

**BELL ATLANTIC – NEW JERSEY, INC.**  
**TESTIMONY OF WILLIAME E. TAYLOR**  
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## **I. INTRODUCTION**

### **A. Background**

#### **Q. PLEASE STATE YOUR NAME TITLE AND BUSINESS ADDRESS.**

**A.** My name is William E. Taylor. I am Senior Vice President of National Economic Research Associates, Inc. (“NERA”), One Main Street, Cambridge, Massachusetts, 02142.

#### **Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?**

**A.** I am currently the head of its telecommunications economics practice, and head of its Cambridge office.

#### **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS.**

**A.** I have been an economist for over twenty-five years. I received a B.A. degree in economics (Magna Cum Laude) from Harvard College in 1968, a master’s degree in statistics from the University of California at Berkeley in 1970, and a Ph.D. in Economics from Berkeley in 1974, specializing in industrial organization and econometrics. I have taught and published research in the areas of microeconomics, theoretical and applied econometrics, and telecommunications policy at academic institutions (including the economics departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology) and at research organizations in the telecommunications industry (including Bell Laboratories and Bell Communications Research, Inc.). I have participated in telecommunications regulatory proceedings before state public service commissions, the Federal Communications Commission

("FCC"), and the Canadian Radio-television and Telecommunications Commission concerning competition policy, incentive regulation, access charges, pricing of public telephone services, measuring economic costs and efficient pricing. (My curriculum vitae, Exhibit 7, describes my qualifications in greater detail).

## **B. Purpose and Principal Conclusions**

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

**A.** The purpose of my testimony is to assess whether Bell Atlantic-New Jersey's ("BA-NJ's") proposal to reclassify local exchange and carrier access services meets the 1992 New Jersey Telecommunications Act ("New Jersey Act") standards and is consistent with the public interest. In doing so, I present detailed evidence regarding the presence of competitors, ease of market entry, and availability of like or substitute services.

### **Q. WHAT ARE YOUR PRINCIPAL CONCLUSIONS?**

**A.** As proposed by BA-NJ in its Competitive Telecommunications Plan (the "CTP"), the Board of Public Utilities ("Board") should reclassify local residence and business exchange services, and carrier access services as competitive services. For each service, the presence of competitors, ease of market entry, and the availability of like or substitute services show that BA-NJ's proposed plan meets the New Jersey Act standards, is consistent with economic principles for classification as competitive, and will promote the public interest.

**II. BA-NJ’S REMAINING REGULATED LOCAL SERVICES MEET THE NEW JERSEY ACT’S COMPETITIVE SERVICE REQUIREMENTS.**

**Q. PLEASE SUMMARIZE THE EVIDENCE THAT YOU PRESENT IN THIS SECTION.**

**A.** Numerous and substantial competitors are present in BA-NJ’s territory. Their presence is widespread in BA-NJ’s service area. These firms compete using their own facilities, resale of BA-NJ retail services, purchasing unbundled network elements (“UNEs”) from BA-NJ, or a combination of these. In addition, the number, facilities, and offerings of competitors have been growing rapidly. In light of the number and scope of competitors, there are no substantial entry barriers. Further, competitors are offering both like and substitute residence, business and access services using an extensive, widening array of technologies.

**A. Numerous and substantial local exchange competitors are present in BA-NJ’s service area.**

**Q. DOES BA-NJ FACE COMPETITION?**

**A.** Yes. In this section, I show that: (1) substantial competition is present for each of the services that BA-NJ seeks to have reclassified; and (2) competitors are present throughout BA-NJ’s service territory. Attachments 1, 2, and 3 contain data supporting and expanding upon the discussion below.<sup>1</sup>

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<sup>1</sup> Attachment 1 provides information on competitors’ histories, acquisitions, investments, facilities, and strategic directions. Attachment 2 contains more New Jersey-specific data about these firms, including their current and planned facilities, the locations they serve, the customers they target, and their major service offerings. Attachment 3 lists the firms with Board certification and/or Board-approved interconnection and resale agreements with BA-NJ, under the Telecommunications Act of 1996 (the “1996 Act”).

**Q. ARE NUMEROUS COMPETITORS PRESENT IN BA-NJ'S SERVICE AREA?**

**A.** Yes. In BA-NJ's service area, by December 1999:

- ?? 67 Competitive Local Exchange Carriers ("CLECs") were present (most "CLECs" offer packages of local *and* toll services);<sup>2</sup>
- ?? 21 CLECs were selling facilities-based services;
- ?? 46 were strictly reselling Incumbent Local Exchange Carrier ("ILEC") services;
- ?? at least 14 of the facilities-based carriers provided switched services;
- ?? four more CLECs had facilities under construction or planned;
- ?? many CLECs had been operating in New Jersey for more than two years—e.g., at least nine facilities-based competitors were operating in the state by year-end 1997;<sup>3</sup> and
- ?? six firms were operating two-way wireless mobile networks, five cable TV companies were providing cable modem service, and at least four plan to provide voice telephone services. (These services substitute for traditional wireline service. See Section II.D)

**1. Competitors provide all types of services and serve numerous residence and business customers.**

**Q. WHAT TYPES OF SERVICES DO BA-NJ'S COMPETITORS PROVIDE?**

**A.** Competitors have been selling all forms of switched and non-switched (private line or special access) local exchange services. All of the 21 facilities-based carriers serve business customers. Eight of the facilities-based carriers served residence customers by December 1999. Four of these eight were strictly using resale to do so, although at least one of the four has plans to use its

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<sup>2</sup> The CLEC count excludes firms providing only equipment, voice mail and other enhanced services (i.e., firms not providing network-based services), and those that provide only wireless mobile or cable modem services.

<sup>3</sup> New Paradigm Resources Group, *1998 Annual Report on Local Telecommunications Competition*, Chapter 8, p. 33. According to New Paradigm, the nine facilities-based CLECs were Hyperion Communications, Intermedia Communications, MCI Telecommunications, Metromedia Fiber Networks, MFS-WorldCom, MH Lightnet, NEXTLINK Communications, Teleport Communications Group, and Winstar Communications.

own facilities for residence local service. Of the 52 firms<sup>4</sup> that resold local service—under the Telecommunications Act of 1996 (“1996 Act”)—by December 1999, 43 provided residence service. Table 1 summarizes these data.

**Table 1: Number of Alternatives to BA-NJ’s Local Services<sup>5</sup>**

	<b>OPERATIONAL</b>	<b>EXPECTED/UNDER CONSTRUCTION</b>
Facilities Based	21	4
Switched	14	4
Business	21	3
Residence	4 <sup>6</sup>	1
Resellers <sup>7</sup>	52	-
Business	33	-
Residence	43	-
Two-Way Wireless Mobile	6 <sup>8</sup>	-
Cable TV (cable modem)	5	-

**Q. HOW MANY LINES DO BA-NJ'S COMPETITORS SERVE ?**

**A.** Bell Atlantic data show that CLECs were serving at least 134,000 lines (i.e., E 911 listings) with their own facilities (by the end of March 2000) and 100,320 lines by reselling BA-NJ service (by

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<sup>4</sup> These include 46 “pure” resellers and 6 additional companies that both resell and provide facilities based service. This count excludes approximately 1000 resellers of BA-NJ’s services who filed to resell BA-NJ services under a process set up by the Board prior to the federal Telecommunications Act of 1996.

<sup>5</sup> The counts in Table 1 may overlap—e.g., of the 21 facilities-based carriers, 14 provide switched service, all 21 serve business customers, and four use their own facilities to serve both residence and business customers. Teleport Communications Group (“TCG”) is included with AT&T, although it entered the New Jersey local market separately from AT&T. We also treat MCIMetro and MFS as a single entity because they became affiliated through a common parent, MCI WorldCom. To obtain a better indication of the number of New Jersey local market entrants and of the lack of entry barriers, these affiliates should be counted as separate entities. Doing so increases the number of facilities-based entrants to 23.

<sup>6</sup> This excludes four facilities-based carriers that also resell BA-NJ services to residence customers.

<sup>7</sup> The residence and business numbers do not sum to the total number of resellers because some carriers resell to both businesses and residences.

year end 1999).<sup>9</sup> The actual number of lines served is much greater than that indicated by data tracked by BA-NJ and other ILECs—for example, based on other data sources, I estimate that AT&T and MCI WorldCom were serving between 1.5 and 2.8 million voice-grade equivalent access lines in New Jersey by December 31, 1999.<sup>10</sup>

**2. Competitors have substantial local switching capacity, fiber optic networks, and wireless networks in New Jersey.**

**Q. TO WHAT EXTENT HAVE BA-NJ'S COMPETITORS DEPLOYED LOCAL NETWORK FACILITIES?**

**A.** BA-NJ's competitors have deployed substantial local switching, access, and transport capacity in New Jersey. By March 31, 2000, 14 carriers had installed a total of 36 local wireline voice circuit switches capable of serving 2.9 million lines—over 45 percent of the total BA-NJ served in December 1999.<sup>11</sup> (Exhibit 1 shows switch locations. See Attachment 2 for sources and additional data on switch locations, target markets, and service offerings.)

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<sup>8</sup> This includes Verizon Wireless, created by the merger of Bell Atlantic Mobile with Vodafone AirTouch and PrimeCo.

<sup>9</sup> Total facilitates-based lines are from March 2000 E 911 listings, and resold lines are from the year-end 1999 BA TIS Volume Report. An E 911 listing indicates that the competitor is using *at least* its own switch to serve an access line; it may also be using other facilities of its own (*e.g.*, loops, interoffice transport). Each E 911 listing represents at least one customer access line. However, these data likely underestimate the actual number of lines, *e.g.*, a business location with hundreds of lines could have only a single line listed in the database. E 911 listings also fail to capture access lines and locations that are not connected to BA-NJ's local switched network but may be used to connect to long distance switches. CLECs do not create separately identifiable E 911 subscriber listings for customers they serve through resale or UNE-Ps; Bell Atlantic is responsible for the E 911 listings of these customers.

<sup>10</sup> See subsequent sections for derivations of these data. The estimates for AT&T and MCI are based on SEC filings and New Jersey's share of CLEC switches.

<sup>11</sup> Two of the 36 CLEC switches serving New Jersey customers are located in an adjoining state. Capacity estimate assumes 80,000 lines per switch. Two additional switches had been installed for the purpose of serving New Jersey customers but had yet to be put to use, bringing the number of installed switches to 36. At least one

By December 1999, CLECs had installed at least 3,277 route miles of fiber. By September 1999, based on the limited available data on CLEC routes, we estimate that CLECs had fiber optic networks in at least 86 wire centers (See Exhibit 2) that account for at least 58 percent of both BA-NJ's revenues and access lines.<sup>12</sup> These data underestimate the extent of CLEC fiber because they are based on maps for only a minority of the CLECs and only for northern New Jersey.<sup>13</sup>

**Q. PLEASE DESCRIBE BRIEFLY BA-NJ'S COMPETITORS .**

**A.** BA-NJ faces competition from the "Big Three"—AT&T, MCI WorldCom, and Sprint—multinational integrated network service firms that provide packages of local, intraLATA and interLATA toll, Internet, wireless, and other services. Other competitors include companies with fiber optic and/or cable TV networks, as well as fixed and mobile wireless firms.

**Q. PLEASE SUMMARIZE THE BIG THREE'S COMPETITIVE PRESENCE IN NEW JERSEY.**

**A.** AT&T and MCI WorldCom have substantial local facilities in BA-NJ's service area, including: 19 local voice circuit switches and 1,945 CLEC fiber route miles that pass through wire centers

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other switch will be installed prior to mid-2000. CLECs also have at least six packet switches installed in New Jersey. See Attachment 2.

<sup>12</sup> These wire centers account for over 70 percent of business lines and about 70 percent of business revenues.

<sup>13</sup> They also capture only fiber for the local affiliates of MCI WorldCom (MCI Metro and MFS) and of AT&T (TCG), i.e., they exclude the long distance companies' fiber that may be used for local loops and transport, as well as toll service.

serving at least 58 percent of BA-NJ's lines and revenues.<sup>14</sup> They also have fixed wireless licenses covering roughly 192 of BA-NJ's 204 wire centers. AT&T's ownership interests in TCI and Cablevision and its announced joint ventures with Time Warner and Comcast allow AT&T to market two-way telecommunications services via broadband facilities passing about 92 percent of New Jersey homes. (See Attachment 1.)

Sprint does not appear to have conventional CLEC facilities in BA-NJ's service area.. However, Sprint's PCS wireless network, which already covers roughly 60 percent of BA-NJ's territory, and its extensive New Jersey ILEC experience make it a strong competitor. Further, Sprint has New Jersey CLEC certification, and is strengthening its ability to compete by deploying its Integrated On-Demand Network ("ION"). ION uses digital subscriber line ("DSL") technology to provide local-to-long distance data and voice services via CLEC or ILEC local loops or fiber and via wireless or cable TV. Finally, according to the parties, if the pending merger between MCI WorldCom and Sprint is consummated, the merged firm will be an even stronger local (and packaged) service competitor. (See Attachment 1 for supporting and additional details on the Big Three.)

**Q. PLEASE SUMMARIZE THE OTHER COMPETITORS' FACILITIES.**

- A.** By December 1999, the 19 New Jersey facilities-based CLECs not affiliated with AT&T or MCI WorldCom had deployed fiber optic facilities, local switches, and/or fixed wireless networks. Collectively they had deployed 17 local voice switches, and built fiber networks covering at least

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<sup>14</sup> NERA bases its estimates on maps provided by Quality Strategies. These data include only CLEC-specific fiber route mileage; thus, they substantially underestimate the companies' total New Jersey fiber. See Attachment 1.

1,332 route miles or about 40 percent of the total competitive local fiber in New Jersey. In addition, collectively they sell all of services at issue in this case—business service, residence service, and carrier access service. Many have been expanding rapidly, and most package their local services with long distance and other offerings. Winstar and Teligent—with fixed wireless licenses covering about 193 of BA-NJ’s wire centers or 90 percent of BA-NJ’s lines—install radio transmitters at customers’ premises that communicate with a central antenna site. Such wireless providers can rapidly deploy and expand their facilities because they do not need physical cable paths to customers. Attachments 1 and 2 describe these competitors’ facilities and service offerings in greater depth.

**Q. CAN COMPETITORS CURRENTLY SERVE ALL RESIDENCE AND BUSINESS CUSTOMERS IN BA-NJ’S SERVICE AREA?**

**A.** CLECs can serve over 90 percent of BA-NJ’s lines using their own switches and fiber optic networks and/or collocation with BA-NJ unbundled loops. (The rapid spread of collocation, discussed below, shows that this option can be expanded quickly to serve the remaining 10 percent.) In addition, since December, 1999, BA-NJ has been required to provide the UNE Platform (“UNE-P”) for Plain Old Telephone Service (“POTS”) and Integrated Services Digital Network-Basic Rate Interface (“ISDN-BRI”) service in every BA-NJ wire center.<sup>15</sup> (See Exhibits 1, 2 and 3.) Finally, as of March 2000, wireless mobile networks served the entire state, competitors’ fixed wireless licenses covered the entire state, and at least four cable TV firms

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<sup>15</sup> As discussed below, the FCC has extended this requirement even further.

serving New Jersey had upgraded or were in the process of nationwide programs to upgrade their facilities to provide two-way telephony. (See Section II.D. below and Attachments 1 and 4.)

**B. There are no substantial entry barriers.**

**Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING BARRIERS TO ENTRY.**

**A.** My key findings are: (1) the regulatory process is not an entry barrier; (2) as the Board itself has stated, its implementation of the New Jersey Act as well as the 1996 Act have stimulated competition; and (3) substantial entry has occurred and competitors can readily expand to serve adjacent geographic and service markets.

