local services, and iMapData has confirmed as much. This of course

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16. *AT&T "Economic"* Study, *supra* note 1, at 38 (emphasis added).
17. *Id.*
18. *Id.*
19. *Id.* (citing Pfau Declaration at ¶ 26) (emphasis in original).

should come as no surprise—it would not make sense for Level 3 to traverse the most expensive areas of downtown Seattle and Cleveland if the sole purpose of those networks was to carry long-haul traffic.

2. A CLEC's Fiber Does Not Disappear from the Fiber Map If That CLEC Declares Bankruptcy

12. AT&T makes one other attempt to dismiss the fiber maps produced by iMapData. Because iMapData included the fiber networks of e.spire in Tucson (e.spire has recently filed for bankruptcy), AT&T contends that iMapData has overstated the degree of actual competition in the special access market.[21] According to AT&T, the e.spire fiber network in Tucson should be stricken from the record. That line of reasoning is flawed for at least two reasons. *First*, even though it declared bankruptcy in March 2001,[22] e.spire continues to operate as of the time of this filing,[23] and thus should be counted in any assessment of the state of actual competition in the special access market in Tucson.

13. *Second*, a fiber network deployed by e.spire—or any other bankrupt CLEC—constitutes a sunk asset, which can be used subsequently by the failed carrier itself, or by another carrier that acquires its established facilities. For example, in May 2001, Cable & Wireless

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20. LEVEL 3 COMMUNICATIONS INC., SEC FORM 10-K, at 7 (filed Mar. 8, 2001) (emphasis added). Level 3 lists Cleveland and Seattle as "market[s] in service" in a Table within the section on Local Market Infrastructure.

21. *AT&T "Economic" Study*, *supra* note 1, at 38. *See also Mpower Comments*, *supra* note 7, at 17 (criticizing me for failing to recognize the importance of "the fact that several CLECs have filed for bankruptcy in the last six months.").

22. Jerry Knight, *An Imploding Telecom Sector Tests Darwinism*, WASH. POST, Mar. 26, 2001, at E1.

23. *e.spire Receives Final Approval for DIP Financing*, PR NEWSWIRE, June 12, 2001. The Bankruptcy Court of the District of Delaware approved the remaining $45 million of the $85 million debtor-in-possession financing for e.spire.

announced that it had allocated $7 billion to acquire a recently bankrupted American CLEC.[24] Similarly, if e.spire ceased to operate, its facilities could be acquired by another CLEC looking to fill a hole in its nationwide network. Therefore, the CLEC fiber networks that are currently deployed should be counted in any competitive assessment of the special access market.

14. In fact, AT&T's prescription for the treatment of capacity owned by a bankrupt carrier—a prescription, incidentally, that is the polar opposite of what AT&T argued when it was seeking deregulation of its own services—has already been rejected by the Commission. In its *Pricing Flexibility Order*, the Commission explained that it would consider facilities-based investment as a sunk investment:

> Investment in facilities, particularly those that cannot be used for another purpose, is an important indicator of such irreversible entry. If a competitive LEC has made a substantial sunk investment in equipment, that equipment remains available and capable for providing service in competition with the incumbent, even if the incumbent succeeds in driving that competitor from the market. Another firm can buy the facilities at a price that reflects expected future earnings and, as long as it can charge a price that covers average variable cost, will be able to compete with the incumbent LEC.[25]

The Commission has espoused this treatment of facilities-based investment for over a decade.[26]

3. The Fiber Maps Cannot Be Rejected by a Casual Eye-Balling of the Data

15. Finally, WorldCom accuses iMapData of including routes in its fiber maps where "WorldCom has no facilities at all."[27] Although it is conceivable that iMapData did not perfectly

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24. Dan Roberts, *C&W Hopes to Acquire U.S. Phone Operator*, FIN. TIMES, May 17, 2001, at P23. Several carriers have recently acquired the assets of failed CLECs, including AT&T, Hughes, McLeod, WorldCom, and XO Communications.

25. Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, 14 FCC Rcd. 14221, 14264 (1999).

