

PUBLIC DISCLOSURE VERSION

1 **ON BEHALF OF BELL SOUTH TELECOMMUNICATIONS, INC.**
2 **DIRECT TESTIMONY OF ANIRUDDHA (ANDY) BANERJEE, Ph.D.**
3 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**
4 **DOCKET NO. 030852-TP**
5 **DECEMBER 22, 2003**

6 **I. INTRODUCTION AND SUMMARY**

7 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT**
8 **POSITION.**

9
10 A. My name is Aniruddha (Andy) Banerjee. I am a Vice President at NERA Economic
11 Consulting located at One Main Street, Cambridge, Massachusetts 02142.

12
13 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL, PROFESSIONAL, AND**
14 **BUSINESS EXPERIENCE.**

15
16 A. I earned a Bachelor of Arts (with Honors) and a Master of Arts degree in Economics
17 from the University of Delhi, India, in 1975 and 1977 respectively. I received a
18 Ph.D. in Agricultural Economics from the Pennsylvania State University in 1985,
19 and subsequently served there as an Assistant Professor of Economics. I have over
20 eight years of experience teaching undergraduate and graduate courses in various
21 fields of Economics, and have conducted academic research that has led to several
22 publications and conference presentations.

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1 Since 1988, I have held various positions in the telecommunications industry. Prior
2 to my present position, I have been an economist in the Market Analysis &
3 Forecasting Division at AT&T Communications in Bedminster, NJ, a Member of
4 Technical Staff at Bell Communications Research in Livingston, NJ, and a Research
5 Economist at BellSouth Telecommunications in Birmingham, AL. In these
6 positions, I was responsible for conducting economic and market analysis, building
7 quantitative demand models for telecommunications services, developing economic
8 positions and strategies, and providing expert testimony support on regulatory
9 economic matters.

10

11 In my present capacity, I provide quantitative and regulatory economic analysis for
12 telecommunications industry clients principally on matters of concern to local
13 exchange carriers. I have testified before state and federal regulators on
14 interconnection and unbundling, universal service, local and long distance
15 competition, efficient rate rebalancing, and inter-carrier compensation. I have
16 participated in several proceedings on antitrust damage issues, price and alternative
17 regulation, and telephone company mergers. I have published several papers and
18 made several presentations at international forums on topics such as telephone
19 service quality performance, mobile telephony growth, telecommunications
20 privatization, and Internet economics. My curriculum vita is attached to this
21 testimony as Exhibit

22 AXB-1.

23

1 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE FLORIDA PUBLIC**
2 **SERVICE COMMISSION?**

3
4 A. Yes. I have testified before the Florida Public Service Commission (“Commission”)
5 in a number of proceedings, most recently in the “rate rebalancing” proceeding
6 (Docket Nos. 030961-TL, 030867-TL, 030868-TL, and 030869-TL).

7
8 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

9
10 A. In my Direct Testimony, I present evidence based on the potential deployment test
11 for determining whether or not competitive local exchange carriers (“CLECs”) are
12 impaired without access to an incumbent local exchange carrier’s (“ILEC’s”)
13 unbundled network elements (“UNEs”). This test is prescribed by the Federal
14 Communications Commission (“FCC”) for circumstances in which specific
15 “triggers”—signifying actual competitive availability of the desired UNEs—do not
16 exist. My testimony covers issues 4,6,13, and 19.

17
18 **Q. WHAT ARE YOUR PRINCIPAL CONCLUSIONS?**

19
20 A. Upon applying the potential deployment test to loops and transport facilities in
21 BellSouth’s service territory in Florida, I find that CLECs are not impaired without
22 access to BellSouth’s unbundled loops in 387 customer locations, and CLECs are not

1 impaired without access to BellSouth's transport facilities on 91 routes.

2

3 **Q. ARE THESE CUSTOMER LOCATIONS AND ROUTES INCREMENTAL**
4 **TO THOSE ALREADY INCLUDED IN THE TRIGGERS ANALYSIS?**

5

6 A. The routes identified in the potential deployment test are incremental to those
7 included in the triggers analysis. However, because of differences in building-
8 address conventions, it is possible that – despite best efforts – some overlap may
9 remain between the customer locations identified in the potential deployment test
10 and in the triggers analysis. Any overlap should not, however, be considered
11 particularly significant because the customer locations in that overlap would already
12 qualify for relief under the triggers analysis.

13

14 **II. POTENTIAL LOOP DEPLOYMENT**

15 **Issue 4: If neither the self-provisioning nor the wholesale triggers for DS3 loops is**
16 **satisfied at a specific customer location, using the potential deployment criteria**
17 **specified in §51.319(a)(5)(ii), what evidence of non-impairment for a DS3 loop at a**
18 **specific customer location exists? Is this evidence sufficient to conclude that there is**
19 **no impairment at a specific customer location?**

20

1 **Issue 6: If the self-provisioning trigger for dark fiber loops is not satisfied at a**
2 **specific customer location, using the potential deployment criteria specified in**
3 **§51.319(a)(6)(ii), what evidence of non-impairment for dark fiber loops at a specific**
4 **customer location exists? Is this evidence sufficient to conclude that there is no**
5 **impairment at a specific customer location?**