**1. There are no substantial regulatory entry barriers.**

**Q. IS REGULATION A SUBSTANTIAL ENTRY BARRIER IN NEW JERSEY?**

**A.** Regulation in New Jersey is not a substantial barrier to competition; that is, the process by which a competitor obtains Board authorization to offer local exchange service is not onerous. Indeed, the Board has actively sought to promote local competition.<sup>16</sup> Numerous firms wishing to resell BA-NJ's services, interconnect their facilities with BA-NJ's network, or purchase network elements pursuant to the 1996 Act have obtained Board-approved agreements with BA-NJ. As shown in Attachment 3, from the passage of the 1996 Act through December 1999, the Board approved

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<sup>16</sup> The Board noted that it, "has been at the leading edge, nationally, of promoting land line competition in the telephone market. The Board has certified telecommunications companies to compete in the local land line market, has approved interconnection and resale agreements between ILECs and CLECs, has established resale rates and interconnection rates and has approved tariff filings submitted by CLECs." Board Status of Local Competition Report, Docket No. TX98010010, July 22, 1998, p. 1.

95 agreements between BA-NJ and competitors, including 31 with facilities-based providers, 10 with wireless mobile providers, and 54 resale agreements. Forty-six additional agreements were pending as of December 1999.<sup>17</sup>

**2. There are no substantial economic entry barriers in New Jersey.**

**Q. ARE THERE SUBSTANTIAL ECONOMIC BARRIERS TO ENTRY?**

**A.** No. The evidence of substantial entry, investments, and growth by numerous firms demonstrates that no substantial economic entry barriers exist in New Jersey local telecommunications markets. (Even if only a small number of competitors were present in a recently-opened market, it would not necessarily mean that entry barriers were high.) However, despite the extensive quantitative evidence that entry barriers are low, the Board might be concerned that entrants face costs that the ILECs do not or that entrants must incur substantial sunk costs. These concerns are unwarranted.

**Q. WHY ARE SUCH CONCERNS UNWARRANTED?**

**A.** The above-noted economic entry barriers might have been significant before the Board's implementation of the 1996 Act, but they are no longer an issue. Under the 1996 Act, competitors need not incur substantial sunk costs to enter the relevant market(s). By using BA-NJ UNEs (that will, even under the CTP, remain subject to the requirements of the 1996 Act) competitors can: (1) enter the market without incurring investment costs that the incumbent

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<sup>17</sup> See Attachment 3. Further, Board approval is not required for firms to compete via resale. The BA-NJ tariff allows resellers merely to send a Letter of Acknowledgement expressing their intent to resell BA-NJ's services.

incurred to build the network, at a price reflecting the full economies of scale and scope that BA-NJ would experience; and (2) incur minimal incremental sunk investment costs to supply a host of local services.

Indeed, the Board's October 1999 policies on UNE-Ps, extended loops, and access pricing were designed to accelerate the spread of competition for local residence and small business service.

According to its Summary Order in the Status of Local Exchange Competition in New Jersey:

... the Board is satisfied that the Staff recommendation [which it adopts in the Order] ... will help jump-start competition to residential and small business customers and will eliminate access to unbundled elements as a barrier to such competition.<sup>18</sup>

In particular, the Board's UNE-P policies have reduced potential entrants' costs by mandating that UNE-Ps be made available, at no additional cost (beyond that of the UNEs that make up the platform), to all CLECs providing service to residence customers, all one-to-three-line business customers (or, by the Board's own calculation, approximately 80 percent of the access lines in the state), and to 4-to-10-line business customers in wire centers with fewer than three collocators.<sup>19</sup>

The FCC extended—over-extended may be more accurate—the cost reduction to additional multi-line business customers in more wire centers. Under the FCC's UNE Remand Order, ILECs (including BA-NJ) were required to offer 12 different types of UNE-P in every BA-NJ wire center, except 18 wire centers located in FCC Density Zone 1. (See Exhibit 3.) Even in

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BA-NJ received approximately 1,000 of these as required under the pre-1996 Act process established by the Board.

<sup>18</sup> Summary Order, Docket No. TX98010010, October 6, 1999, p. 4.

<sup>19</sup> Summary Order, Docket No. TX98010010, October 6, 1999, pp.3-5.

those locations, CLECs can purchase all types of UNE-Ps except for customers with 4 or more lines.<sup>20</sup>

The Board has generally found in evaluating ease of market entry for new competitive services that market entry may be accomplished through one of three methods: (1) facilities construction, (2) resale of an existing tariffed service, and (3) purchase of UNEs.<sup>21</sup> Thus, the Board recognizes that new and smaller companies can enter through resale and purchasing of UNEs.

**Q. PLEASE EXPLAIN THE SIGNIFICANCE OF THE BOARD'S AND THE FCC'S UNE-P POLICIES.**

**A.** BA-NJ must sell UNE-Ps to its competitors at “costs,” i.e., at prices set based on forward-looking costs reflecting the full economies of scale and scope that BA-NJ would experience. If BA-NJ attempted to raise local prices above competitive levels, its competitors could buy UNE-Ps at or below BA-NJ’s cost and use them to sell their own service packages at lower rates. Further, use of UNE-Ps to carry toll traffic allows competitors to avoid access charges. Thus, the policy effectively eliminates any market power BA-NJ might have had for carrier access services and local loops.

If anything, the UNE-P policy adopted by the Board and expanded by the FCC appears to unduly favor BA-NJ’s competitors because they: (1) can pick and choose the most profitable

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<sup>20</sup> In addition to POTS and ISDN-BRI the list of available UNE-Ps also includes Centrex, Foreign Exchange, PBX, ISDN-PRI, Coin and Public Access. FCC Docket 96-98, Implementation of the Local Competition Provision of the Telecommunications Act of 1996, Third Report and Order, released Nov. 5, 1999. Appendix C, P5.

<sup>21</sup> See I/M/O of Filing by Bell Atlantic-New Jersey, Inc. For the Reclassification of Existing Rate Regulated Services -Directory Assistance Services as Competitive Services, Order of Approval, Docket No. TT97120889 (Sept. 14, 1999), p. 5.

means of serving customers—using their own facilities (with or without BA-NJ UNEs) or using UNE-Ps or resale of BA-NJ’s services; and (2) have no corresponding obligations to provide their facilities and services at their cost to BA-NJ or other competitors. Therefore, the policy not only eliminates any residual market power BA-NJ may have retained; it asymmetrically disadvantages BA-NJ.<sup>22</sup>

**Q. CAN COMPETITORS USE THEIR EXISTING CAPACITY TO RAPIDLY ENTER OTHER PRODUCT AND/OR GEOGRAPHIC MARKETS?**

**A.** Yes. In many areas of the state, CLECs already have substantial capacity that could rapidly be brought to bear to serve many more customers than they currently serve. First, extensive collocation enables competitors to use unbundled (BA-NJ) loops with their own switches and interoffice transport (or with other firms’ transport) to rapidly expand and compete for all lines throughout the state. Second, facilities-based carriers serving business customers can diversify readily to serve residential customers. Integrated network service providers are particularly well positioned to expand their local presence and can readily diversify into the local residence market. Attachments 1 and 2 contain specific examples of competitors with the capacity to expand into other product and geographic markets.

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<sup>22</sup> Indeed, it undermines competitive parity by providing much more of a free ride on BA-NJ’s network than that which AT&T criticized when AOL and others sought open access to AT&T’s broadband cable TV networks. Indeed, AT&T has been fighting vigorously against requirements sought by Internet service providers to provide high-speed data services over AT&T’s cable TV systems, bypassing AT&T’s @Home, cable ISP. See, for example, Bloomberg News, “Excite At Home Shares Rise on AOL-AT&T Speculation,” Update 5, September 29, 1999.

**Q. IS THE NEED TO INSTALL SWITCHING CAPACITY AN ENTRY BARRIER?**

**A.** No. As noted above, competitors already have numerous switches. New lines can be added rapidly. Additional switches also can be added rapidly at relatively low incremental costs. From November 1, 1998, to March 31, 2000, competitors installed 17 new local voice switches in New Jersey—one a month. Several companies offer switches that facilitate local service provision. For example, Lucent offers the 5ESS-2000 AnyMedia platform that supports wireless, landline, gateway, toll, local, advanced ISDN, and other applications on the same exchange.<sup>23</sup>

**Q. DOES THE NEED TO INSTALL INTEROFFICE TRANSPORT PRESENT A SIGNIFICANT BARRIER TO ENTRY?**

**A.** No. The evidence presented in Section II and depicted in Exhibit 1 shows that competitors have substantial fiber optic facilities in place. In addition, they have wireless options at their disposal, and can make use of wholesale transport from BA-NJ and from others. (See section II.D.1. below.)

**Q. DOES THE LOCAL LOOP REPRESENT A BARRIER TO ENTRY?**

**A.** No. The local loop is no longer an entry barrier. Competitors' extensive fiber facilities can be used on their own or in combination with collocation and BA-NJ unbundled loops to rapidly

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<sup>23</sup> Lucent markets this switch to CLECs as follows: “[w]ith a minimal investment in hardware, real estate and staff, emerging competitors can quickly provide telecommunications services and support a large number of customers and services . . . .” Lucent developed prefabricated central offices to speed switch deployment times: the entire process, “from prefab to the deployment of service” takes only 40 days. Nortel describes its DMS-500 as a cost-effective option for cable operators, long distance carriers, and CLECs to quickly enter local markets. , *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, May 26, 1999*, p. I-28 and I 30. See [http://www.lucent.com/wirelessnet/products/networks/5ess\\_adv.html](http://www.lucent.com/wirelessnet/products/networks/5ess_adv.html), May 2, 2000.

overcome whatever advantage BA-NJ might have had in the past with respect to the local loop. Fixed wireless, cable TV and wireless mobile services provide other ways to bypass the local loop. (See Section II.D. and Attachments 2 and 4 below.) In addition, a new entrant is planning to provide wholesale capacity to compete with BA-NJ's local loop services for residence and small businesses. According to its presentation to the Board, Gemini Networks, Inc., intends to build high capacity local facilities that it will sell to Internet service providers, CLECs and others to meet residence and small business customers' demands. Gemini plans to provide "...an alternative to the 'last mile' infrastructure energizing competition to serve broadband residential and small business markets.... [in] New Jersey...." and, "...spur competition," from "out-of-region ILECs" and CLECs to provide telephony.<sup>24</sup> Gemini's plans and funding appear to represent substantial wholesale market entry:

"We're going to be building a brand-new network that ultimately will be nationwide in scope," [Gemini President, Arnold] Chase said. Unlike conventional cable TV or telephone networks, which are used primarily - and often exclusively - by their owners, the Gemini network will be open to any company wishing to offer Internet access, local telephone service or long-distance telephone service....<sup>25</sup>

Furthermore, the company's web site reports that: "Gemini will quickly build its digital fiber-optic network across nine northeastern states from Virginia to Maine..."<sup>26</sup>

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<sup>24</sup> See Gemini Networks, "Discussion with Board of Public Utilities," March 8, 2000, pp. 5, 6, 7, 9, and 10.

<sup>25</sup> See Associated Press, Newswires, "Hartford-based company promises fast Internet access for state," November 8, 1999, (obtained from Dow Jones Interactive, May 8, 2000).

<sup>26</sup> See <http://aboutgemini.com/> (May 8, 2000).

**Q. HOW DOES LOCAL NUMBER PORTABILITY FACILITATE COMPETITIVE ENTRY?**

**A.** Local number portability allows CLECs to serve customers throughout BA-NJ's service area using BA-NJ's telephone numbers—i.e., without obtaining their own NXX codes—and allows customers to keep their own numbers when they change carriers.

**C. Like or substitute services are available in the relevant area.**

**Q. ARE LIKE OR SUBSTITUTE SERVICES AVAILABLE IN THE RELEVANT AREA?**

**A.** Yes. In this section, I show that like or competitive substitutes are available for each of the services that BA-NJ wants the Board to reclassify; and that they are available throughout the state. I also present marketplace evidence, i.e., data on extensive and rapidly growing demand for competitive services, that shows that the substitutes are clearly viable.<sup>27</sup> Finally, I explain that when BA-NJ can compete on a more equal basis—when it obtains interLATA relief, competitive status for its local services, and rebalanced rates—competitors will have even greater economic incentives to provide substitute services.

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<sup>27</sup> The Board has found that the mere advertising of resellers' services or other service providers' services operating in a geographic area is evidence of availability of like or substitute services in that area. *I/M/O Filing by New Jersey Bell Telephone Company B.P.U.-N.J.-No.2, Providing for the Introduction of Call Restriction Service*, Order of Approval issued July 6, 1993, Docket No. TT93050160.

**1. Like or substitute services are available for BA-NJ's local residential services.**

**Q. ARE COMPETITORS' LOCAL RESIDENCE SERVICES PRICED BELOW BA-NJ'S?**

**A.** Yes. Competitors' residence tariff filings imply that BA-NJ's residence customers have lower-priced substitutes available in BA-NJ's service area.<sup>28</sup> Thus, as shown in the table in Exhibit 4, residence customers could lower their bills for local service under competitors' tariffed rates approved prior to December 1999.

**Q. ARE COMPETITORS' SERVICES AND PACKAGES ATTRACTIVE TO CONSUMERS?**

**A.** Yes. PNR and Associates' New Jersey residence survey found that: (1) consumers would consider both established and new telecommunications providers in place of BA-NJ for local service; and (2) 60 percent of respondents would be somewhat or very likely to switch to another provider with little or no discounts.<sup>29</sup>

There is substantial survey and marketplace evidence that offering service packages (i.e., one-stop-shopping options for local, toll, data and Internet services) makes competitors' services even

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<sup>28</sup> Cablevision, RCN, and Conectiv are below BA-NJ's rates for all residence services.

<sup>29</sup> More specifically, 39 percent of customers would consider AT&T for their local telephone service; 13 percent would consider MCI, 11 percent would consider Sprint, and about 17 percent would consider either their cable TV or electric utility; and 21 percent would consider a "new telephone company" to provide their local telephone service. Further, it would take little or no discount for many customers to switch to another local provider—10 percent would be very likely to switch and 23 percent would be very likely or somewhat likely to switch with no discount; and 28 percent would be very likely and 60 percent would be very likely or somewhat likely to switch with only a 10 percent discount. PNR, *Request V Survey*, 1998. The results cited in this affidavit were compiled from the responses of over 700 (out of about 1,300 surveyed) New Jersey consumers.

more attractive substitutes. Numerous studies have found that customers want the simplicity of one-stop shopping, and that AT&T and the other IXCs will capture the majority of the consumers with such services. (See Attachment 7.)

**Q. DO SURVEY RESULTS PROVIDE THE ONLY EVIDENCE OF DEMAND FOR COMPETITORS' TELECOMMUNICATIONS SERVICES PACKAGES?**

**A.** No. First, competitors' massive acquisitions, diversification and marketing campaigns provide marketplace evidence that customers want telecommunications service packages. (See Attachments 1 and 7.)

Second, the logic of packaging is compelling: it is a way of differentiating a firm's services to reduce price sensitivity—i.e., cross elasticity with other providers' services—and to reduce customer churn. The latter is important because it reduces marketing costs.

Third, as shown in Attachment 6, experience in New York shows that when the major integrated network service providers market service packages, they capture numerous local customers in a short time, and similar results are likely in New Jersey. Moreover, as seen in New York, allowing BA-NJ to join the ranks of full-service providers by authorizing its entry into the interLATA market will likely further accelerate local residence competition in New Jersey.

**2. Like or substitute services are available for BA-NJ's local business services.**

**Q. ARE COMPETITORS' LOCAL BUSINESS SERVICES CURRENTLY AVAILABLE AT PRICES COMPARABLE TO BA-NJ'S PRICES?**

**A.** Yes. Competitors' local business services are currently available at prices comparable to BA-NJ's prices. Exhibit 5 lists CLEC local business services and their Board-approved rates.