26. *See, e.g.*, Competition in the Interstate, Interexchange Marketplace, Notice of Proposed Rulemaking, 5 FCC Rcd. 2627, 2634 (1990) (explaining in the context of the long-distance services that "even if an existing facilities-based carrier exits the interstate market, its supply capacity likely will remain available to other IXCs and new entrants.").

trace the path of each CLEC's fiber network,[28] WorldCom does not provide substantive evidence to support such a claim. Nor does it even show the *extent* to which the iMapData is purportedly inaccurate. Instead, WorldCom offers up a declaration by a WorldCom employee, who claims that he caught the "error" through casual inspection:

> Third, the CLEC network maps *appear* to be inaccurate. To the extent that I can discern the claimed path of WorldCom's network on the maps in the Crandall Declaration, it *appears* that some of the routes shown on the map include WorldCom conduit that is *generally* not used for its local network; include long haul fiber routes; or are otherwise inaccurate.[29]

If these claims are to be given any credence, then they must be far more specific and documented. In the absence of such documentation, the Commission must conclude that either no such methodical assessment was performed, or the results of such an assessment largely confirmed the patterns of iMapData's fiber maps.

B. The Opponents Incorrectly Suggest That the Results of My Six City Survey Cannot Be Extended to Other Cities in the United States

16. WorldCom claims that my results are not representative of the general addressability of high-cap customers because I did not include any cities *larger* than Cleveland in the sample.[30] According to WorldCom, exclusion of the largest cities overstates the general

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27. *WorldCom Comments*, *supra* note 2, at 28.

28. Given iMapData's rigorous methodology, this is very unlikely. iMapData (formerly InContext Inc.) has been tracking the fiber configuration of CLECs since 1992 in more than 30 major urban markets. These mapped configurations have been created and maintained by following a combination of research methodologies that include: (1) contacting the local CLECs in any particular market; (2) contacting the local departments of public works; (3) contacting the incumbent RBOC; (4) contacting local construction companies that lay fiber; and (5) contacting the local commercial broker network that leases high-end commercial properties.

29. Declaration of Edwin A. Fleming, on behalf of WorldCom Inc., at ¶ 10 (June 11, 2001) (emphasis added) [hereinafter *Fleming Declaration*].

30. *WorldCom Comments*, *supra* note 2, at 30 (citation omitted). *See also* Comments of Z-Tel Communications, Inc., at 20-21 (July 11, 2001) [hereinafter *Z-Tel Comments*] ("In short, these cities are not 'representative' of cities of all sizes in the United States. As a result, general conclusions about the competitive nature of special access services *throughout* the U.S. simply cannot be drawn by looking only at these six

degree of addressability because "demand in larger MSAs tends to be *dispersed* across a wider area, thus requiring more outside plant construction in order to address a particular percentage of the demand."[31] A quick inspection of the relationship between density and MSA size reveals the following fact: contrary to WorldCom's assertion, the top ten MSAs have an average population density of 1,044 persons per square mile, whereas MSAs eleven through twenty have an average population density of 621 persons per square mile.[32] Because special access customers are less likely to be clustered in smaller cities, and because smaller cities are less likely to attract CLEC facilities-based deployment (regardless of any construction cost differentials),[33] the addressability of special access customers in smaller cities would necessarily be less than the addressability of special access customers in larger cities.[34] Stated differently, if I had only concentrated my analysis on the very largest cities, it is likely that my estimates of addressability would have been *upwardly* biased and WorldCom would have been quick to point that out. Indeed, the positive relationship between city size and addressability is revealed in my results: larger cities, such as Cleveland and Seattle, have a greater degree of addressability than do mid-sized cities, such as Tucson and St. Paul.

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cities." (emphasis in original) (citation omitted)).

31. *WorldCom Comments*, *supra* note 2, at 30 (emphasis added).

32. U.S. Census Bureau, Land Area, Population, and Density for Metropolitan Areas: 1990, at Table 2 (Mar. 14, 1996) (downloaded from Census web site at http://www.census.gov/population/censusdata/90den_ma.txt).

33. WorldCom's own economists admit that CLECs are more likely to deploy facilities in densely populated areas. *See Declaration of A. Daniel Kelley and Richard A. Chandler*, on behalf of WorldCom Inc., at ¶ 29 (June 11, 2001) ("This, of course, explains why CLECs have chosen to concentrate their investment where telecommunications demand is most dense—the central business districts and some outlying business centers within large cities.").