6

7 **Q. PLEASE DESCRIBE THE FCC'S POTENTIAL DEPLOYMENT TEST FOR**
8 **IDENTIFYING CUSTOMER LOCATIONS WHERE CLECS ARE NOT**
9 **IMPAIRED WITHOUT ACCESS TO UNBUNDLED LOOPS FROM THE**
10 **ILEC?**

11

12 A. For DS3 and dark fiber, the FCC's *Triennial Review Order*¹ allows state
13 commissions to analyze "whether [a] particular customer location *could* be
14 economically served by competitive carriers through deployment of alternative loop
15 transmission facilities" even if the location does not meet the triggers test provided
16 by the FCC.²

17

18 The FCC requires that, in conducting such an analysis, a state must consider and may

¹ FCC, *In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, CC Docket No. 01-338, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, and *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking ("*Triennial Review Order*"), released August 21, 2003.

² *Triennial Review Order*, at ¶335.

1 also find no impairment at a particular customer location even when this trigger has
2 not been facially met if the state commission finds that no material economic or
3 operational barriers at a customer location preclude competitive LECs from
4 economically deploying loop transmission facilities to that particular customer
5 location at the relevant loop capacity level. In making a determination that
6 competitive LECs could economically deploy loop transmission facilities at that
7 location at the relevant capacity level, the state commission must consider various
8 factors affecting the ability to economically deploy at that particular customer
9 location. These factors include: evidence of alternative loop deployment at that
10 location; local engineering costs of building and utilizing transmission facilities; the
11 cost of underground or aerial laying of fiber or copper; the cost of equipment needed
12 for transmission; installation and other necessary costs involved in setting up service;
13 local topography such as hills and rivers; availability of reasonable access to rights-
14 of-way; building access restrictions/costs; availability/feasibility of similar
15 quality/reliability alternative transmission technologies at that particular location.³

16
17 **Q. WHAT IS THE PURPOSE OF BELL SOUTH'S POTENTIAL DEPLOYMENT**
18 **ANALYSIS?**

19
20 A. The purpose of BellSouth's potential deployment analysis for loops is to identify
21 locations that do not meet the triggers, but which "could be economically served by

³ *Id.*

1 competitive carriers” when the criteria described above are examined. As I show
2 below, 387 such locations have been identified in BellSouth’s service territory in
3 Florida.

4

5 **Q. HOW MANY CLECS ARE REQUIRED TO “ECONOMICALLY SERVE A**
6 **LOCATION?”**

7

8 A. In the self-provisioning trigger analysis described above, the *Triennial Review Order*
9 sets *two* CLECs as the lower threshold for competitive supply that would be
10 sufficient for non-impairment. Therefore, I assume that a minimum of two CLECs is
11 also required in my potential deployment analysis. That is, if one actual CLEC
12 currently serves a location, to establish non-impairment it would only require the
13 demonstration that one more CLEC could potentially deploy loop facilities to that
14 location. If no actual CLEC currently serves that location, then it would be necessary
15 to demonstrate that two CLECs would potentially be able to deploy loop facilities.
16 This methodology allows me to take into account “evidence of alternative loop
17 deployment at that location,” as the *Triennial Review Order* requires.

18

19 **Q. PLEASE DESCRIBE BELLSOUTH’S POTENTIAL DEPLOYMENT**
20 **ANALYSIS AT A CONCEPTUAL LEVEL.**

21

22 A. BellSouth’s potential deployment analysis investigates the economic attractiveness

1 to CLECs of deploying fiber-based loop facilities to additional customer locations
2 where they may not have such facilities at the present time. The financial viability of
3 extending fiber to an additional location is determined using a net present value
4 (“NPV”) test, as prescribed by the *Triennial Review Order* (fn. 260). That is, with a
5 positive NPV, it is economically rational for a carrier to deploy fiber to that location,
6 as the potential revenue exceeds the potential cost. The “revenue” in this case is
7 derived from the portion of end-user spending that a CLEC could capture by serving
8 a particular location. The “cost” comprises the expenses that the CLEC would incur
9 (both upfront and on an ongoing basis) to extend its network by deploying fiber to
10 the additional location from its nearest current “fiber node,” i.e., a currently
11 collocated wire center or facilities-served building.
12

13 **Q. HOW DO YOU CALCULATE THE REVENUE OPPORTUNITY PER**
14 **BUILDING?**

15
16 A. I use data from TNS Telecoms, a third-party data source that provides an estimate of
17 wireline telecommunications spending per tenant for business locations nationwide.
18 For each building located in BellSouth’s service territory in Florida, I sum the
19 spending of all tenants in that building to get an estimate of the total end-user
20 spending per building.
21
22

1 **Q. DO YOU BELIEVE THAT TNS TELECOMS IS AN ACCURATE SOURCE**
2 **OF DATA ON TELECOMMUNICATIONS SPENDING?**

3
4 A. Yes. TNS Telecoms is the leading market research firm for site-specific demand for
5 telecommunications services. In the context of universal service, the FCC, AT&T,
6 MCI, and many other companies have relied on TNS Telecoms to estimate the exact
7 locations of business and voice lines. Moreover, a comparison of revenue estimates
8 from TNS Telecoms with national revenue estimates made by J.P. Morgan confirms
9 that the estimated spending reported by TNS Telecoms is reasonable and even a little
10 conservative (about 10% lower).