**Q. WHAT COMPETITIVE SUBSTITUTES FOR BA-NJ BUSINESS OPTIONS ARE AVAILABLE?**

**A.** Competitors offer many alternatives to BA-NJ's options. AT&T, for example, offers Digital Link local switched service in New Jersey (and every other state). Digital Link allows businesses to efficiently “combine inward and outward local, IntraLATA, long-distance, and international service on AT&T ... dedicated access.”<sup>30</sup> AT&T's integrated local business operations have clearly been a success—including Digital Link. By December 31, 1999, AT&T had over 1.3 million high-capacity business access lines (or 27.3 million voice-grade equivalent lines) in service nationwide, which implies that they serve somewhere between 679,000 and 1.6 million voice grade access lines in New Jersey.<sup>31</sup> The national (and international) presence of AT&T's network has undoubtedly contributed to this rapid growth. Similarly, MCI WorldCom capitalizes on its global presence by offering business customers volume discounts for local-to-global services. Numerous other competitors offer New Jersey businesses bundles of local, long distance, Internet,

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<sup>30</sup> See <http://www.att.com/local/services/dlinkp.html> (May 1, 2000).

<sup>31</sup> See Attachment 2.

and vertical services. Attachment 1 contains information on additional business packaged offerings.

**Q. ARE CLEC MULTI-SERVICE PACKAGES DEMANDED BY BUSINESS CUSTOMERS?**

**A.** Yes. As Mr. Shooshan describes in detail, business customers view the existing competitors and their service packages as viable substitutes for BA-NJ services. In fact, many businesses find the alternatives superior to BA-NJ's services because the competitors can provide a full range of sophisticated local, intraLATA, and interLATA services in a single integrated package.

**3. Like or substitute services are available for BA-NJ's access services.**

**Q. ARE SUBSTITUTES AVAILABLE FOR BA-NJ ACCESS SERVICES?**

**A.** As detailed below, numerous competitors provide substitute carrier access (and retail access) services using:

- ?? Their own local access facilities, switches and transport.
- ?? Their own switches and BA-NJ wholesale services—i.e., special access, unbundled loops and transport.
- ?? Other firms' wholesale services or network elements—e.g., local or transport capacity.
- ?? Rapidly growing options such as wireless, cable TV telephony, Internet telephony and DSL.<sup>32</sup>

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<sup>32</sup> From an economic perspective, except to the extent that the mode of provision affects price, features and quality characteristics, end-users should be indifferent to whether competitors use their own facilities or resell BA-NJ's retail services or capacity (including use of UNE-Ps) to provide substitutes for BA-NJ's services. Some customers may prefer a single carrier for end-to-end service, however, using wholesale services or elements from other carriers does not preclude end-to-end network control. Internet telephony and DSL services typically are used in conjunction with the other access technologies listed in the text; however, they can be used to gain access to toll networks and thus substitute for BA-NJ's carrier access services.

In fact, CLECs have provided access substitutes for years. They started as competitive *access* providers (“CAPs”) selling special access to connect businesses to IXCs' points of presence (“POPs”). They then diversified to provide switched access, local and toll services. Similarly the IXCs transformed themselves into integrated network service providers—with both local and interLATA networks—by developing their own local access facilities and/or purchasing CAPs/CLECs.

The diversification trend to provide full-service packages has transformed and expanded access service competition. In addition, the accelerating development of wireless and two-way cable TV-based alternatives, coupled with the Board’s October 1999 UNE-P Order and the FCC’s UNE Remand Order, imply that access substitutes are or will soon be ubiquitously available.

Below, I describe the already numerous competitors, and explain the changing and rapidly expanding nature of access competition.

**Q. HOW MANY COMPETITORS PROVIDE SUBSTITUTES FOR BA-NJ'S ACCESS SERVICES?**

- A.** By December 1999, 14 New Jersey facilities-based competitors were providing special access services, and at least seven were providing switched access services.<sup>33</sup> Two of the largest were among the pioneering CAPs—TCG and MFS—which by then had been acquired by AT&T and WorldCom, respectively. However, they continue to provide access services to other parties as

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<sup>33</sup> One other firm plans to provide special access in the near future. See Attachment 2.

well as to their parent companies.<sup>34</sup> Seven additional facilities-based carriers provided switched local service and therefore do or could provide access service at least to themselves.

**Q. PLEASE DESCRIBE HOW COMPETITORS COMPETE TO PROVIDE ACCESS SUBSTITUTES.**

A. By December 1999, MCI Metro had a Board-approved switched carrier access tariff, and thirteen other CLECs serving New Jersey (including AT&T) had filed switched carrier access tariffs.<sup>35</sup> Their prices appear to be somewhat higher than BA-NJ's. Thus, their access pricing apparently reflects strategies to capture customers' total communications service demands, rather than to serve carriers' access service demands on a stand-alone basis.<sup>36</sup> (CLECs with no long distance network can buy toll services at wholesale rates and then sell the full package of services to end-users, rather than sell only local services to end users and access to IXCs.) As shown in Exhibit 6, carrier access providers typically compete to provide full-service packages to customers.<sup>37</sup> Competitors can provide carrier access services to themselves, or stated another way, carriers that provide local switched service have no need to purchase carrier access service from BA-NJ or any other provider. Thus, even if—contrary to the evidence—competitors did

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<sup>34</sup> *Ibid.*

<sup>35</sup> The thirteen CLECs also separately include MFS and TCG.

<sup>36</sup> Even if CLECs were the exclusive providers of access to their own end-user customers, established long distance carriers could deter CLECs from charging excessively high carrier access prices because: (1) CLECs seeking to provide long distance services rely on IXCs for wholesale toll services and facilities; (2) the long distance carriers have entered and are expanding their local and carrier access services; and (3) IXCs can use UNE-Ps and unbundled loops to compete for local services throughout New Jersey, thus eliminating the need to purchase access service. Finally, Internet telephony allows customers to avoid carrier access charges at one or both ends of a toll call.

<sup>37</sup> In addition, US LEC, International Telcom, and DialTek have filed carrier access tariffs in New Jersey, but they were not operational in the state as of the end of 1999.

not sell any carrier services to other BA-NJ competitors, substitutes exist for BA-NJ access services.

**Q. DO YOU EXPECT ACCESS SUBSTITUTES TO BECOME MORE WIDELY AVAILABLE?**

- A.** Yes. Rapid CLEC growth and emerging additional substitutes for BA-NJ access services imply that facilities-based substitutes will be even more widely available.

Fixed wireless, wireless mobile and cable TV telephony services are rapidly emerging competitive substitutes for BA-NJ local residence and small business services and will compete with BA-NJ access services for these customer groups throughout the state. “Wireless cable” (2.1 GHz) and 28 GHz spectrum have the potential to deliver economically viable service even at low subscriber densities. DSL, spurred by consumer demand for high-speed Internet access can simultaneously provide—at low incremental cost—local and long distance voice services. (See Section II.D. below and Attachment 1 for additional data on wireless, cable TV, and DSL options.)

**Q. DO UNES AND OTHER WHOLESALE OPTIONS ALLOW BA-NJ'S COMPETITORS TO PROVIDE SUBSTITUTES FOR BA-NJ CARRIER ACCESS?**

- A.** Yes. Competitors can use UNE-Ps or unbundled loops and their own switches and transport to provide local exchange service to their New Jersey customers, thereby avoiding access charges for toll calls originating from or terminating to that line. The UNE-P option is generally available

throughout the state for competitors who wish to serve residence or business customers. (See Exhibit 3.)<sup>38</sup> Competitors can also use other CLECs' wholesale capacity, as discussed below.

**4. Competitive substitutes are available throughout the state.**

**Q. PLEASE DESCRIBE YOUR ANALYSIS OF THE GEOGRAPHIC AVAILABILITY OF COMPETITIVE SUBSTITUTES.**

**A.** Local residence, local business, and access services all involve connections from end-users to the network. Thus, carriers use the same facilities to originate and terminate both local calls and carrier access traffic. This implies that data on the geographic availability of substitutes for local services and carrier access should be considered jointly. Doing so reveals that substantial switching capacity and transport capacity are already in place and collocation is widespread; thus, facilities-based substitutes for local and carrier access services are widely available.

**a. Competitors already serve customers throughout the state.**

**Q. IS IT POSSIBLE TO ASCERTAIN WHICH RATE EXCHANGE AREAS ARE ALREADY SERVED BY FACILITIES-BASED COMPETITORS?**

**A.** Yes. E 911 subscriber listings allow one to identify rate center areas in which competitors serve customers with their own facilities (i.e., using at least their own switches).<sup>39</sup>

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<sup>38</sup> Summary Order, Docket No. TX98010010, October 6, 1999, p. 3.

<sup>39</sup> An area is served by a competitor if the competitor has at least one E 911 listing in that area. The NPA NXX of an E 911 listing can be used to identify its rate exchange area. We obtained E 911 data by NPA NXX from BA-NJ. We matched listings to rate centers using NPA NXX/rate center dictionaries. To associate rate centers with density cells, we then found the corresponding wire center for each rate center with an E 911 listing.

**Q. WHAT DOES YOUR ANALYSIS SHOW?**

**A.** Our analysis of E 911 listings shows that by the end of March 2000 competitors served customers

in:

?? at least 153 (or about 85 percent) of BA-NJ's 180 rate exchange areas;

?? 29 (100 percent) of all rate exchange areas in Density Cell 1;

?? 54 (95 percent) of all rate exchange areas in Density Cell 2;

?? 62 (74 percent) of all rate exchange areas in Density Cell 3.<sup>40</sup>

CLECs virtual ubiquity in Density Cells 1 and 2 is especially significant because over 70 percent of BA-NJ's lines are located in those two cells.

**b. Competitive facilities are widespread.**

**Q. DO THE FACILITIES DESCRIBED IN THIS SECTION (AND THE EXTENSIVE COLLOCATION DESCRIBED BELOW) IMPLY THAT LOCAL ACCESS AND TRANSPORT OPTIONS ARE WIDELY AVAILABLE AS SUBSTITUTES FOR BA-NJ'S SERVICES?**

**A.** Yes. First, the 36 local voice switches<sup>41</sup> deployed by BA-NJ's competitors by March 2000 have widespread reach. They are located in all three New Jersey Local Access Transport Areas ("LATAs"). With current technology, switches located in one area can serve customers located

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<sup>40</sup> The density cell results do not sum to 153 rate centers because we omitted from the analysis eight rate centers with two or more wire centers in different density cells.

<sup>41</sup> This is a very conservative number because it excludes long distance switches not yet adapted for local service, packet switches, and numerous wireless switches providing local services.

hundreds of miles away.<sup>42</sup> Even without remote switching modules, firms can use digital loop carrier to serve customers within a 125-mile radius of the switch.

Second, alternatives to BA-NJ loops and transport are already widespread and are growing in availability and technological capabilities. The presence of fiber in a wire center does not mean that the carrier has a line to each customer in that wire center. It does mean that the carrier has transport to that area and has at least the ability to rapidly serve customers adjacent to or within some distance from the fiber. As shown in Exhibit 2, CLEC fiber typically appears to be linked to CLEC switches and to run through wire centers with collocation.

Several competitors have fixed wireless licenses that cover nearly all of BA-NJ's service area.

The ability to rapidly deploy wireless facilities makes them particularly potent competition. Three carriers—Winstar, Teligent, and NEXTLINK—use or will soon use wireless broadband to serve New Jersey business customers. Firms can deploy fixed wireless services more rapidly and at lower cost by utilizing existing wireless mobile networks. See Attachment 4 for a detailed description of competitors' wireless offerings.

Competitors also can reach customers beyond their own networks by purchasing capacity and service from each other. BA-NJ's competitors are providing wholesale offerings to other carriers. These offerings include carrier access service to IXCs and local services for resale—and “network elements”—e.g., dark fiber for transport or for use in local loops. Collocation and UNEs allow competitors to provide ubiquitous service more rapidly.

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<sup>42</sup> For example, the Lucent 5ESS enables remote switch modules to “be located up to 600 miles from the host switch,

**Q. HOW DO COLLOCATION AND UNES ALLOW COMPETITORS TO PROVIDE UBIQUITOUS SERVICE?**

**A.** Collocation allows competitors to serve end users throughout New Jersey by using unbundled (BA-NJ) loops to connect end users to their networks (even in areas where they do not yet have their own local loops). By December 31, 1999, collocation was present or pending in 148 BA-NJ wire centers—present in 125 and pending in 23. These offices served 88 percent of BA-NJ’s residence lines and 94 percent of its business lines.<sup>43</sup> Twenty-one CLECs had a total of 870 collocation arrangements with BA-NJ, 529 of which were completed. Three or more collocation arrangements had been made in 107 wire centers, which serve about 78 percent of BA-NJ total access lines and 83 percent of BA-NJ business lines. As illustrated in Exhibit 1, competitors have collocation arrangements in all three density cells, including every wire center in Density Cell 1, wire centers serving 97 percent of the lines in Density Cell 2, and those serving 71 percent of the lines in Density Cell 3.<sup>44</sup>

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making it easy to enter new territories.” See <http://www.lucent-sas.com/switching/products/configurations/switch.shtml> (May 1, 2000).

<sup>43</sup> We include pending collocation arrangements because these arrangements have been rapidly activated—e.g., between September 30, 1999 and year end 1999, BA-NJ completed more than 150 collocation arrangements, as the number completed grew from 377 to 529.

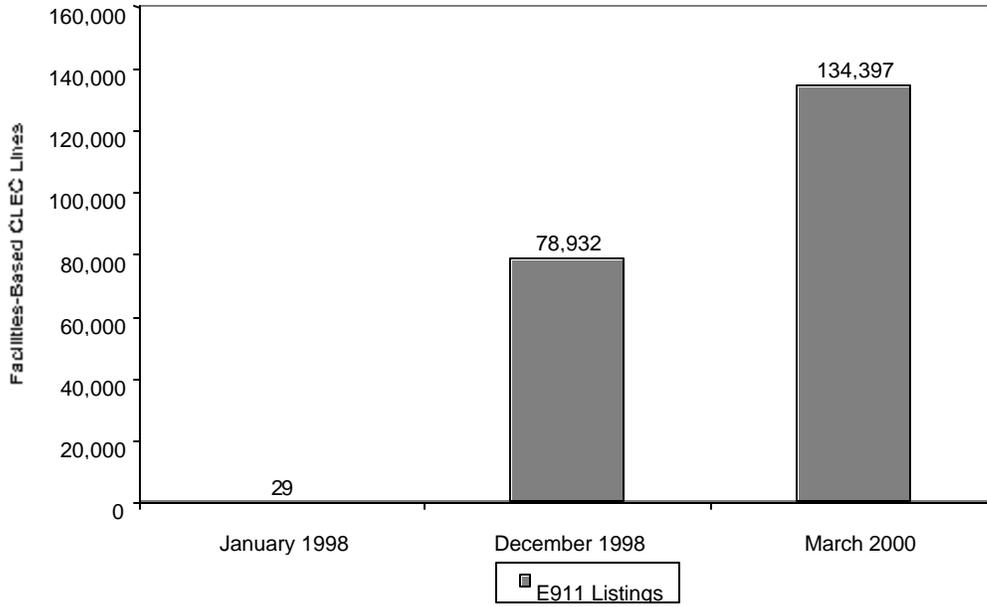
<sup>44</sup> BA provided data on collocation by wire center. This includes both pending and completed arrangements.