34. CLECs have historically deployed fiber networks in the most densely populated MSAs. According to New Paradigm Resource Group, larger (and more densely populated) MSAs have more CLEC networks. For example, MSAs 21 through 30 have between four and eleven CLEC networks, whereas MSAs 61 through 70

II. The Opponents Mischaracterize the Metrics Used to Characterize Actual and Potential Competition in the Special Access Services Market

17. Despite rejecting direct evidence of competitive fiber, AT&T argues such evidence is the only thing the Commission consider in its impairment decision. Any measurement device that could be construed as a "model," even if it assisted the Commission in assessing the data, must be discarded! But the model is a direct response to AT&T and other competitors, which have argued that existing networks cannot be economically expanded to serve additional customers. For this reason, I sought to provide a metric that would characterize the degree to which CLECs networks (1) currently reach or (2) could profitably be extended to reach special access customers.

18. In summary, my "theoretical modeling" is simply a means to give content to the data on CLECs' supply of special access facilities and the demand for special access services. The analysis is fundamentally sound and serves only to confirm what is evident from the market data: CLECs can deploy their own local networks in dense urban areas to serve large business customers.

A. The Opponents Mischaracterize the Metric Used to Portray Actual Competition

19. The purpose of my probit model is twofold. *First*, I sought to identify likely special access customers in the six survey cities. *Second*, I sought to relate (by distance) those potential customers to existing competitive fiber networks. Without using a predictive model that incorporates knowledge of an individual firm's characteristics, the Commission would be left to

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have between one and six CLEC networks. *See* NEW PARADIGM RESOURCE GROUP, INC., CLEC REPORT 2001 (13 ed. 2001).

assume that *every* customer in *every* building is equally likely to demand special access service. Unfortunately, that assumption would grossly understate the degree to which CLECs are *currently* serving special access customers. At the risk of appearing too theoretical, I estimated a probit model to determine which customers would be more likely to subscribe to high-cap services.

1. AT&T Confuses the Relationship Between the Cutoff Probability and the Degree of Addressability

20. The probit model allows me to score each business in the six sample cities according to its individual likelihood of using high-cap services. The cutoff probability is a subjective measure that determines which customers are ruled in or out of the pool of potential special access customers. A low probability cutoff ensures that more businesses are included in the pool of potential special access customers. AT&T is confused about a very simple relationship between the probability cutoff and the degree of addressability—namely, the *more* businesses that are included in the set of potential special access customers, the *more* difficult it is to demonstrate that the majority of all potential customers is served by existing CLEC fiber lines. Because the very characteristics that make a customer more likely to use high-cap services are correlated with that customer's decision to locate in densely populated areas, a smaller pool of potential special access customers will necessarily be easier to serve. At the same time, the location decisions of the largest customers are likely to influence the location decisions of the CLECs themselves.[35] Hence, a probability cutoff that is too low will understate the degree of

35. Indeed, the data actually confirmed this relationship—that is, at higher cutoffs levels, fewer potential customers were identified, but the addressability of those customers was higher.

addressability. But according to AT&T's misdirected logic, I artificially set the cutoff probability too *low*:

> On the other hand, if Dr. Crandall in fact used a cutoff probability of 0.1886 to draw telecommunications customers into the set of high-capacity customers, this is an arbitrarily low probability that would treat numerous customers with a low probability of purchasing high-capacity service as potential high-capacity customers.[36]

If I had artificially contrived a cutoff level, as the opponents suggest, I certainly would have set the cutoff level too *high*, so as to rule *out* firms from the set of potential special access customers.[37] Rather, as I explained in my declaration, I set the cutoff level at 18 percent to ensure that I would populate the cities with a sufficiently *large* number of potential special access customers. In particular, I chose a cutoff level that was associated with the estimated percentage of businesses that use a high-cap connection (5.8 percent).

2. AT&T Incorrectly Suggests That a Probit Model Might Not Be Applicable

21. In a second attempt to criticize the probit model, AT&T argues that I assumed, without ever proving, that the error terms of the probit model were normally distributed: "A sound statistical analysis, however, would examine the distribution of [the error term] (e.g. a graph of [the error term] based on the sample data) to justify the distribution assumption."[38] Thus, AT&T implies that another statistical model might have been more applicable in the present case.