11

12 **Q. HOW DO YOU DETERMINE THE COST TO DEPLOY LOOP FACILITIES**
13 **PER BUILDING?**

14

15 A. This calculation proceeds in two steps. First, I determine the length of the fiber
16 facilities that a carrier would have to deploy in order to connect a building to its
17 network. Next, I determine the costs of installing and providing service over such a
18 facility.

19

20

21

22

1 **Q. HOW DO YOU DETERMINE THE LENGTH OF THE FIBER LOOP THAT**
2 **A CLEC NEEDS TO EXTEND ITS FACILITIES TO A CUSTOMER**
3 **LOCATION?**

4
5 A. The determination of the length of the fiber loop requires the creation of two tables.
6 The first table contains, for each CLEC, information on every building and wire
7 center currently connected by its self-deployed fiber. This is the same information
8 (compiled from discovery and BellSouth's internal data) that is used by BellSouth
9 witness Shelly Padgett in her Direct Testimony in this proceeding to conduct the
10 triggers tests for unbundled loop and transport facilities. BellSouth's internal records
11 and standard address-matching software provide the "V&H coordinates," or latitude
12 and longitude, for every building and wire center.

13
14 The second table contains all buildings in the TNS Telecoms database that are
15 associated with at least \$5,000 of estimated retail wireline spending per month (this
16 minimum spending threshold is a conservative "filter" that is applied to make the
17 table smaller and, therefore, more manageable). This file also includes the latitude
18 and longitude for each building, as provided by TNS Telecoms.

19
20 Given the two tables, a simple program in Microsoft Excel and Visual Basic is used
21 to determine, for every building in the second table, the two CLECs that have the
22 nearest "fiber nodes," defined as the buildings or wire centers where they have
23 already deployed fiber (as listed in the first table). Distance between the building

1 under consideration for potential deployment and the nodes is calculated as the
2 North/South right angle distance, which generally overestimates the distance because
3 a more direct route can usually be found. The specific formula used for this purpose
4 is described in the FCC's rules in 47 CFR Section 73.208(c).

5
6 **Q. HOW DO YOU DETERMINE THE COST FOR A CLEC TO EXTEND LOOP**
7 **FACILITIES TO A CUSTOMER LOCATION?**

8
9 A. The necessary elements to construct the loop and the cost of each such element are
10 presented in the Direct Testimony of BellSouth witness Wayne Gray in this
11 proceeding. I rely upon Mr. Gray's evidence to establish the physical cost of the
12 loop in my analysis.

13
14 **Q. WHAT ADDITIONAL COSTS DO YOU CONSIDER?**

15
16 A. I consider four other types of cost that CLECs incur to serve customers: (1) cost of
17 goods sold (COGS), (2) other network costs (i.e., not including the loop which was
18 already covered above), (3) sales and marketing (S), and (4) general and
19 administrative (G&A).

20
21 I use the BellSouth Analysis of Competitive Entry ("BACE") model for business

1 customers with four or more lines to determine COGS and other network costs.⁴
2 Based on this model, COGS and other network costs combined are 25% of revenue.
3 Sales and marketing cost is assumed to be ***** times the monthly revenue.⁵
4 Sales cost is incurred in year zero (the first year of operations), along with other
5 costs of establishing service to a customer. In addition, sales and marketing cost is
6 incurred on an ongoing basis as the CLEC offsets the churn of 20% per year for
7 business customers with other gross customer additions. Finally, G&A is assumed to
8 be 27.4% of revenue, obtained as a weighted average of G&A costs for long distance
9 voice service (15% of revenue) and remaining services (28.5% of revenue).⁶

10

11 **Q. HAVING DETERMINED THE REVENUES AND COSTS, HOW DO YOU**
12 **CALCULATE THE NPV OF THE DEPLOYMENT?**

13

14 A. The NPV is calculated in the standard way from the after-tax cash flows, assuming
15 that all capital expenditures are made in year zero and depreciate over 10 years and
16 using the tax and cost of capital assumptions that were filed in Docket No. 030851-
17 TP. That is:

18 1. Calculate the required capital expenditure in year zero.

⁴ See Direct Testimony of James Stegeman in Docket No. 030851-TP (the proceeding that considers whether there is impairment for the switching UNE).

⁵ See Direct Testimony of Debra Aron in Docket No. 030851-TP.

⁶ See Direct Testimony of Debra Aron in Docket No. 030851-TP.

- 1 2. Calculate the annual depreciation and the resulting depreciation tax-shield using
- 2 an average tax rate of 39%.
- 3 3. Calculate network-operating expenses, including COGS and SG&A.
- 4 4. Calculate pre-tax operating income by subtracting network operating expenses
- 5 from revenue.
- 6 5. Calculate after-tax operating income and, hence, cash flows (by adding the
- 7 depreciation tax shield).
- 8 6. Calculate the 10-year NPV, using the mid-year convention for cash flows and a
- 9 discount rate of 10.8%. To be conservative, I do not assume any continuing
- 10 value beyond the 10-year period.