**5. Demand for competitive substitutes is large and growing very rapidly.**

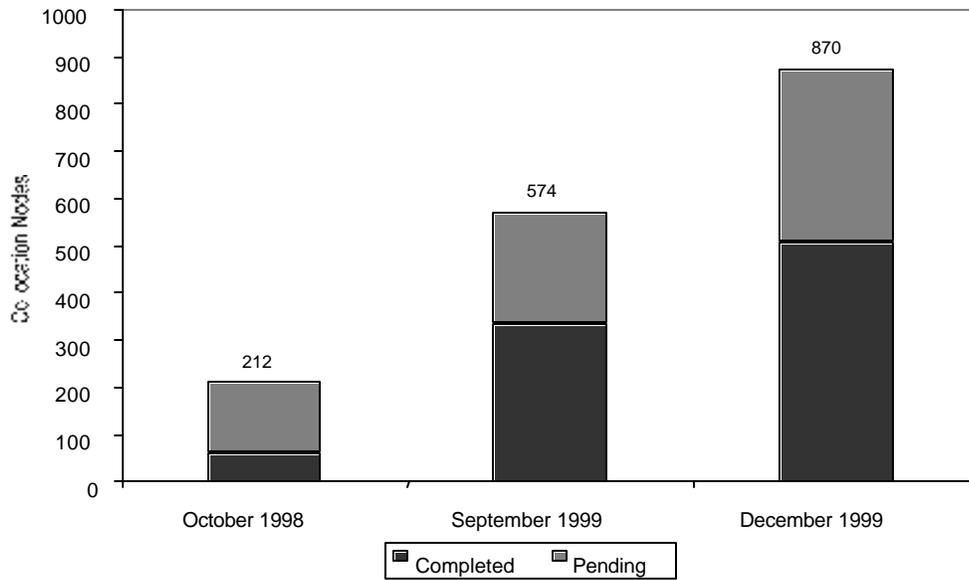
**Q. DOES THE NEW JERSEY MARKETPLACE PROVIDE EVIDENCE THAT  
COMPETITIVE ALTERNATIVES ARE VIABLE SUBSTITUTES FOR BA-NJ  
SERVICES?**

**A.** Yes. Available data show that competitors have both a large and rapidly growing customer base in New Jersey. These data provide compelling evidence that: (1) customers view competing options to be good substitutes for BA-NJ services; and (2) at the end of the proposed rate stabilization period, BA-NJ will face even more substantial and vibrant competition. I have examined measures of growth based on information available to BA-NJ. These measures, however, exclude services and facilities supplied without BA-NJ inputs. They also do not account for the rapid growth that will come as the Big Three IXC's compete more aggressively for local and packaged services using UNE-Ps and other options. Accordingly, the measures, if anything, understate the amount of competition and its likely growth. The data depicted in the following charts reveal that competition is growing rapidly. Attachment 5 provides greater detail concerning these growth measures, except for the collocation data described above.

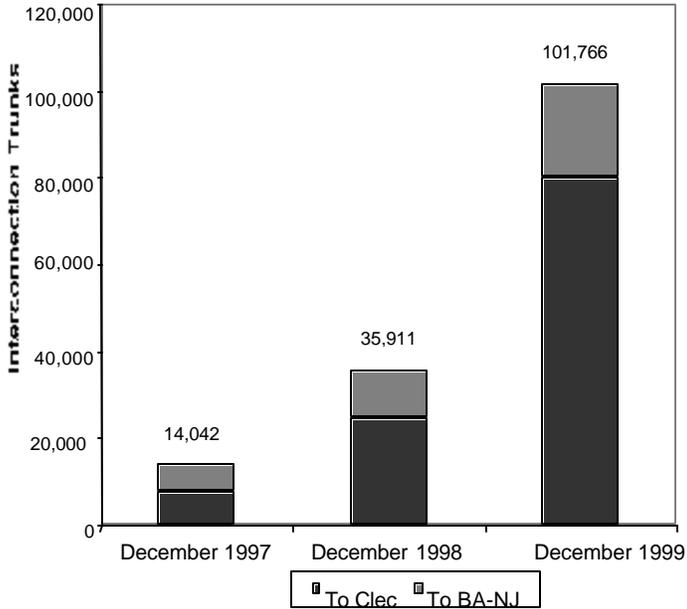
**Growth in CLEC Facilities-Based Switched Voice Lines  
January 1998 to March 2000**



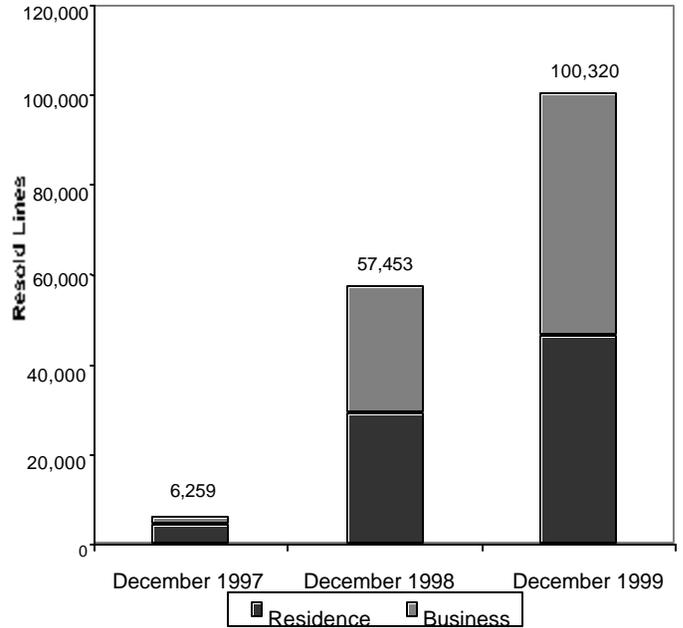
**Growth in Collocation Arrangements  
October 1998 to December 1999**



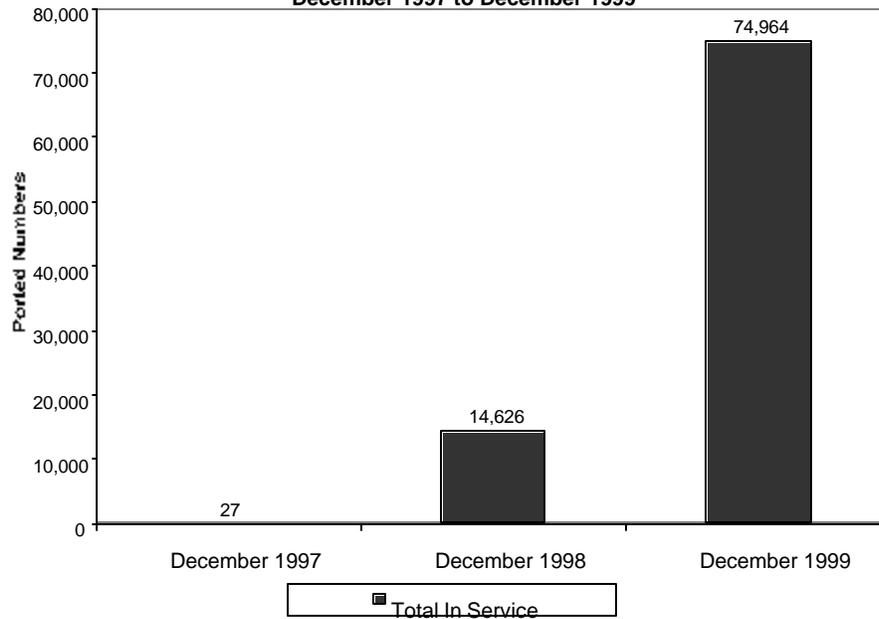
**Growth in CLEC Interconnection Trunks  
December 1997 to December 1999**



**Growth in Resold Lines  
December 1997 to December 1999**



**Growth in Ported Numbers  
December 1997 to December 1999**



**6. As regulatory restrictions on BA-NJ are eased, competition is likely to intensify.**

**Q. WOULD ALLOWING MARKET FORCES—RATHER THAN REGULATION— TO GOVERN BA-NJ'S RATES STIMULATE MORE WIDESPREAD RESIDENCE COMPETITION?**

**A.** Yes. The substantial competitive entry that has already occurred in New Jersey did so in the face of heavily subsidized local residence service. As the CLECs contend, such under-pricing makes entry into local residence markets less profitable.<sup>45</sup> BA-NJ's plan would allow market forces to move prices towards cost-based levels, which would likely expand competitive entry into residence markets.

**Q. WILL THE BIG THREE COMPETE MORE AGGRESSIVELY FOR RESIDENCE CUSTOMERS WHEN BA-NJ IS ALLOWED TO PROVIDE INTERLATA TOLL SERVICE?**

**A.** Yes. Much of the growth in competition for residence customers has come from smaller independent CLECs. For example, the rapid growth in residence resale has been achieved by these CLECs, not the Big Three IXCs. This is not surprising. The Big Three have strategic reasons for limiting such activity—*i.e.*, their interest in keeping BA-NJ and other ILECs out of the long distance market. They further that interest by arguing to regulators that resale and UNEs are not providing effective competition. Experience in New York shows that as long distance entry by Bell Atlantic becomes imminent, the IXCs will, in fact, accelerate their efforts to compete for local

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<sup>45</sup> Board Status of Local Competition Report, Docket No. TX98010010, July 22, 1998, p. 16.

residence customers. It also demonstrates just how potent these firms will be in local markets.

Indeed, the New York experience provides compelling support for BA-NJ's position that its entry into the interLATA market will spur local exchange competition. See Attachment 6 for specific examples of the competitive effects of the New York experience.

**D. Market forces are eliminating any market power that BA-NJ might retain.**

**Q. WHAT MARKET FORCES HAVE BEEN TRANSFORMING THE COMPETITION FACED BY BA-NJ?**

A. In this section, I describe wireless mobile and cable TV trends that are transforming these options into increasingly good substitutes for traditional wireline services. I also discuss more general industry trends toward service packages that are reducing BA-NJ's local service to but one part of the communication service package most consumers want.

**1. Wireless mobile services are increasingly good substitutes for BA-NJ local services.**

**Q. PLEASE DESCRIBE THE AVAILABILITY AND COMPETITIVENESS OF WIRELESS MOBILE SERVICES.**

A. Six two-way wireless mobile networks operate in New Jersey. AT&T's network covers BA-NJ's entire service area, while Sprint's PCS network covers roughly 60 percent of it. Four other two-way wireless mobile networks also compete throughout New Jersey.

Consumers already view wireless services as substitutes for wireline services. Wireless providers are marketing their services as substitutes for wire-based phone lines—e.g., AT&T advertises that

with one of its plans “your wireless phone may become your only phone.” Sprint has made similar claims.

Competitive pressures on mobile prices and emerging pricing plans will make mobile services even more attractive substitutes. Attachment 4 contains a more comprehensive review of mobile wireless providers and trends.

**2. Cable TV is rapidly becoming a facilities-based alternative to BA-NJ services.**

**Q. HAVE CABLE TV FIRMS ENTERED TELEPHONE SERVICE MARKETS?**

**A.** Yes. Cable TV firms have entered or are in the process of entering the telephone market. Cable TV firms already compete with BA-NJ to provide two-way telecommunications, i.e., high-speed Internet access.<sup>46</sup> Further, AT&T’s aggressive cable TV strategy validates the use of cable TV networks to provide virtually ubiquitous alternatives to BA-NJ’s residence services. For example, according to AT&T Chairman Armstrong:

We trialed our cable telephony service in 16 communities, starting in Fremont, California, where it surpassed the local telephone company’s service on every measure, from call setup time to call quality and customer satisfaction. Now we’re ramping up. From just 8,300 cable telephony customers at the beginning of 2000, we’re rolling out enough trucks every day to install service in 400,000 to 500,000 households by the end of the year. . . . The people of AT&T are demonstrating that our strategy is not just doable -- it’s being done.<sup>47</sup>

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<sup>46</sup> See Attachments 1 and 2.

<sup>47</sup> C. Michael Armstrong, Chairman and Chief Executive Officer, AT&T Annual Report 1999, March 17, 2000, pp. 2-3.

Cable companies have already made substantial progress towards providing two-way service. Although data are not available publicly for New Jersey, national data for AT&T and others in New Jersey suggest that cable TV firms already provide two-way telephone services in many markets and expect to see substantial gains in the near future. (See Attachments 1 and 2.)

### **3. DSL competes for voice as well as data traffic.**

#### **Q. PLEASE DESCRIBE HOW DSL COMPETES FOR ACCESS SERVICE.**

**A.** Although DSL has been marketed, thus far, as a substitute for high-speed cable TV modem service, recent developments establish that it too will be a substitute for BA-NJ voice access services. For example, NorthPoint recently stated that the addition of multiple voice circuits to its high-speed connections was a logical and forthcoming extension to its DSL offering.<sup>48</sup> Similarly, Sprint's ION employs DSL technology to provide its "any distance" services to homes and offices. "Sprint ION will enable users to conduct multiple phone calls, high-speed Internet sessions, fax transmissions and videoconferences simultaneously over one connection." (And, it will do so over ILEC loops, wireless local loops, and cable TV connections.)<sup>49</sup>

Also, the FCC's recent line-sharing requirement will facilitate the growth in DSL offerings because the UNE cost of the high-frequency portion of ILECs' local loops is likely to be lower than the cost of self-provisioning loops or buying entire UNE loops.<sup>50</sup> Since the new unbundling

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<sup>48</sup> Thurm, Scott, "In a Race to the Web, Phone Upstarts Grab Turf," *The Wall Street Journal*, October 18, 1999, p. B1.

<sup>49</sup> Sprint Press Release, "Sprint Announces Record Third Quarter Results," October 20, 1999.

<sup>50</sup> FCC 99-355, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, released: December 9, 1999, ¶36.

requirement applies to most ILEC loops, which currently provide analog voice service, DSL has the potential to become available ubiquitously.<sup>51</sup>

#### **4. Packaged services are changing the marketplace.**

##### **Q. HOW HAVE PACKAGED SERVICES CHANGED THE MARKETPLACE?**

**A.** As discussed above, efforts to assemble packaged services are blurring the distinctions between local and long distance, wireless and wireline, cable TV and telephone services. The emergence of the service packages makes the competitors' offerings more desirable. This allows competitors to compete more effectively, makes local service but one part of the relevant service package and, thus, diminishes any market power BA-NJ might have had.

The pressure to compete with other mobile providers' services packages lead even Bell Atlantic's mobile service to compete with BA-NJ's wireline business. According to the president and CEO of Bell Atlantic Mobile, competitors' bundled offerings are "...a great attempt to serve their own purpose and lock customers in."<sup>52</sup> The success of these attempts forced Bell Atlantic wireless to compete with Bell Atlantic land line services. "The bundle that we have today is often being used to displace land-line services," says Mr. Strigl.<sup>53</sup> The pressure to develop plans that compete with wireline service will likely increase because Verizon Wireless—created by the merger of Bell Atlantic Mobile with Vodafone AirTouch and PrimeCo and motivated by the need to compete

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<sup>51</sup> *Ibid.*, ¶71.

<sup>52</sup> Blumenstein, Rebecca, "Package Plan: AT&T Sees Wireless as the Key to Its Broader Strategy of Bundling Its Services," *The Wall Street Journal*, September 20, 1999, p. R26.

<sup>53</sup> *Ibid.*

nationally with AT&T and others wireless mobile carriers—will have to sell services that compete with other wireless mobile offerings that compete with wireline services.

Note also that wireless mobile service developments have blurred the line between local and long distance services in two ways: first, wireless calling areas are much wider than the local calling areas of wireline services, and, second, new one-rate calling plans have essentially eliminated the differences between rates for (extended wireless) local and long distance services.