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36. *AT&T "Economic" Study*, *supra* note 1, at 46-47. Z-Tel follows similarly contorted logic, insisting that I should have used a *higher* cutoff probability of 0.5 (50 percent). *See*, *Z-Tel Comments*, *supra* note 30, at 22, n.31 ("[Crandall] was required to adjust the probabilities of purchasing high-cap circuits to the much lower level of 0.1886 (18.86%) in order to have the probit model provide any result that was not absurd.").

37. Other commenters suggested that I set the cutoff probability too high. *See, e.g.*, *WorldCom Comments*, *supra* note 2, at 28 (arguing that not enough buildings in Seattle were included in the set of potential customers). Perhaps the Commission will recognize that, like Goldilocks, I set the cutoff probability just right.

38. *AT&T "Economic" Study*, *supra* note 1, at 47.

22. There are only two widely accepted estimation techniques that an economist can use to estimate a model with two discrete choices: a probit model or a logit model. A logit model assumes that the error term—that is, the residual that cannot be explained from the right-hand-side variables in the regression—is distributed exponentially. The probit model assumes that the error term is distributed normally. Both are "mound-shaped" probability functions. The only difference is that the distribution function for the probit model has slightly thinner tails—that is, the probit model finds fewer observations in the extremes of the distribution. Indeed, the coefficients generated by both models are quite similar, and the predicted probabilities from the respective coefficient estimates are nearly identical.[39] AT&T's criticism of my modeling choice is without merit.

3. Sprint Incorrectly Suggests That the Probit Model Rules Out Relevant Customers

23. Sprint argues that the probit model "self-selects a portion of the exchange access market in order to produce the desired result."[40] Like AT&T and WorldCom, Sprint complains that I limited my analysis to the addressability of potential high-cap customers only—the opponents would prefer that I examine the addressability of *all* local telecommunications customers. Because the probit model focuses on a non-existent market, Sprint argues, the probit model and its findings on addressability should be discredited:

> By limiting the analysis to high-capacity businesses, the Crandall affidavit shows, not surprisingly, that much of this subset of the special access market tends to be clustered, and that CLECs have targeted those clustered areas with fiber build-outs. As Sprint stated in its initial comments, there is no logical or factual basis

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39. For a comparison of the logit and probit models, see WILLIAM H. GREENE, ECONOMETRIC ANALYSIS 875-78 (Prentice Hall 3rd. ed. 1997).

40. *Sprint Comments*, *supra* note 3, at 13.

> for differentiating the exchange access market in terms of the types of end user customers served in that market.[41]

What is most noteworthy about that comment is that Sprint *agrees* with my findings that (1) special access customers tend to be clustered and (2) CLECs have targeted those areas with fiber build outs. In other words, Sprint *agrees* with my assessment of competition. Its dispute is limited to matters of market definition, and even on that front, for the reasons discussed in my original declaration, Sprint is wrong.[42] With respect to product market definition, Sprint should consult the *Horizontal Merger Guidelines* to understand the role of demand characteristics in defining markets.[43] With respect to its perceived self-selection fallacies of my analysis, Sprint should consult an econometrics textbook to understand how the probit model accurately links a customer's characteristics to its propensity to subscribe to high-cap services.[44] At least Sprint and I can agree that, conditional on the existence of a special access market, potential customers in that market are currently served by facilities-based CLECs.

B. The Opponents Mischaracterize the Metric Used to Portray Potential Competition

24. The purpose of my breakeven analysis is to characterize the state of *potential* competition. Based on the patterns of actual CLEC deployment in the past, and an appreciation of the expected costs and benefits of expansion, it is possible to make informed predictions about which buildings CLECs are likely to serve in the future. While such models should not serve as the *sole* basis upon which the Commission makes its impairment decision, the analysis can be

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41. *Id.*
42. *Crandall Reply Declaration*, *supra* note 5, at ¶¶ 16-20.
43. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines at § 1.0 (Apr. 2, 1992) [hereinafter *Merger Guidelines*] (explaining that "[m]arket definition focuses solely on demand substitution factors—i.e., possible consumer responses.")
44. *See, e.g.*, GREENE, *supra* note 39, at 871-78.