11

12 **Q. HOW DO YOU SELECT THE BUILDINGS THAT SATISFY THE**
13 **POTENTIAL DEPLOYMENT TEST?**

14

- 15 A. The buildings that satisfy the potential deployment test are those with NPV > 0 at
- 16 some assumed market share. To be conservative, I assume that any building that
- 17 requires the CLEC to achieve a market share of 15% or less for the loop deployment
- 18 to yield a positive NPV satisfies the potential deployment test. This assumption is
- 19 consistent with the information found in JP Morgan's Broadband 2001 (which
- 20 estimates that the overall CLEC share of telecommunications spending in a building
- 21 could be as high as 50%) and with CLEC experience in the marketplace.

1 **Q. BASED ON THE ANALYSIS THAT YOU HAVE JUST DESCRIBED,**
2 **WHICH CUSTOMER LOCATIONS SATISFY THE POTENTIAL**
3 **DEPLOYMENT TEST FOR NON-IMPAIRMENT WITH RESPECT TO**
4 **LOOPS AND DARK FIBER?**

5

6 A. Exhibit AXB-2 shows the list of customer locations that satisfy the test for potential
7 deployment of fiber-based facilities. These buildings therefore meet the test for
8 potential deployment of dark fiber and DS3 loops, and I conclude that there is no
9 impairment for these facilities at the locations on that list.

10

11 **Q. ARE YOU SUBMITTING THE FINAL LIST OF BUILDINGS THAT**
12 **QUALIFY FOR UNBUNDLING RELIEF ON THE BASIS OF THE**
13 **POTENTIAL DEPLOYMENT TEST?**

14

15 A. No. BellSouth reserves the right to change the list of buildings after receiving
16 responses to additional discovery requests.

17

18 **III. POTENTIAL TRANSPORT DEPLOYMENT**

19 **Issue 13: If neither the self-provisioning nor the wholesale triggers for DS3 level**
20 **dedicated transport is satisfied along a route, using the potential deployment criteria**
21 **specified in §51.319(e)(2)(ii), what evidence of non-impairment for DS3 level**
22 **dedicated transport on a specific route exists? Is this evidence sufficient to conclude**

1 that there is no impairment along this route?

2

3 **Issue 19: If neither the self-provisioning nor the wholesale triggers for dark fiber**
4 **transport is satisfied along a route, using the potential deployment criteria specified**
5 **in §51.319(e)(3)(ii), what evidence of non-impairment for dark fiber on a specific**
6 **route exists? Is this evidence sufficient to conclude that there is no impairment**
7 **along this route?**

8

9 **Q. PLEASE DESCRIBE THE FCC'S POTENTIAL DEPLOYMENT TEST FOR**
10 **IDENTIFYING ROUTES WHERE CLECS ARE NOT IMPAIRED**
11 **WITHOUT ACCESS TO UNBUNDLED TRANSPORT FROM THE ILEC.**

12

13 A. For DS3 and dark fiber, the *Triennial Review Order* allows state commissions to
14 analyze the “potential ability of competitive LECs to deploy transport facilities along
15 a particular route” even if the route does not meet the triggers described above.⁷

16

17 The FCC requires that in conducting this analysis, the state must consider and may
18 also find no impairment on a particular route that it finds is suitable for “multiple,
19 competitive supply,” but along which this trigger is not facially satisfied. States must
20 expressly base any such decision on the following economic characteristics: local

⁷ *Triennial Review Order*, at ¶410.

1 engineering costs of building and utilizing transmission facilities; the cost of
2 underground or aerial laying of fiber; the cost of equipment needed for transmission;
3 installation and other necessary costs involved in setting up service; local topography
4 such as hills and rivers; availability of reasonable access to rights-of-way; the
5 availability or feasibility of alternative transmission technologies with similar quality
6 and reliability; customer density or addressable market; and existing facilities-based
7 competition.⁸

8

9 **Q. WHAT IS THE PURPOSE OF BELLSOUTH'S POTENTIAL DEPLOYMENT**
10 **ANALYSIS?**

11

12 A. The purpose of BellSouth's potential deployment analysis is to identify routes that
13 do not meet the triggers for transport, but which are suitable for "multiple
14 competitive supply" when the criteria described above are examined. As I show
15 below, 91 such routes have been identified in BellSouth's service territory in Florida.

16

17 **Q. HOW MANY CLECS ARE REQUIRED ON A ROUTE FOR "MULTIPLE**
18 **COMPETITIVE SUPPLY?"**

19

20 A. In the self-provisioning trigger analysis described above, the *Triennial Review Order*

⁸ *Id.*

1 sets *three* CLECs as the lower threshold for “multiple competitive supply” that
2 would be sufficient for non-impairment. Therefore, I assume that a minimum of
3 three CLECs is also required in my potential deployment analysis. That is, if two
4 actual CLECs currently serve a route, to establish non-impairment, it would only
5 require the demonstration that one more CLEC could potentially deploy transport
6 facilities along that route. If no actual CLEC currently serves that route, then it
7 would be necessary to demonstrate that three CLECs would potentially be able to
8 deploy transport facilities. This methodology allows me to take into account
9 “existing facilities-based competition,” as the *Triennial Review Order* requires.