### **III. RECLASSIFICATION IS CONSISTENT WITH ECONOMIC PRINCIPLES AND WILL PROMOTE THE PUBLIC INTEREST.**

#### **A. Economic principles support reclassifying BA-NJ's services.**

#### **Q. FROM THE PERSPECTIVE OF ECONOMIC PRINCIPLES, WHAT IS THE RELEVANT POLICY QUESTION IN CONNECTION WITH RECLASSIFYING BA-NJ'S SERVICES AS PROPOSED?**

**A.** BA-NJ asks the Board to reclassify business local services, residence local services and access services sold to either end-users or carriers. Thus, the relevant economic question for the Board is: Will competition be sufficiently effective to ensure BA-NJ cannot exercise market power by 2001, when the CTP calls for the Board to relinquish control over BA-NJ's business local exchange prices, and by 2003, when Board oversight of residence local exchange and access prices would end.

#### **Q. WHAT ECONOMIC PRINCIPLES SHOULD GUIDE THE BOARD IN EXAMINING THIS QUESTION?**

A. The analysis should be forward looking: it should consider the extent to which the incumbent will be able to exercise market power for the services at issue in 2001 and 2003. It should not focus on market share data or even market presence from the recent past. Furthermore, the analysis should balance restraints on the incumbent firm's ability to exercise market power against the strengths and abilities of competitive entrants. For example, it is significant that BA-NJ is not seeking to reclassify as competitive its wholesale provision of network capacity via UNEs and UNE-Ps. The prices for these network elements will continue to be set at cost and governed by the 1996 Act and the Board. This continued regulation is important because competitors' ability to use BA-NJ's network at cost—as well as their own network, in cases where that is more cost effective—virtually eliminates BA-NJ's ability to raise prices above competitive (cost-based) levels.

Finally, economic theory tells us that when a market is opened to competition, the terms under which all firms must compete should be made as symmetric as possible, consistent with the protections in place against the regulated firm's ability to exercise market power.

**Q. WHAT ARE THE PRACTICAL REGULATORY IMPLICATIONS OF THESE PRINCIPLES?**

A. Where market forces can prevent the exercise of market power, regulation should be reduced accordingly. Thus, (1) if current competitors can supply a sufficiently close substitute to the incumbent's service to prevent a small but significant price increase above the competitive level; **or** (2) if entry barriers are so low that the threat of new entry can discipline the market price, then the service should be classified as competitive. The evidence clearly shows that BA-NJ's remaining

regulated services meet both of these criteria and, thus, should be reclassified as competitive. I have shown that competitors—including major diversified multinational firms—can and, in fact, do supply like or substitute services to those BA-NJ seeks to reclassify. The impressive number of competitors the Board has certified, the extensive facilities competitors have installed and collocation arrangements they have entered into remove any doubt that no significant barriers to entry remain. If this were not enough, the requirements of the 1996 Act and the 1992 New Jersey Act—*e.g.*, the Section 251 requirements of the 1996 Act and the non-discrimination requirements established by the 1992 New Jersey Act that will continue under the CTP—will ensure that competitors will not be disadvantaged relative to BA-NJ for access and interconnection. However, even if the evidence were ambiguous, the services could be classified as competitive but be subjected to monitoring and the threat of more stringent regulation if significant market power is exercised in the future. Section 48:2-21.19.d of N.J.S.A. expressly authorizes the Board to reclassify any telecommunications service from competitive to regulated if it determines that sufficient competition is no longer present. The CTP goes even further by proposing specific protections for the services to be reclassified, including a two year cap on residence basic exchange and access service prices.

**B. Competitive parity requires that all competitors have the same flexibility.**

**Q. IS BA-NJ'S PLAN CONSISTENT WITH COMPETITIVE PARITY?**

- A.** Yes. The Board should recognize the complementary relationship between promoting competition and reducing regulation. (The New Jersey Act recognizes this relationship by seeking both to

promote competition *and* to reduce regulation.) Customers are demanding bundled local, long distance, data, and Internet access services, and BA-NJ's competitors have virtually complete freedom to develop and refine various pricing plans to target the most lucrative customers. As soon as competitive entry is allowed, incumbents should be given sufficient flexibility to have a reasonable chance to compete for these lucrative customers.

Therefore, BA-NJ should be subject to no more regulation than are the entrants. As noted above, when a market is opened to competition, the terms under which all firms must compete should be made as symmetric as possible, consistent with the protections in place against the regulated firm's ability to exercise market power. Current asymmetric regulations interfere with the competitive process by creating artificial conditions that would never occur in an unregulated competitive market.

**Q. WHAT COSTS WILL BE IMPOSED ON NEW JERSEY CONSUMERS IF THE BOARD DOES NOT REDUCE THE CURRENT REGULATORY ASYMMETRIES?**

**A.** Maintaining regulatory requirements on one competitor (i.e., on BA-NJ but not on others) does not stimulate efficient competition. Rather, asymmetric regulatory policies interfere with competition and potentially harm consumers in three ways. First, allocative efficiency is reduced when regulation prevents any competitor from charging cost-based prices that would likely prevail in unregulated competitive markets. Second, productive efficiency would be harmed to the extent that customers are served by firms with higher costs than BA-NJ if those firms capture those customers based on a regulatory advantage conferred by asymmetric regulation, rather than through the workings of true competition. Third, innovative or dynamic efficiency would be

harmed. The disadvantaged (excessively regulated) firm would have both less ability and diminished incentives to innovate because it would make less profit than would occur in an unregulated competitive setting. The advantaged (less regulated) firm would have less incentive to innovate because hampering BA-NJ—with regulatory restrictions—from responding to its non-regulated competitors will decrease the pressure on non-regulated firms to innovate.

Adopting BA-NJ's plan would increase regulatory parity and provide consumer safeguards. Strong and increasing competition—supplemented by the 1996 Act's and the New Jersey Act's continuing safeguards—ensure that BA-NJ cannot exercise market power.

**C. BA-NJ's proposal for Residence Basic Exchange Service will promote more efficient competition.**

**Q. WILL ADOPTING BA-NJ'S PLAN FOR RESIDENCE BASIC EXCHANGE SERVICE PROMOTE COMPETITION?**

- A. Yes. To the extent that rates move toward more cost-based levels—*e.g.*, if the current residence subsidy can be reduced and other rates can be lowered—there will be substantial efficiency gains. Such cost-based rates will send the correct pricing signals to entrants and promote competition in all areas of New Jersey.

**IV. CONCLUSION**

**Q. DOES BA-NJ'S PROPOSAL TO RECLASSIFY RESIDENCE, BUSINESS AND ACCESS SERVICES AS COMPETITIVE MEET THE NEW JERSEY LEGISLATIVE STANDARD?**

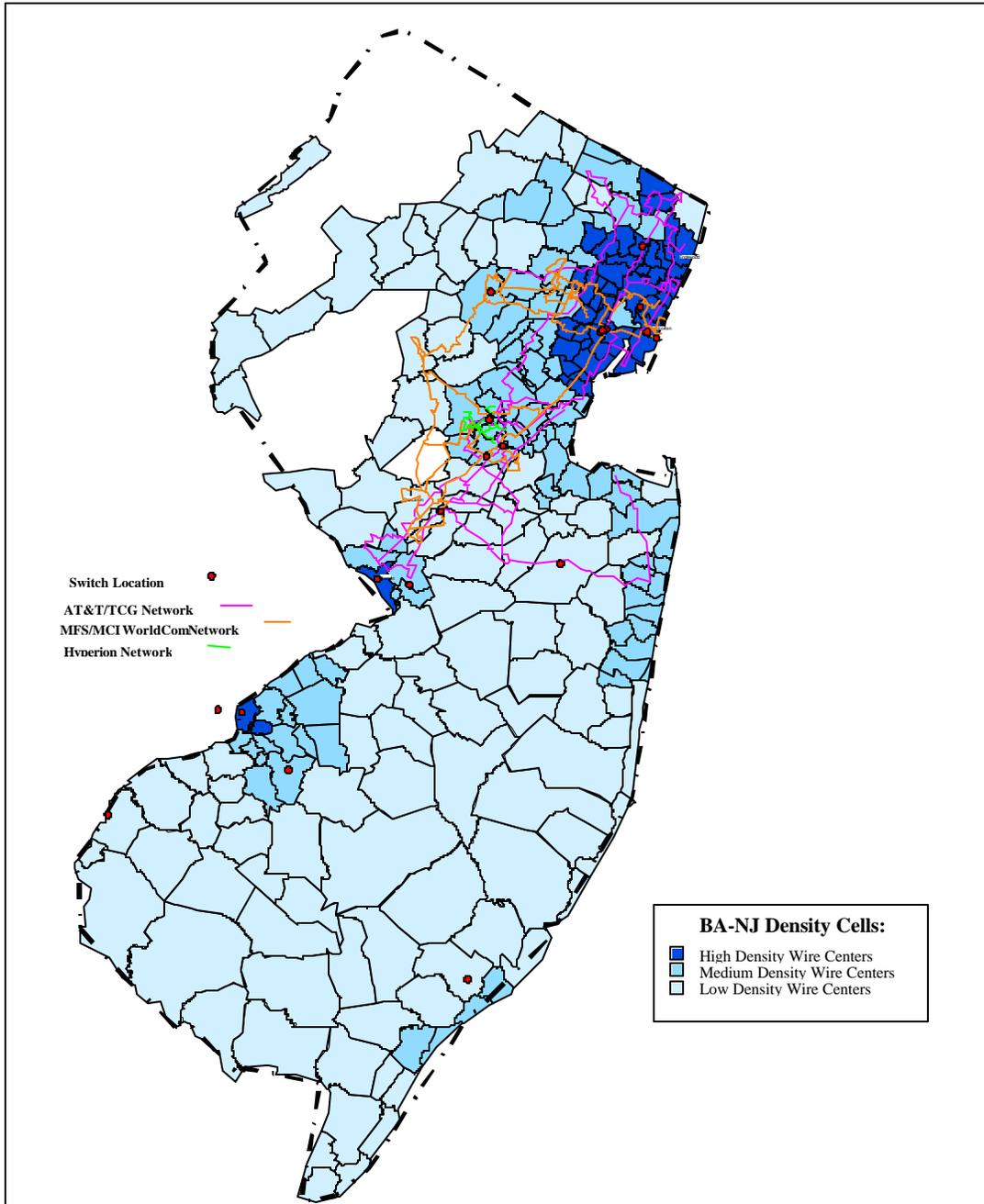
A. Yes. The above evidence meets the NJSA standards for reclassifying BA-NJ's remaining regulated services as competitive. Specifically, I have shown that: competitors are present throughout BA-NJ's territory; there are no significant entry barriers; and like or substitute services are available throughout the BA-NJ's service area.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes, it does.

Exhibit 1

**Competitors Have Substantial Local Voice Switching and Fiber Optic Networks  
in BA-NJ's Service Area**

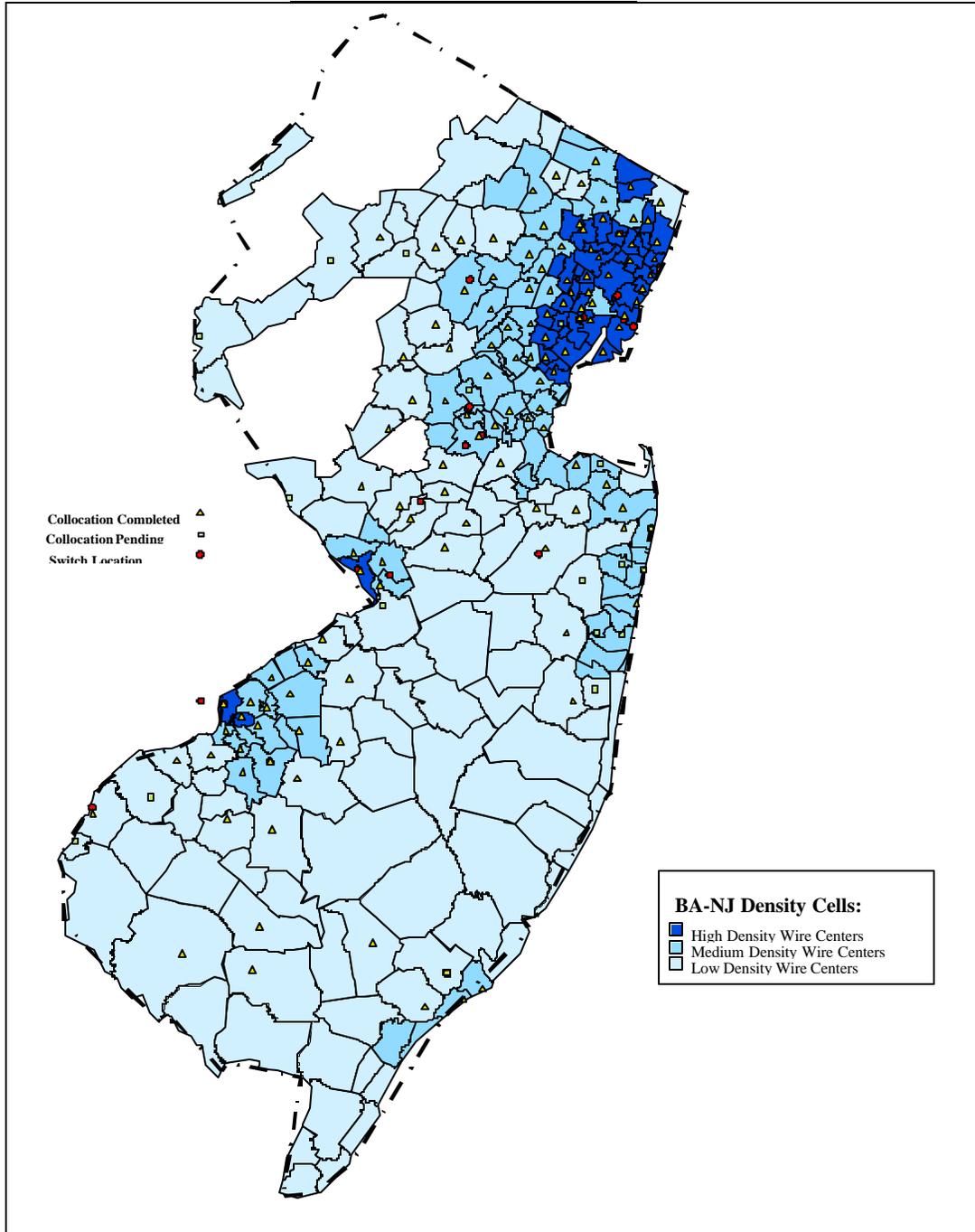


**Sources and Notes:** Switch Locations from Telcordia, Local Exchange Routing Guide, March 2000. Map excludes data and remote switches. Some locations have multiple switches. Map includes a Philadelphia switch and omits a New York switch that serve New Jersey customers.

Fiber Optic Network Maps from Quality Strategies. Maps were not available for several competitors and/or for routes in southern New Jersey. This understates the competitors' network coverage.