10

11 **Q. PLEASE DESCRIBE BELLSOUTH’S POTENTIAL DEPLOYMENT**
12 **ANALYSIS AT A CONCEPTUAL LEVEL.**

13

14 A. BellSouth’s potential deployment analysis investigates the economic attractiveness
15 to CLECs of deploying fiber-based transport facilities to additional BellSouth wire
16 centers where they may not have such facilities at the present time. The financial
17 viability of extending fiber to an additional wire center is determined using a NPV
18 test, as prescribed by the *Triennial Review Order* (fn. 260). That is, with a positive
19 NPV it is economically rational for a CLEC to deploy fiber to that wire center, as the
20 potential revenue exceeds the potential cost.

21

22 The “revenue” in this case (unlike that in the potential loop deployment situation) is
23 the savings that a CLEC could realize by no longer having to lease from BellSouth

1 the unbundled transport and special access for routes that connect the wire center to
2 other wire centers where the CLEC is already collocated.⁹ The “cost” comprises the
3 expenses that the CLEC would incur (both upfront and on an ongoing basis) to
4 extend its network by deploying fiber to the additional wire center from its nearest
5 current collocation site where it has fiber facilities.

6
7 From an economic perspective, this analysis represents the familiar “buy or build”
8 decision. Its purpose is to determine whether it is more economical for the CLEC to
9 continue leasing transport facilities from BellSouth or to build its own facilities.

10

11 **Q. HOW DO YOU DETERMINE THE POTENTIAL REVENUE WHEN A**
12 **CLEC EXTENDS ITS NETWORK TO AN ADDITIONAL WIRE CENTER**
13 **BY INVESTING IN ITS OWN FIBER TRANSPORT FACILITIES?**

14

15 A. As described above, the potential revenue to a CLEC from extending its network to
16 an additional wire center where it is not currently collocated can be conservatively
17 estimated as that CLEC’s current total spending on BellSouth-leased transport from
18 that wire center to other wire centers within its network. This spending, which the
19 CLEC saves (or avoids) by deploying its own fiber transport facilities, is determined
20 for every CLEC from BellSouth’s actual September 2003 billing records for
21 wholesale transport (UNE and special access). Although a CLEC that has installed

⁹ This is a conservative estimate because it ignores the additional savings that may be realized if the CLEC currently buys transport at higher rates from wholesalers other than BellSouth.

1 its own facilities could likely generate additional revenue by wholesaling transport to
2 other carriers, my conservative estimate of potential CLEC revenue does not account
3 for that possibility.
4

5 **Q. HOW DO YOU DETERMINE THE CLEC'S ADDITIONAL COST TO**
6 **EXTEND ITS NETWORK TO AN ADDITIONAL WIRE CENTER?**
7

8 A. A CLEC's network is typically fully interconnected, i.e., transport facilities connect
9 every wire center within a LATA at which the CLEC is collocated. It follows that,
10 to add a new wire center to its network, a CLEC merely has to extend fiber to it from
11 any location at which it is currently collocated. To calculate the cost of that network
12 extension, it is first necessary to identify the nearest location from which the
13 extension can be made. Subsequently, it is necessary to determine the expenses that
14 would be incurred to lay the new fiber and add the equipment needed to make the
15 fiber operationally ready to provide transport. I describe each of these steps below.
16

17 **Q. IN CONSIDERING A WIRE CENTER THAT MAY BE ADDED TO THE**
18 **CLEC'S NETWORK, HOW DO YOU DETERMINE THE NEAREST**
19 **LOCATION (WIRE CENTER) WHERE THE CLEC CURRENTLY HAS**
20 **FIBER?**
21

22 A. That determination requires the creation of two tables. The first table contains, for

1 each CLEC, information on every building and wire center currently connected by its
2 self-deployed fiber. This is the same information (compiled from discovery and
3 BellSouth's internal data) that is used in BellSouth witness Shelly Padgett's Direct
4 Testimony to conduct the triggers tests for unbundled loop and transport facilities.
5 BellSouth's internal records and standard address-matching software provide the
6 "V&H coordinates," or latitude and longitude, for every wire center.

7

8 The second table contains, for each CLEC, the remaining wire centers at which the
9 CLEC is *not* collocated present ly, but at which it could *potentially* collocate to
10 augment its existing network.

11

12 Given the two tables, simple queries in Microsoft Access are used to determine, for
13 each CLEC, the distance between each wire center from the second table and the
14 *nearest* wire center from the first table. This exercise provides the distance that
15 needs to be covered to connect a currently off-network wire center to the nearest on-
16 network wire center. As for extending loop facilities, distance here is also calculated
17 as the North/South right angle distance, which generally overestimates the distance
18 because a more direct route can usually be found.

19

20 **Q. HOW DO YOU DETERMINE THE COST TO EXTEND THE CLEC'S**
21 **NETWORK TO AN ADDITIONAL WIRE CENTER?**

22

23 A. The network design and the costs of the various components of that network design

1 necessary to extend the CLEC's network are described in the Direct Testimony of
2 Mr. Gray. I rely on Mr. Gray's evidence to establish the cost of extending the CLEC
3 network in my analysis.
4

5 **Q. HAVING DETERMINED THE REVENUES AND COSTS, HOW DO YOU**
6 **CALCULATE THE NPV OF THE DEPLOYMENT?**
7

8 A. The NPV is calculated in the standard way from the after-tax cash flows, assuming
9 that all capital expenditures are made in year zero and depreciate over 10 years, and
10 incorporating the tax and cost of capital assumptions as filed in Docket No. 030851-
11 TP. That is:

- 12 1. Calculate the required capital expenditure in year zero.
- 13 2. Calculate the annual depreciation and the resulting depreciation tax-shield using
14 an average tax rate of 39%.
- 15 3. Calculate network-operating expenses.
- 16 4. Calculate pre-tax operating income by subtracting network operating expenses
17 from revenue.
- 18 5. Calculate after-tax operating income and, hence, cash flows (by adding the
19 depreciation tax shield).