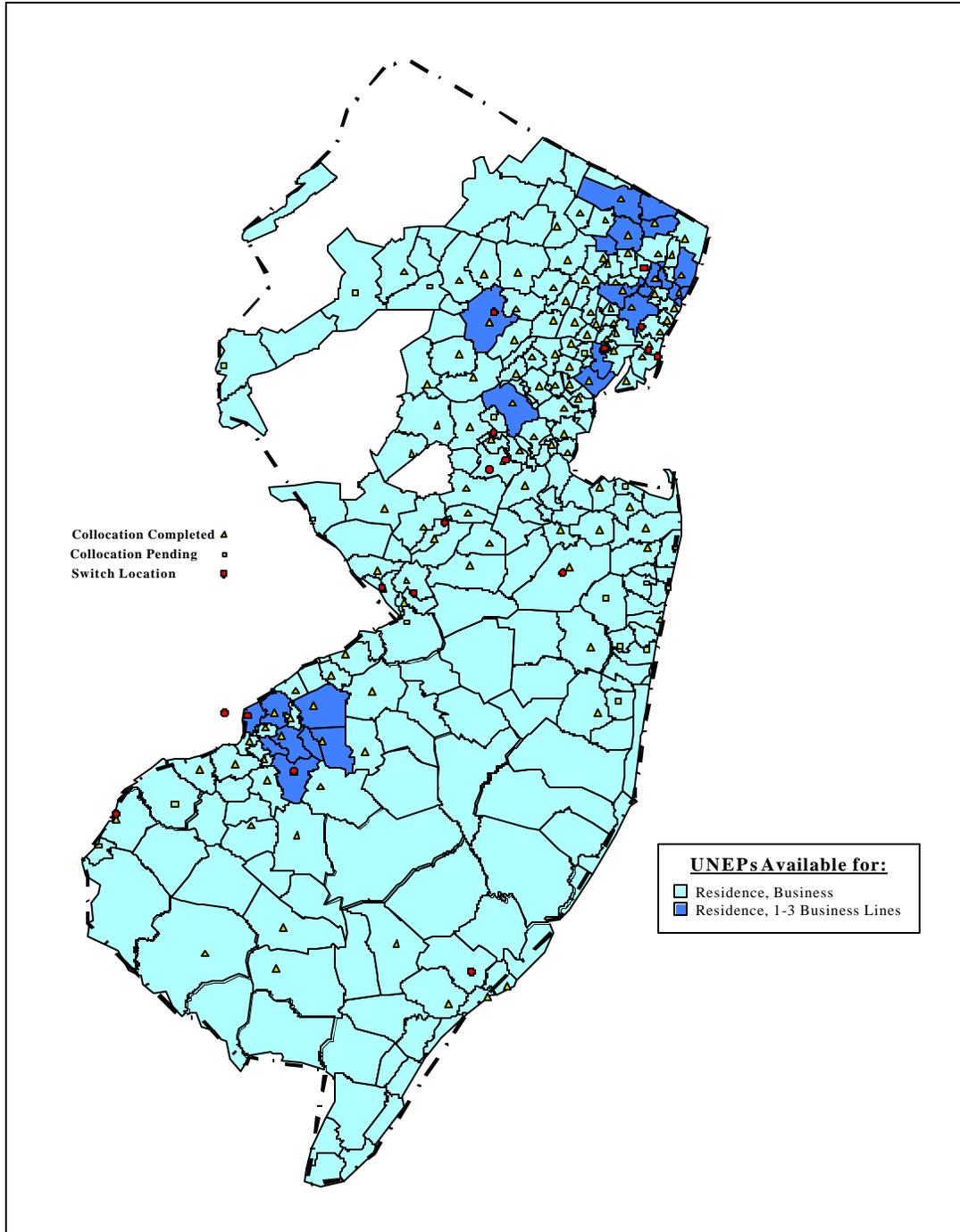
Exhibit 2

**Competitors Have Local Voice Switches and/or Collocation Arrangements in 148 Wire Centers with 90 Percent of BA-NJ's Total Lines.**



**Notes and Sources:** Switch Locations from Telcordia, Local Exchange Routing Guide (LERG), March 2000. (See Notes to Exhibit 1.) Collocation arrangements as of December 1999 provided by BA-NJ

**UNE-Ps Are Available in All BA-NJ Wire Centers**



**Notes and Sources:** Switch Locations from Telcordia, Local Exchange Routing Guide, March 2000. (See Notes to Exhibit 1.) UNE-P Availability from Bell Atlantic analysis of FCC November 1999 UNE Remand Order.

**Exhibit 3**



**Exhibit 4. Residence Service Tariffs**

Local Service	BA-NJ	MFS	MCI Metro	RCN	Cable Vision	NEXTLINK	Focal	Conectiv
Flat Rate	\$6.75 - \$8.19	-	-	\$6.41 - \$7.55	\$6.41 - \$7.78		\$15.66	\$6.40 \$7.55
Measured Incl. 75 units	-	-	-	-	-	\$14.50	-	-
Measured No units incl.	-	\$7.62 \$8.58>5 lines	\$7.20	-	-	-	-	-
Message Incl. 75 units	\$5.44 - \$6.58	-	-	\$5.17- \$6.07	\$5.16 - \$6.25	-	-	-
Message Units	\$0.065	\$0.0627	\$0.06	\$0.06	\$0.062	\$0.05	-	-
Low Use Incl. 20 units	\$4.40- \$5.39	-	-	\$4.18 - \$4.94	\$4.18 \$5.12	-	-	-
Low Use Message Units	\$0.10			\$0.095	\$0.090			
Vertical <sup>54</sup>								
Touch-Tone	\$1.00	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
Call Waiting	\$4.59	\$3.00	Incl.	\$4.36	\$4.36	\$1.00	-	\$4.35
Caller ID	\$6.55	-	\$8.00	\$6.22	\$6.17	\$8.50	-	\$6.20
Return Call	\$4.00	-	-	\$3.80	\$2.18	-	-	\$3.80
Call Forward	\$2.30	Incl.	Incl.	\$1.90	\$2.18	\$1.00	-	\$1.90

Source: CLEC tariffs approved by the New Jersey Board of Public Utilities.

<sup>54</sup> This is a selected list of vertical features. Standard Customer Premises Equipment (“CPE”) is available to residence customers and those who work at home. CPE provides some of the same comparable features like “Touch-tone” dialing, repeat call, and speed calling capabilities at no additional charge beyond the initial purchase price. Vendors for this equipment include Panasonic, Nortel, and Lucent.

**Exhibit 5. Business Local Service Tariffs**

Service	BA-NJ	MFS	MCI Metro	RCN	Cable Vision	NEXT LINK	Allegiance	Focal	Conectiv	Winstar
Flat Rate	-	-	-	\$13.96- \$15.48	-	-	-	\$15.66	\$14.10 \$15.65	-
Measured Incl. 75 units	\$10.65- \$12.96	-	-	\$10.02- \$12.01	\$10.11- \$12.31	\$14.50	-	-	\$10.10 \$12.15 (Incl. 225 MOUs)	-
Measured No units incl.	-	\$7.62 \$8.58 > 5 lines	\$7.20	-	-	-	\$11.56	-	-	\$13.00
Message Units	\$0.066	\$0.0627	\$0.06	\$0.061	\$0.063	\$0.05	\$0.059	-	-	\$0.0594
DID (1 <sup>st</sup> 20)	\$20.00	\$30.00	\$18.00	\$19.00	\$19.00	\$18.00	\$18.00	\$4.00	\$19.00	\$18.00
Trunks	\$10.90- \$13.27	\$6.04- \$7.86	\$7.40	\$10.26- \$12.39	\$10.35- \$12.70	\$14.50	\$ 7.37	\$26.53	\$10.35 \$12.50	\$16.00
Vertical <sup>55</sup>										
Touch-Tone	\$2.01	Incl.	Incl.	Incl.	Incl.	Incl.	\$ 1.79	Incl.	Incl.	Incl.
Call Waiting	\$7.65	\$3.00	Incl.	\$7.20	\$7.27	\$1.00	-	-	\$7.30	\$6.89
Caller ID	\$8.50	-	\$8.00	\$8.08	\$6.23	\$8.50	-	-	\$8.10	\$7.65
Return Call	\$6.00	-	-	\$5.70	\$2.56	-	-	-	\$5.70	\$3.00
Call Forward	\$2.69	Incl.	Incl.	\$1.90	\$2.56	\$1.00	-	-	\$1.90	\$2.07

Source: CLEC tariffs approved by the New Jersey Board of Public Utilities.

<sup>55</sup> This is a selected list of vertical features. Key systems and Private Branch Exchange (PBX) systems provide some of the same comparable features at no additional charge beyond the initial purchase price. Vendors for this equipment include Nortel, Lucent and Toshiba.

**Exhibit 6: Competitors Offer Both Access and Other Services in New Jersey**

Company	Access Service		Other Services			
	Dedicated	Switched	Local	Toll	Data	Internet Access
AT&T	☑	☑	☑	☑	☑	☑
MCI WorldCom	☑	☑	☑	☑	☑	☑
ABS	☑	☑	☑	☑	☑	☑
Allegiance	☑☑	☑☑	☑☑	☑☑	☑☑	☑☑
Conectiv	☑	☑	☑	☑	☑	☑
Focal		☑	☑	☑	☑	☑
Level 3	☑☑		☑	☑☑	☑☑	☑☑
NEXTLINK	☑		☑	☑	☑	☑
Winstar	☑	☑	☑	☑	☑	☑

Source: See Attachment 2. (Although NEXTLINK has filed a switched access tariff with the Board, public sources did not confirm that it was providing this service in New Jersey as of December 1999. Similarly, Focal has filed dedicated access tariffs for DS1 in New Jersey but did not appear to be providing the service as of December 1999.)

Exhibit 7

**WILLIAM E. TAYLOR**

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Dr. Taylor received a B.A. *magna cum laude* in Economics from Harvard College, an M.A. in Statistics and a Ph.D. in Economics from the University of California at Berkeley. He has taught economics, statistics, and econometrics at Cornell and the Massachusetts Institute of Technology and was a post doctoral Research Fellow at the Center for Operations Research and Econometrics at the University of Louvain, Belgium.

At NERA, Dr. Taylor is a Senior Vice President, heads the Cambridge office and is Director of the Telecommunications Practice. He has worked primarily in the field of telecommunications economics on problems of state and federal regulatory reform, competition policy, terms and conditions for competitive parity in local competition, quantitative analysis of state and federal price cap and incentive regulation proposals, and antitrust problems in telecommunications markets. He has testified on telecommunications economics before numerous state regulatory authorities, the Federal Communications Commission, the Canadian Radio-Television and Telecommunications Commission, federal and state congressional committees and courts. Recently, he was chosen by the Mexican Federal Telecommunications Commission and Telmex to arbitrate the renewal of the Telmex price cap plan in Mexico. Other recent work includes studies of the competitive effects of major mergers among telecommunications firms and analyses of vertical integration and interconnection of telecommunications networks. He has appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer.

He has published extensively in the areas of telecommunications policy related to access and in theoretical and applied econometrics. His articles have appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic Review*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, *The Review of Industrial Organization*, and *The Encyclopedia of Statistical Sciences*. He has served as a referee for these journals (and others) and the National Science Foundation and has served as an Associate Editor of the *Journal of Econometrics*.

## EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY  
Ph.D., Economics, 1974

UNIVERSITY OF CALIFORNIA, BERKELEY  
M.A., Statistics, 1970

HARVARD COLLEGE  
B.A., Economics, 1968  
(Magna Cum Laude)

## EMPLOYMENT

1988- NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC. (NERA)  
Senior Vice President, Office Head, Telecommunications Practice Director. Dr. Taylor has directed many studies applying economic and statistical reasoning to regulatory, antitrust and competitive issues in telecommunications markets. In the area of environmental regulation, he has studied statistical problems associated with measuring the level and rate of change of emissions.

1983-1988 BELL COMMUNICATIONS RESEARCH, INC. (Bellcore)  
Division Manager, Economic Analysis, formerly Central Services Organization, formerly American Telephone and Telegraph Company. While at Bellcore, Dr. Taylor performed theoretical and quantitative research focusing on problems raised by the implementation of access charges. His work included design and implementation of demand response forecasting for interstate access demand, quantification of potential bypass liability, design of optimal nonlinear price schedules for access charges and theoretical and quantitative analysis of price cap regulation of access charges.

1975-1983 BELL TELEPHONE LABORATORIES  
Member, Technical Staff, Economics Research Center. Performed basic research on theoretical and applied econometrics, focusing on small sample theory, panel data and simultaneous equations systems.

Fall 1977 MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
Visiting Associate Professor, Department of Economics. Taught graduate courses in econometrics.

1974-1975 CENTER FOR OPERATIONS RESEARCH AND ECONOMETRICS  
Université Catholique de Louvain, Belgium.  
Research Associate. Performed post-doctoral research on finite sample econometric theory and on cost function estimation.

CORNELL UNIVERSITY

1972-1975 Assistant Professor, Department of Economics. (On leave 1974-1975.) Taught graduate and undergraduate courses on econometrics, microeconomic theory and principles.

**MISCELLANEOUS**

1985-1995 Associate Editor, *Journal of Econometrics*, North-Holland Publishing Company.  
1990- Board of Directors, National Economic Research Associates, Inc.  
1995- Board of Trustees, Treasurer, Episcopal Divinity School, Cambridge, Massachusetts.

**PUBLICATIONS**

- “Smoothness Priors and Stochastic Prior Restrictions in Distributed Lag Estimation,”  
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Pennsylvania Public Utility Commission, on behalf of Bell Atlantic-Pennsylvania, statement regarding costs and benefits from Bell Atlantic entry into interLATA telecommunications markets. Filed February 10, 1997. Rebuttal testimony filed March 21, 1997.

Connecticut Department of Public Utilities (DPUC Docket No. 96-11-03), on behalf of the Woodbury Telephone Company, statement regarding the effects of resale and the provision of unbundled network elements on a rural telephone company. Filed February 11, 1997.

Federal Communications Commission, on behalf of Bell Atlantic: "An Analysis of Conceptual Issues Regarding Proxy Cost Models", a response to FCC Staff Report on issues regarding Proxy Cost Models. Filed February 13, 1997.

Public Service Commission of West Virginia (Case Nos. 96-1516-T-PC, 96-1561-T-PC, 96-1009-T-PC, and 96-1533-T-T) on behalf of Bell Atlantic - West Virginia: direct testimony regarding costing and pricing of interconnection and unbundled network elements. Filed February 13, 1997. Rebuttal testimony filed February 20, 1997.

New York Public Service Commission on behalf of New York Telephone Company, "Competitive Effects of Allowing NYNEX To Provide InterLATA Services Originating In New York State," public interest analysis of NYNEX's proposed entry into in-region long distance service. Filed February 18, 1997 (with Harold Ware and Richard Schmalensee).

Public Utilities Commission of Ohio (Case No. 96-899-TP-ALT) on behalf of Cincinnati Bell Telephone Company: direct testimony regarding CBT's proposed rate rebalancing and price regulation plan. Filed February 19, 1997.

Delaware Public Utilities Commission, on behalf of Bell Atlantic - Delaware: statement regarding costs and benefits from Bell Atlantic entry into interLATA telecommunications markets. Filed February 26, 1997. Rebuttal testimony filed April 28, 1997.

The New Jersey Board of Public Utilities on behalf of Bell Atlantic - New Jersey (Docket No. T097030166) economic analysis of costs and benefits from Bell Atlantic provision of interLATA services, statement filed March 3, 1997, reply affidavit filed May 15, 1997.

Federal Communications Commission (CC Docket 96-262 et al.), on behalf of USTA: a report entitled, "An Analysis of the Welfare Effects of Long Distance Market Entry by an Integrated Access and Long Distance Provider", *ex parte* filed March 7, 1997 (with Richard Schmalensee, Doug Zona and Paul Hinton).

Maryland Public Service Commission, on behalf of Bell Atlantic - Maryland: statement regarding consumer benefits from Bell Atlantic's provision of interLATA service, filed March 14, 1997.

Louisiana Public Service Commission, on behalf of BellSouth Long Distance, Inc. (Docket No. U-22252), direct testimony regarding the probable economic benefits to consumers in Louisiana from entry by BellSouth into the interLATA long distance market. Filed March 14, 1997. Rebuttal testimony filed May 2, 1997. Supplemental testimony filed May 27, 1997.

Federal Communications Commission (CC Docket 96-262 et al.), on behalf of the United States Telephone Association: a report entitled, "An Update of the FCC Short-Term Productivity Study (1985-1995)", *ex parte* filed March 1997.