1 6. Calculate the 10-year NPV, using the mid-year convention for cash flows and a
2 discount rate of 10.8%. To be conservative, I do not assume any continuing value
3 beyond the 10-year period.

4

5 **Q. HOW DO YOU SELECT THE WIRE CENTERS (AND, HENCE, THE**
6 **ROUTES) THAT MEET THE POTENTIAL DEPLOYMENT TEST?**

7

8 A. For a given CLEC, the wire centers that satisfy the potential deployment test are
9 those for which $NPV > 0$ as calculated according to the methodology described
10 above. Once those wire centers are identified, it is a simple matter to calculate the
11 additional routes on which a CLEC would be able to deploy its own transport
12 facilities. Once this is done for every CLEC, it is a matter of counting to determine
13 which routes for which a finding of no impairment must be made.

14

15 **Q. BASED ON THE ANALYSIS THAT YOU HAVE JUST DESCRIBED,**
16 **WHICH ROUTES SATISFY THE POTENTIAL DEPLOYMENT TEST FOR**
17 **NON-IMPAIRMENT WITH RESPECT TO TRANSPORT FACILITIES?**

18

19 A. Exhibit AXB-3 shows the list of routes (pairs of wire centers) that satisfy the
20 potential deployment test for DS3 and dark fiber transport facilities. Based on the
21 test prescribed by the FCC, I conclude that there is no impairment for DS3 and dark
22 fiber transport on the routes on that list.

1 **Q. ARE YOU SUBMITTING THE FINAL LIST OF ROUTES THAT QUALIFY**
2 **FOR UNBUNDLING RELIEF ON THE BASIS OF THE POTENTIAL**
3 **DEPLOYMENT TEST?**

4

5 A. No. BellSouth reserves the right to change the list of routes after receiving
6 responses to additional discovery requests.

7

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

9

10 A. Yes.

11

Exhibit AXB-1

ANIRUDDHA (ANDY) BANERJEE, Ph.D.

BUSINESS ADDRESS

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www.nera.com (website)

Dr. Banerjee is a Vice President at NERA. He is responsible for providing analysis of, and expert witness testimony on, regulatory and economic issues of concern to telecommunications companies and other public utilities, preparing and responding to interrogatories in regulatory proceedings, and conducting econometric/statistical analysis to support marketing and market research activities of telecommunications companies. Dr. Banerjee works on a range of issues including Internet economics, price cap and incentive regulation, antitrust violations and remedies for damages, protections against anti-competitive pricing, local and long distance competition, pricing of interconnection and unbundled services, pricing and optimal tariff design, reciprocal and inter-carrier compensation, resale and avoided cost, benchmark and proxy cost models, universal service, service quality, and cellular telephony. His market research activities are carried out, as needed, in collaboration with leading providers of telecommunications data or directly with telecommunications companies.

Before coming to NERA, Dr. Banerjee was a Research Economist (and internal economic consultant) at BellSouth Telecommunications where he was responsible for providing economic policy guidelines to key decision-makers and the Officer Body, preparing testimony and cross-examination questions, responding to interrogatories, and building econometric models to answer business questions. He provided quantification support for BellSouth's successful initiative of designing and securing price cap regulation for itself in each of its nine states, and contributed to BellSouth's policies on local and toll imputation, universal service, interconnection pricing, rate rebalancing, and per use pricing of vertical services. In the process, Dr. Banerjee collaborated with consultants from McKinsey and Company and Strategic Policy Research, Inc. He also

represented BellSouth's participation in the National Telecommunications Demand Study, an ongoing study of demand trends in the telecommunications industry.

Prior to BellSouth, Dr. Banerjee was an economic consultant as a Member of the Technical Staff at Bell Communications Research and a Staff Supervisor at AT&T. Dr. Banerjee has several years of experience teaching graduate and undergraduate courses in economic theory, statistics, econometrics, industrial organization, and public finance. He has conducted research on the dynamics of futures markets and various aspects of time series econometrics. He has presented a number of papers on telecommunications economics issues at national business and academic conferences.

EDUCATION

THE PENNSYLVANIA STATE UNIVERSITY

Ph.D., Agricultural Economics, 1985

UNIVERSITY OF DELHI, INDIA

M.A., Economics, 1977 (Delhi School of Economics)

UNIVERSITY OF DELHI, INDIA

B.A., Economics (Honors), 1975 (St. Stephen's College)

EMPLOYMENT

NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

2002- Vice President. Responsible for applying economic theory, regulatory economics, and econometric analysis to a variety of issues and problems facing both regulated and non-regulated firms (including public utilities). Provide expert witness testimony and strategic advice.

1995-2002 Senior Consultant, Communications Practice. Responsible for applying economic theory, regulatory economics, and econometric analysis to a variety of tasks: supporting telecommunications firms in litigation and regulatory matters, market research, and strategic planning. Provided expert witness testimony and strategic advice.

BELLSOUTH TELECOMMUNICATIONS

1992-1995 Research Economist, Statistics and Econometrics Group. Developed, led, and disseminated economic and econometric research on issues of concern to BellSouth Telecommunications in particular and the telecommunications industry in general. Contributed to each of the following areas: regulatory economics, demand analysis (growth and elasticities), market potential, diffusion, pricing, cost, new product planning, forecasting, market research, competitive analysis, and the development of strategy/policy positions for BellSouth. Supervised and collaborated with other BellSouth economists and strategic planners and outside consultants.

BELL COMMUNICATIONS RESEARCH

1989-1992 Member of Technical Staff, Regulatory Economics and Pricing Theory, Demand Response Analysis Group. Developed various statistical and econometric methods and models that are applicable to the study of demand for various types of telephone service. The focus was on analysis, forecasting, and rate design support to client companies including BellSouth, U S West, NYNEX, and Bell Atlantic. Developed software for demand and market potential analysis using advanced mathematical/statistical languages. Transformed original techniques research into business tools for analysts within client companies.

AT&T COMMUNICATIONS

1988-1989 Staff Supervisor, Market Analysis and Forecasting, Consumer Markets and Services. Assisted and contributed to demand analysis and forecasting efforts of the group. The focus was on demand issues related to AT&T's business and residential long distance telephone services.

THE PENNSYLVANIA STATE UNIVERSITY

1985-1988 Assistant Professor, Department of Economics. Developed and taught undergraduate and graduate courses in economics and econometrics. Conducted personal research in economics and econometrics. Supervised graduate student research leading to M.S. and Ph.D. degrees in economics. Developed the econometrics component of a new graduate program in policy analysis at Penn State. And, advised undergraduate economics students on their curriculum and course selection. Taught courses on introductory macro-economic theory, introductory and intermediate micro-economic theory, industrial

organization, public sector economics, statistics, and introductory econometrics. Developed and taught advanced graduate econometrics and time series courses (frequency-domain econometrics and spectral analysis, dynamic simultaneous equations systems and state space models, causality, model testing and validation, nonlinear time series, and asymptotic theory.

- 1982-1985 Instructor, Department of Economics. Taught a number of undergraduate economics courses including macro-economic theory, micro-economic theory, public sector economics, and statistical foundations of econometrics.
- 1979-1982 Research Assistant, Department of Agricultural Economics & Rural Sociology. Assisted in research activities of Professor Robert D. Weaver of the Department of Agricultural Economics. Research areas included: stabilization of prices of internationally traded agricultural commodities; choice under risk-aversion by a firm faced with multiple sources of uncertainty; impacts of public policy on risk-averse firms; market efficiency, role of information, distribution of asset returns, and market equilibrium; and productivity and cost relations in the wheat, corn, and soybean producing areas of the U.S. using crop survey data from the U.S. Department of Agriculture. Most of the work consisted of literature research, writing computer programming, and econometric data analysis.

UNIVERSITY OF DELHI, INDIA

- 1977-1979 Lecturer, Department of Economics, Shri Ram College of Commerce. Taught undergraduate economics courses including micro-economic theory, public finance, and economic planning and policy.

HONORS AND AWARDS

Marquis' Who's Who in the South and Southwest, 1995-96
Gamma Sigma Delta Honor Society of Agriculture, inducted 1983
Phi Kappa Phi, inducted 1982

Department Head Award, BellSouth Telecommunications, 1993

Department Head Commendation, Bell Communications Research, 1992
Vice President's Award, Bell Communications Research, 1990

PAPERS AND PUBLICATIONS

CONTRIBUTIONS TO NERA REPORTS

"NERA Declaration" (on FCC's proposal to reform the TELRIC methodology for determining prices of unbundled network elements), with William E. Taylor and Harold Ware, for BellSouth Telecommunications (filed with FCC in WC Docket 03-173), December 16, 2003.

"NERA Reply Declaration" (on FCC's unbundled network element policy and effects on competition and entry), with William E. Taylor, Charles Zarkadas, and Agustin Ros, for BellSouth Corporation (filed with FCC in CC Docket Nos. 01-338, 96-98, and 98-147), July 17, 2002.

"A Unified Inter-Carrier Compensation Mechanism for all Forms of Interconnection: Calling Party's Network Pays or Bill and Keep?" (with William E. Taylor), for BellSouth Corporation, filed November 5, 2001.

"Efficient Inter-Carrier Compensation for Internet-Bound Traffic: Reply to Time Warner Telecom." (with William E. Taylor), ex parte with FCC on behalf of Qwest Corporation, October 23, 2000.

"An Economic and Policy Analysis of Efficient Intercarrier Compensation Mechanisms for ISP-Bound Traffic," (with Agustin Ros and William E. Taylor), ex parte with FCC on behalf of U S WEST Communications, Inc., November 12, 1999.

"Determining Fair and Reasonable Rates Under Competition: Response to Major Themes at the FPSC Workshop," for BellSouth Telecommunications, Inc., November 1998.

"Costing and Pricing Principles for Determining Fair and Reasonable Rates Under Competition," for BellSouth Telecommunications, Inc., September 1998.