Public Service Commission of West Virginia on behalf of Bell Atlantic - West Virginia: economic analysis of issues regarding Bell Atlantic's entry into the interLATA long distance market. Filed March 31, 1997.

South Carolina Public Service Commission, on behalf of BellSouth Long Distance, Inc., (Docket No. 97-101-C) : direct testimony regarding the probable economic benefits to consumers in South Carolina from entry by BellSouth into the interLATA long distance market. Filed April 1, 1997. Rebuttal testimony filed June 30, 1997.

Public Utilities Commission of Ohio (Case No. 97-152-TP-ARB), on behalf of Cincinnati Bell Telephone Company: direct testimony regarding the application of MCI Telecommunications Corporation Petition for Arbitration Pursuant to Section 252 (b) of the Telecommunications Act of 1996. Filed April 2, 1997.

Kentucky Public Service Commission (Administrative Case No. 96-608) on behalf of BellSouth Long Distance, Inc., testimony regarding the economic effects of BellSouth entry into interLATA services. Filed April 14, 1997. Rebuttal testimony filed April 28, 1997, supplemental rebuttal testimony filed August 15, 1997.

Federal Communications Commission (CC Docket No. 96-149), on behalf of Bell Atlantic, BellSouth, NYNEX, Pacific Bell and SBC: affidavit concerning economic issues raised by the BOC supply of interLATA services to an affiliate. Filed April 17, 1997.

Maine Public Utilities Commission (Docket No. 97-505) on behalf of NYNEX: direct testimony regarding economic principles for setting prices and estimating costs for interconnection. Filed April 21, 1997. Rebuttal testimony filed October 21, 1997.

State of New York Public Service Commission (Case 94-C-0095 and 28425), on behalf of NYNEX, *Initial Panel Testimony*: direct testimony regarding InterLATA Access Charge Reform. Filed May 8, 1997. *Rebuttal Panel Testimony* filed July 8, 1997.

Federal Communications Commission (CC Docket Nos. 93-193, Phase 1, Part 2, 94-65), on behalf of Bell Atlantic: affidavit concerning allocation of earnings sharing and refunds in the local exchange carrier price cap plan. Filed May 19, 1997.

Maine Public Utilities Commission on behalf of NYNEX: affidavit regarding competitive effects of NYNEX entry into interLATA markets. Filed May 27, 1997 (with Kenneth Gordon, Richard Schmalensee and Harold Ware).

Alabama Public Service Commission, on behalf of BellSouth Long Distance, Inc., (Docket No. 25835): direct testimony regarding the probable economic benefits to consumers in Alabama from entry by BellSouth into the interLATA long distance market. Filed June 18, 1997. Rebuttal testimony filed August 8, 1997.

Pennsylvania Public Utility Commission (Docket No. I-00960066), on behalf of Bell Atlantic: direct testimony providing an economic framework for the intrastate carrier switched access rates charged by Bell Atlantic. Filed June 30, 1997. Rebuttal testimony filed July 29, 1997. Surrebuttal testimony filed August 27, 1997.

Vermont Public Service Board (Docket No. 5713), on behalf of Bell Atlantic – Vermont, direct testimony regarding economic principles for setting prices and estimating costs for interconnection. Filed July 31, 1997. Rebuttal testimony filed January 9, 1998. Surrebuttal testimony filed February 26, 1998. Supplemental rebuttal testimony filed March 4, 1998.

North Carolina Utilities Commission (Docket No. P-55, Sub1022) on behalf of BellSouth Long Distance, Inc.: direct testimony regarding the likely economic benefits to consumers in North Carolina from entry by BellSouth into the interLATA long distance market. Filed August 5, 1997. Rebuttal testimony filed September 15, 1997.

State of Connecticut, Department of Public Utility Control (Docket Nos. 95-03-01, 95-06-17 and 96-09-22), on behalf of Southern New England Telephone Company: direct testimony discussing economic principles the DPUC should use in evaluating SNET's joint and common overhead and network support expenses. Filed August 29, 1997. Rebuttal testimony filed December 17, 1998.

Alabama Public Service Commission, on behalf of BellSouth Telecommunications, Inc., (Docket No. 26029): rebuttal testimony of intervenor testimonies in BellSouth's cost and unbundled network element pricing docket in Alabama. Filed September 12, 1997.

Mississippi Public Service Commission (Docket No. 97-AD-0321), on behalf of BellSouth Long Distance, Inc., direct testimony regarding the likely economic benefits to consumers in Mississippi from entry by BellSouth into the interLATA long distance market. Filed July 1, 1997. Rebuttal testimony filed September 29, 1997.

The New Jersey Board of Public Utilities (Docket No. TX95120631) on behalf of Bell Atlantic - New Jersey: economic analysis of proposed universal service funds. Direct testimony filed September 24, 1997. Rebuttal testimony filed October 18, 1997.

State of Connecticut, Department of Public Utility Control (Docket No. 96-04-07) on behalf of Southern New England Telephone Company: direct testimony regarding economic principles guiding access charge reform. Filed October 16, 1997.

Tennessee Regulatory Authority (In re: Petition to Convene a Contested Case Proceeding to Establish "Permanent Prices" for Interconnection and Unbundled Network Elements) on behalf of BellSouth Telecommunications, Inc. (Docket No. 97-01262): rebuttal testimony regarding costing principles on which to base prices of unbundled network elements. Filed October 17, 1997.

Pennsylvania Public Utility Commission (Docket No. I-00940035), on behalf of Bell Atlantic: direct testimony regarding the relationship between access charge reform and universal service funding. Filed October 22, 1997.

Florida Public Service Commission on behalf of BellSouth, "Local Telecommunications Competition: An Evaluation of a Proposal by the Communications Staff of the Florida Public Service Commission," filed November 21, 1997 (with A. Banerjee).

South Carolina Public Service Commission (Docket No. 97-374-C), on behalf of BellSouth Telecommunications, Inc.: rebuttal testimony concerning general economic principles for the pricing and costing of interconnection and unbundled network elements. Filed November 25, 1997.

Rhode Island Public Utilities Commission, on behalf of Bell Atlantic – Rhode Island: direct testimony discussing basic economic principles regarding costs and prices of interconnection and unbundled network elements. Filed November 25, 1997.

Federal Communications Commission (File No. SCL-97-003), on behalf of ATU Long Distance: affidavit concerning the economic effects of classifying a proposed undersea cable between Alaska and the lower 48 states as a private carrier. Filed December 8, 1997.

Federal Communications Commission (CC Docket No. 80-286), on behalf of Bell Atlantic: affidavit concerning proposed reforms of jurisdictional separations. Filed December 10, 1997.

North Carolina Utilities Commission (Docket No. P-100, SUB 133d), on behalf of BellSouth Telecommunications: direct testimony on the proper economic basis for determining costs and

prices of interconnection, unbundled network elements, and operating support systems. Filed December 15, 1997. Rebuttal filed March 9, 1998.

Massachusetts Department of Public Utilities (Docket No. DTE 98-15), on behalf of Bell Atlantic – MA: direct testimony regarding the method used to determine wholesale (avoided cost) discount that applies to resold retail services. Filed January 16, 1998.

Vermont Public Service Board (Docket no. 6000), on behalf of Bell Atlantic: direct testimony examining the likely benefits from adopting a price regulation plan. Filed January 19, 1998.

Federal Communications Commission (*ex parte* CC Docket No. 96-262 et. al.), “The Need for Carrier Access Pricing Flexibility in Light of Recent Marketplace Developments: A Primer,” research paper prepared on behalf of United States Telephone Association. Filed on January 21, 1998 (with Richard Schmalensee).

Colorado Public Utilities Commission (Docket No. 97A-540T), on behalf of U S WEST: testimony concerning the economic effects of a proposed price regulation plan. Direct testimony filed January 30, 1998. Rebuttal testimony filed May 14, 1998.

California Public Utilities Commission, on behalf of Pacific Bell: Comments on the economic principles for updating Pacific Bell’s price cap plan. Filed February 2, 1998.

Massachusetts Department of Public Utilities (Docket No. D.P.U./D.T.E. 94-185-C) on behalf of Bell Atlantic: economic analysis of the usefulness of a regulatory price floor for wholesale services. Affidavit filed February 6, 1998. Reply Affidavit filed February 19, 1998.

Pennsylvania Public Utility Commission (Docket No. P-00971307), on behalf of Bell Atlantic: direct testimony concerning the classification of Bell Atlantic’s business services in Pennsylvania as competitive and the calculation of an imputation price floor for those services. Filed February 11, 1998. Rebuttal filed February 18, 1998.

Alabama Public Service Commission (Docket No. 25980), on behalf of BellSouth Telecommunications: rebuttal testimony regarding revenue benchmarks and other matters in universal service funding. Filed February 13, 1998.

North Carolina Utilities Commission (Docket No. P-100, SUB 133g), on behalf of BellSouth Telecommunications: direct testimony on appropriate economic principles for sizing the state universal service fund. Filed February 16, 1998. Rebuttal filed April 13, 1998.

Mississippi Public Service Commission (Docket No. 98-AD-035), on behalf of BellSouth Telecommunications: direct testimony regarding universal service funding and price benchmark issues. Filed February 23, 1998, rebuttal testimony filed March 6, 1998.

State of Connecticut, Department of Public Utility Control (Docket No. 98-02-33), on behalf of Southern New England Telephone Company: direct testimony regarding reclassification of custom calling services as emerging competitive. Filed February 27, 1998.

Federal Communications Commission, *In the Matter of Applications of WorldCom, Inc. and MCI Communications Corporation for Transfer of Control of MCI Communications Corporation to WorldCom, Inc.* (CC Docket No. 97-211), affidavit on behalf of GTE Corporation analyzing the likely economic effects of the proposed acquisition of MCI by WorldCom, (with R. Schmalensee), March 13, 1998, reply affidavit filed May 26, 1998.

Mississippi Public Service Commission (Docket No. 97-AD-544), on behalf of BellSouth Telecommunications: rebuttal testimony regarding economic issues of costing and pricing unbundled network elements. Filed March 13, 1998.

New Hampshire Public Service Commission (Docket No. 97-171, Phase II), on behalf of Bell Atlantic – New Hampshire: direct testimony discussing the basic economic principles regarding costs and prices of interconnection and unbundled network elements, filed March 13, 1998. Rebuttal filed April 17, 1998.

State of New York Public Service Commission (Cases 95-C-0657, 94-C-0095, 91-C-1174 and 96-C-0036), on behalf of Bell Atlantic, *Panel Testimony of Bell Atlantic – New York on Costs and Rates for Miscellaneous Phase 3 Services*: panel testimony regarding statistical sampling issues in cost studies for non-recurring charges. Filed March 18, 1998. Rebuttal filed June 3, 1998.

Federal Communications Commission, *In the Matter of Customer Impact of New Access Charges* (CC Docket Nos. 96-262 and 96-45), affidavit on behalf of the United States Telephone Association analyzing long distance price reductions stemming from recent access charge reductions. Filed March 18, 1998.

Federal Communications Commission, *In the Matter of MCI Telecommunications Corp. Petition for Prescription of Tariffs Implementing Access Charge Reform* (CCB/CPD 98-12), affidavit on behalf of Bell Atlantic analyzing economic issues in MCI's petition for changes in the level and structure of interstate access charges. Filed March 18, 1998.

Subcommittee on Communications of the Senate Committee on Commerce, Science and Transportation, *Statement* and oral testimony regarding long distance competition and Section 271 of the Telecommunications Act of 1996. Filed March 25, 1998.

Tennessee Regulatory Authority (Docket No. 97-00888), on behalf of BellSouth Telecommunications, Inc.: direct testimony regarding appropriate economic principles for sizing the state universal service fund, Filed April 3, 1998. Rebuttal filed April 9, 1998.

Massachusetts Department of Telecommunications and Energy (D.P.U. 96-3/74, 96-75, 96-80/81, 96-83, & 96-94), on behalf of Bell Atlantic – Massachusetts: rebuttal testimony discussing the types of costs for OSSs, filed April 29, 1998.

Connecticut Department of Public Utility Control, on behalf of SBC Communications Inc. and Southern New England Telecommunications Corporation: direct testimony responding to economic allegations made by entities proposing that conditions be attached to approval by the DPUC of the SBC-SNET proposed change in control, filed June 1, 1998.

California Public Utilities Commission, on behalf of Pacific Bell: reply comments on Pacific proposal to eliminate vestiges of ROR regulation and inflation minus productivity factor formula/index, filed June 19, 1998.

The New Jersey Board of Public Utilities (BPU Docket No. TO97100808, OAL Docket No. PUCOT 11326-97N) on behalf of Bell Atlantic - New Jersey: economic analysis of imputation rules for long distance services. Direct testimony filed July 8, 1998, rebuttal testimony filed September 18, 1998.

Federal Communications Commission, Merger of SBC Communications Inc. and Ameritech Corporation, comments on behalf of SBC and Ameritech analyzing the likely effects of the proposed merger on competition. (with R. Schmalensee ) Filed July 21, 1998, reply affidavit filed November 11, 1998.

Massachusetts Department of Telecommunications and Energy (Docket No. 85-15, Phase III, Part 1), on behalf of Bell Atlantic – Massachusetts: rebuttal testimony discussing appropriate forward-looking technology for costing network elements, filed August 31, 1998.

Florida Public Service Commission (Docket No. 980696-TP) on behalf of BellSouth Telecommunications, Inc.: rebuttal testimony regarding measurements of cost for sizing a universal service fund, filed September 2, 1998.

Massachusetts Department of Telecommunications and Energy (Docket No. 98-15, Phase II), on behalf of Bell Atlantic – Massachusetts: rebuttal testimony concerning the avoided costs of resold services, filed September 8, 1998.

Rhode Island Public Utilities Commission (Docket No. 2681), on behalf of Bell Atlantic-Rhode Island: rebuttal testimony regarding costs for OSSs, filed September 18, 1998.

Florida Public Service Commission (Docket No. 980000-SP) on behalf of BellSouth Telecommunications, Inc.: “Costing and Pricing Principles for Determining Fair and Reasonable Rates Under Competition,” economic principles for pricing local exchange services, filed September 24, 1998.

Massachusetts Department of Telecommunications and Energy (Docket No. 98-67), on behalf of Bell Atlantic-Massachusetts: direct testimony regarding regulatory rules/economic principles pertaining to exogenous adjustment factors in Bell Atlantic’s price cap formula, filed September 25, 1998.

Federal Communications Commission, *In the Matter of United States Telephone Association Petition for Rulemaking—1998 Biennial Regulatory Review*, “Economic Standards for the Biennial Review of Interstate Telecommunications Regulation,” economic rationale for regulatory simplification, Attachment to the Petition for Rulemaking of the United States Telephone Association, filed September 30, 1998 (with Robert W. Hahn).

Michigan Public Service Commission (Case No. U-11756), on behalf of Ameritech Michigan: direct testimony regarding efficient prices for services supplied to independent phone payers, filed October 9, 1998.

Pennsylvania Public Utility Commission (Docket No. P-00981410), on behalf of The United Telephone Company of Pennsylvania: direct testimony regarding role of productivity offset in a price cap plan, filed October 16, 1998. Rebuttal testimony filed February 4, 1999.

Federal Communications Commission, (CC Docket No. 96-262), “AT&T, MCI, and Sprint Failed to Pass Through the 1998 Interstate Access Charge Reductions to Consumers,” study of long distance pricing, filed *ex parte* on behalf of the United States Telephone Association, October 16, 1998 (with P.S. Brandon)

Nebraska Public Service Commission, on behalf of US WEST, (Application No. C-1628), economic analysis of local exchange and exchange access pricing, direct testimony filed October 20, 1998; reply testimony filed November 20, 1998.

Massachusetts Department of Telecommunications and Energy (Docket No. 98-85), on behalf of Bell Atlantic-Massachusetts: direct testimony regarding efficiency changes from intraLATA presubscription, filed October 20, 1998.

Federal Communications Commission, (CC Docket No. 96-262), "Assessment of AT&T's Study of Access Charge Pass-Through," study of long distance pricing, filed *ex parte* on behalf of the United States Telephone Association, October 22, 1998 (with P.S. Brandon)

Federal Communications Commission, (CC Docket Nos. 96-262, 94-1, 97-250 and RM 9210), "Access Reform Again: Market-Based Regulation, Pricing Flexibility and the Universal Service Fund," Attachment A to the Comments of the United States Telephone Association, filed October 26, 1998; "Productivity and Pricing Flexibility: Reply Comments," Attachment A to the Reply Comments of the United States Telephone Association, filed November 9, 1998.

Vermont Public Service Board (Docket No. 6077), on behalf of Bell Atlantic-Vermont: rebuttal testimony regarding application of imputation standard, filed November 4, 1998.

Florida Public Service Commission (Docket No. 980000-SP) on behalf of BellSouth Telecommunications, Inc.: "Determining Fair and Reasonable Rates Under Competition: Response to Major Themes at the FPSC Workshop," economic principles for pricing local exchange services, filed November 13, 1998.

Maryland Public Service Commission (Case No. 8786), on behalf of Bell Atlantic - Maryland: rebuttal testimony regarding economic principles underlying costs and prices for non-recurring services and access to operations support systems. Filed November 16, 1998.

Federal Communications Commission, (CC Docket No. 98-137), Affidavit on behalf of the United States Telephone Association, Review of Depreciation Requirements for Incumbent Local Exchange Carriers, November 23, 1998. (with A. Banerjee).

South Carolina Public Service Commission (Docket No. 97-124-C), on behalf of BellSouth Telecommunications, Inc.: rebuttal testimony concerning economic principles for pricing interconnection services supplied to payphone providers. Filed December 7, 1998.

Rhode Island Public Utilities Commission (Docket No. 2681), on behalf of Bell Atlantic: rebuttal testimony regarding entry into the local services telecommunications market. Filed January 15, 1999.

Pennsylvania Public Utility Commission, on behalf of Bell Atlantic-Pennsylvania: A report entitled "Promises Fulfilled; Bell Atlantic-Pennsylvania's Infrastructure Development." Filed January 15, 1999 (with Charles J. Zarkadas, Agustin J. Ros, and Jaime C. d'Almeida).

Federal Communications Commission (Docket No. 99-24), affidavit on behalf of Bell Atlantic: economic requirements for regulatory forbearance for special access services. Filed January 20, 1999 (with Karl McDermott). Reply affidavit responding to claims that Bell Atlantic retains market power in the provision of special access filed April 8, 1999.

Alaskan Public Utilities Commission, (Docket Nos. U-98-140/141/142 and U-98-173/174), testimony regarding the economic effects on competition of the acquisitions of Telephone Utilities of Alaska, Telephone Utilities of the Northland, Inc., and PTI Communications of Alaska by ALEC Acquisition Sub Corporation and of Anchorage Telephone Utility and ATU Long Distance, Inc. by Alaska Communications Systems, Inc. Filed February 2, 1999. Rebuttal testimony filed March 24, 1999.

Comisión Federal de Telecomunicaciones de México ("Cofetel"), "Economic Parameter Values in the Telmex Price Cap Plan," arbitrator's report on behalf of COFETEL and Telmex regarding the renewal of the price cap plan for Telmex, February 15, 1999.

Washington Public Utilities Commission (Docket No. UT-990300), on behalf of US WEST, regarding US WEST's interconnection arbitration with AirTouch Paging in Washington. Direct testimony filed February 24, 1999; rebuttal testimony filed March 8, 1999.

The New Jersey Board of Public Utilities (OAL DOCKET Nos. PUCOT 11269-97N, PUCOT 11357-97N, PUCOT 01186-94N AND PUCOT 09917-98N) on behalf of Bell Atlantic - New Jersey: economic issues regarding alleged subsidization of payphone services. Rebuttal testimony filed March 8, 1999; surrebuttal testimony filed June 21, 1999.

Colorado Public Utilities Commission (Docket No. 99A-001T), on behalf of US WEST, regarding US WEST's interconnection arbitration with AirTouch Paging in Colorado. Rebuttal testimony filed March 15, 1999.

Massachusetts Department of Telecommunications and Energy (Docket No. D.T.E. 97-116-B), on behalf of Bell Atlantic-Massachusetts, affidavit regarding consequences for economic efficiency of different intercarrier compensation rules for ISP-bound traffic. Filed March 29, 1999.

Kentucky Public Service Commission (Docket No. 98-292), on behalf of Cincinnati Bell Telephone Company, direct testimony regarding proposed price regulation plan containing earnings sharing requirements. Filed April 5, 1999.

New Hampshire Public Utilities Commission (Docket No. 99-018), on behalf of Bell Atlantic, direct testimony regarding the use of Total Element Long Run Incremental Cost (TELRIC) methodology as the basis for prices in special contracts. Filed April 7, 1999. Rebuttal testimony filed April 23, 1999.

Pennsylvania Public Utility Commission (Docket Nos. A-310200F0002, A-311350F0002, A-310222F0002, A-310291F0003), on behalf of Bell Atlantic Corporation and GTE Corporation, rebuttal testimony regarding economic issues raised in the proposed merger of Bell Atlantic and GTE. Filed April 22, 1999.

Wyoming Public Service Commission (Docket No. 70000-TR-99), on behalf of US West Communications, direct testimony evaluating proposed prices of non-competitive US West services with regards to cost, pricing, competition, & regulation. Filed April 26, 1999.

Vermont Public Service Board (Docket No. 6167), on behalf of Bell Atlantic, rebuttal testimony regarding reduction of access charges & pricing of new services. Filed May 20, 1999. Supplemental testimony filed May 27, 1999.

State Corporation Commission of Virginia *In re: Joint Petition of Bell Atlantic Corporation and GTE Corporation for approval of agreement and plan of merger*, economic effects of the proposed merger of Bell Atlantic and GTE. File May 28, 1999, rebuttal testimony filed October 8, 1999.

Connecticut Department of Public Utility Control (Docket No. 95-06-17RE02), on behalf of The Southern New England Telephone Company, rebuttal testimony regarding local competition and reseller market. Filed June 8, 1999.

Ohio Public Utility Commission (Docket No. 98-1398-TP-AMT), on behalf of Bell Atlantic and GTE, rebuttal testimony concerning economic effects of the proposed merger of Bell Atlantic and GTE. Filed June 16, 1999, substitute rebuttal testimony filed October 12, 1999.

Connecticut Department of Public Utilities (Docket No. 99-03-17), on behalf of The Southern New England Telephone Company, rebuttal testimony regarding market power and termination liabilities in contracts. Filed June 18, 1999.

Kentucky Public Service Commission (Docket No. 99-296), on behalf of GTE & Bell Atlantic, direct testimony on the effects of the Bell Atlantic-GTE merger on competition in Kentucky and on the benchmarking abilities of regulators. Filed July 9, 1999, rebuttal testimony filed August 20, 1999.

- North Carolina Utilities Commission, *In re: Petition for Arbitration of ITC^DELTA COM Communications, Inc., with BellSouth Telecommunications, Inc., Pursuant to the Telecommunications Act of 1996*, (Docket No. P-500, Sub 10), testimony regarding economic interconnection issues, filed July 9, 1999.
- Massachusetts Department of Telecommunications & Energy (Docket No. 94-185-E), on behalf of Bell Atlantic, rebuttal testimony re: inclusion of overhead costs in the calculation of price floors for BA-MA services. Filed July 26, 1999.
- North Carolina Utilities Commission, *In the Matter of Bell South Telecommunications, Inc., Complainant vs. US LEC of North Carolina, Respondent*, (Docket No. P-561, Sub 10), rebuttal testimony regarding economic efficiency and reciprocal compensation. Filed July 30, 1999.
- Public Service Commission of South Carolina, *In re: Petition for Arbitration of ITC^DELTA COM Communications, Inc., with BellSouth Telecommunications, Inc., Pursuant to the Telecommunications Act of 1996*, (Docket No 1999-259-C), on behalf of BellSouth Telecommunications, testimony regarding economic interconnection issues. Filed August 25, 1999.
- Louisiana Public Service Commission (Docket No. U-24206), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic. Filed September 3, 1999, rebuttal filed September 17, 1999.
- Florida Public Service Commission (Docket No. 990750-TP), on behalf of BellSouth Telecommunications, rebuttal testimony regarding intercarrier compensation for Internet-bound traffic, filed September 13, 1999.
- New Mexico Public Regulation Commission (Case No. 3131), On behalf of U S WEST Communications, direct testimony regarding intercarrier compensation for Internet-bound traffic, filed October 14, 1999. Rebuttal testimony filed October 18, 1999.
- Alabama Public Service Commission (Docket No. 27091), on behalf of BellSouth Telecommunications, rebuttal testimony regarding intercarrier compensation for Internet-bound traffic, filed October 14, 1999.
- Tennessee Regulatory Authority (Docket No. 99-00430), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic in Arbitration with ITC-DeltaCom, filed October 15, 1999. Rebuttal testimony filed October 25, 1999.

Tennessee Regulatory Authority (Docket No. 99-00377), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic in Arbitration with ICG Telecom Group, filed October 15, 1999. Rebuttal testimony filed October 25, 1999.

Mississippi Public Service Commission (Docket No. 99-AD-421), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic, filed October 20, 1999. Rebuttal testimony filed November 12, 1999.

Kentucky Public Service Commission (Docket No. 99-218), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic, filed October 21, 1999. Rebuttal testimony filed November 19, 1999.

Rhode Island Public Utilities Commission (Docket No. 2681), on behalf of Bell Atlantic Rhode Island, direct testimony regarding incremental costs and switched access rates. Filed October 22, 1999.

Georgia Public Service Commission (Docket No. 10767-U), on behalf of BellSouth Telecommunications, rebuttal testimony regarding intercarrier compensation for Internet-bound traffic, filed October 25, 1999.

Federal Communications Commission (Docket No. 96-262), on behalf of United States Telephone Association, comments regarding rate structures for the local switching service category of the traffic-sensitive basket and common line basket, filed October 29, 1999. Reply comments filed November 29, 1999.

Oregon Public Utility Commission (ARB 154) on behalf of US WEST Communications, direct testimony regarding intercarrier compensation for ISP-bound traffic, November 1, 1999, rebuttal testimony filed November 5, 1999.

Federal Communications Commission (Docket No. 99-68), "An Economic and Policy Analysis of Efficient Intercarrier Compensation Mechanisms for Internet-Bound Traffic," on behalf of U S WEST Communications, *ex parte* analysis of intercarrier compensation plans for ISP-bound traffic, November 12, 1999 (with A. Banerjee and A. Ros).

Georgia Public Service Commission (Docket No. 10854-U), on behalf of BellSouth Telecommunications, direct testimony regarding intercarrier compensation for Internet-bound traffic, filed November 15, 1999, rebuttal testimony filed November 22, 1999.

- Idaho Public Utilities Commission (Case No. GST-T-99-1), on behalf of US West Communications, Inc., direct testimony regarding intercarrier compensation for ISP-bound traffic, November 22, 1999, rebuttal testimony filed December 2, 1999.
- New Mexico Public Regulation Commission (Utility Case No. 3147), on behalf of US West Communications, Inc., direct testimony regarding efficient pricing and policies towards investment and new service implementation, filed December 6, 1999, rebuttal testimony filed December 28, 1999.
- Colorado Public Utilities Commission (Docket No. 99A-407T), on behalf of US West Communications, Inc., rebuttal testimony regarding the effects of the proposed Qwest-US West merger on economic welfare, filed December 7, 1999.
- New Mexico Public Regulation Commission, on behalf of US West Communications, Inc., direct testimony regarding pricing flexible and alternatives to rate of return regulation, filed December 10, 1999.
- Iowa Utilities Board, on behalf of US West Inc. & Qwest Communications Intl, Inc., rebuttal testimony regarding public interest effects of the proposed merger, filed December 23, 1999.
- Federal Communications Commission (Docket Nos. 94-1, 96-26), comments on behalf of the United States Telecom Association regarding the proposed prescription of the productivity offset in the FCC's price cap plan, January 7, 2000. Reply comments filed January 24, 2000, Ex parte presentation filed May 5, 2000.
- Minnesota Public Utilities Commission (Docket No. P3009, 3052, 5096, 421, 3017/PA-99-1192), on behalf of U S WEST Communications, Inc., rebuttal affidavit regarding the effects of the proposed Qwest-US West merger on economic welfare. Filed January 14, 2000.
- Washington Utilities and Transportation Commission (Docket No. UT-991358), rebuttal testimony regarding the effects of the proposed Qwest-US West merger on economic welfare. Filed February 22, 2000.
- Montana Public Service Commission (Docket No. D99.8.200), rebuttal testimony regarding the effects of the proposed Qwest-US West merger on economic welfare. Filed February 22, 2000.
- Utah Public Service Commission (Docket No. 99-049-41), rebuttal testimony regarding the effects of the proposed Qwest-US West merger on economic welfare. Filed February 28, 2000.

Texas Public Utility Commission (Docket No. 21982), on behalf of Southwestern Bell Telephone Company, direct testimony regarding CLEC's rate for transport and termination of ISP-bound traffic. Filed March 13, 2000. Rebuttal testimony filed March 31, 2000.

Arizona Corporation Commission (Docket Nos. T-02432B-00-0026, T-01051B-00-0026), on behalf of US WEST Communications, Inc., direct testimony regarding intercarrier compensation for Internet-bound traffic. Filed March 27, 2000.

Colorado Public Utilities Commission (Docket No. 00B-011T), on behalf of US West Communications, Inc., direct testimony regarding intercarrier compensation for Internet-bound traffic. Filed March 28, 2000.

Minnesota Public Utilities Commission (Docket No. P3009, 3052, 5096, 421, 3017/PA-99-1192), direct testimony regarding the effects of the proposed Qwest-US West merger on economic welfare. Filed March 29, 2000.

Arizona Corporation Commission (Docket No. T-01051B-99-0497), on behalf of US WEST Communications, Inc., rebuttal testimony regarding economic issues arising in the proposed merger between U S WEST and Qwest. Filed April 3, 2000.

Wyoming Public Service Commission (Docket Nos. 74142-TA-99-16, 70000-TA-99-503, 74037-TA-99-8, 70034-TA-99-4, 74089-TA-99-9, 74029-TA-99-43, 74337-TA-99-2, Record No. 5134), on behalf of US West Communications, rebuttal testimony regarding economic issues arising in the proposed merger between U S WEST and Qwest. Filed April 4, 2000.

Pennsylvania Public Utility Commission (Docket No. A-310630F0002), on behalf of Bell Atlantic, direct testimony regarding the measurement of economic costs of ISP-bound traffic and economic issues concerning intercarrier compensation for such traffic. Filed April 14, 2000. Rebuttal testimony filed April 21, 2000.

Delaware Public Service Commission (PSC Docket No. 00-205), on behalf of Bell Atlantic-Delaware, direct testimony responding to the Petition for Arbitration of Focal Communications Group. Filed April 25, 2000.

Virginia State Corporation Commission, on behalf of Bell Atlantic-Virginia, direct testimony responding to the Petition for Arbitration of Focal Communications Group. Filed April 25, 2000.

The New Jersey Board of Public Utilities (Docket No. TO 00031063), on behalf of Bell Atlantic-New Jersey, direct testimony regarding the measurement of economic costs of ISP-bound

traffic and economic issues concerning intercarrier compensation for such traffic. Filed April 28, 2000. Rebuttal testimony filed May 5, 2000.

July, 2001