"Local Telecommunications Competition: An Evaluation of a Proposal by the Communications Staff of the Florida Public Service Commission," with William E. Taylor, for BellSouth Telecommunications, Inc., November 1997.

"Costing and Pricing Principles for Competitive Telecommunications: A Critique of David Gabel's Recommendations," for BellSouth Telecommunications, March 1997.

“Comments (on Universal Service and the Hatfield Model),” with William E. Taylor, for BellSouth Telecommunications, Inc. (filed with the Federal Communications Commission for CC Docket No. 96-45), August 1996.

“Telephone Company Provision of Broadband Services: Economies of Scope, Competition, and Public Policy,” for BellSouth Interactive Media Services, 1995.

“Economic Welfare Benefits from Rate Rebalancing,” for Stentor Resource Centre Inc., 1995.

TESTIMONY

Rebuttal testimony on the matter of rate rebalancing of local and switched access rates in Florida, on behalf of BellSouth Telecommunications, Inc., Florida Public Service Commission, Docket Nos. 030961-TL, 030867-TL, 030868-TL, and 030869-TL, November 19, 2003. [Appeared at Hearings, December 2003]

Declaration, on behalf of Qwest Communications International, Inc., evaluating alternative statistical methods for selecting an appropriate benchmark to determine state eligibility for federal universal service support. Federal-State Joint Board on Universal Service, December 20, 2002.

Rebuttal Testimony opposing Oregon Public Utility Commission Staff and other intervenors on adjustments to rate structure design proposed by Qwest Corporation for its intraLATA long distance services, on behalf of Qwest Corporation, Oregon Public Utility Commission, Docket No. UT 125 Phase II, May 3, 2001. [Appeared at Hearings, May 2001]

Rebuttal testimony opposing the position of Global NAPs, a competitive local exchange carrier, that it is owed reciprocal compensation for the carriage of Internet-bound traffic, on behalf of BellSouth Telecommunications, Inc., Florida Public Service Commission, Docket No. 991267-TP, December 20, 1999. [Appeared at Hearings, January 2000]

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

Affidavit supporting BellSouth Telecommunications Inc.’s motion to dismiss liability case brought by Public Storage Inc. of California because of lack of personal jurisdiction,

before the U.S. District Court of the Central District of California, Case No. 90-3943 R (RZX), September 1998.

Affidavit and Reply Affidavit supporting the application by BellSouth Corporation for provision of in-region, interLATA services in Louisiana, Round 2, CC Docket No. 98-121, July-August 1998.

Affidavit and Reply Affidavit supporting the application by BellSouth Corporation for provision of in-region, interLATA services in Louisiana, CC Docket No. 97-231, October-December 1997.

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Alabama, on behalf of GTE South and Contel of the South in Arbitration with AT&T, Alabama Public Service Commission, Docket No. 25704, November 1996. [Testified at Hearings, December 1996]

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Texas, on behalf of GTE Southwest in Arbitration with ASCI, Texas Public Utility Commission, Docket No. 16,473, November 1996. [Testified at Hearings, December 1996]

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Oklahoma, on behalf of GTE Southwest in Arbitration with AT&T, Oklahoma Corporation Commission, Cause No. PUD 960000242, November 1996. [Testified at Hearings, November 1996]

Direct Testimony critiquing the use of the Benchmark Cost Model for setting the unbundled loop rate for BellSouth in Georgia, on behalf of BellSouth Telecommunications, to Georgia Public Service Commission, Docket 6759-U, October 1996. [Testified at Hearings, October 1996]

Consolidated Direct and Rebuttal Testimony critiquing bill and keep compensation for interconnection, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petitions by Continental Cablevision, Metropolitan Fiber Systems of Florida, and MCI Metro Access Transmission Services), November 1995. [Testified at Hearings, January 1996]

Direct Testimony on unbundling by local exchange carriers and related cost issues, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950984-TP (Petitions by Metropolitan Fiber Systems of Florida, and MCI Metro

Access Transmission Services), November 1995. [Testified at Hearings, January 1996]

Rebuttal Testimony critiquing bill and keep compensation for interconnection, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petition by Teleport Communications Group), September 1995.

Direct Testimony addressing interconnection rate structure design, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petition by Teleport Communications Group), September 1995.

Testified on behalf of BellSouth Telecommunications in Universal Service Proceeding, Tennessee Public Service Commission, Docket 95-02499, October 1995.

Prepared NERA testimony/comments/affidavits presented to:

- state regulatory commissions on
 1. Price cap, local competition, interconnection, and unbundling issues (Arizona, Connecticut, Kentucky, Louisiana, Mississippi, Pennsylvania, New Mexico, Vermont)
 2. Regulatory Reform (Arizona)
 3. Rate case (Arizona, New Mexico)
 4. Universal service issues (Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Jersey, New Mexico, North Carolina, South Carolina, Tennessee)
 5. Loop cost subsidies: measurement and testing (New Mexico, North Dakota)
 6. Resale and avoided cost (Alabama, Louisiana, Tennessee)
 7. Network Cost models (Alabama, Georgia, Massachusetts, Missouri, New Jersey, New York, Oklahoma, Pennsylvania, Texas)
 8. Estimation of Loop Cost (New York)
 9. Local company entry into interLATA long distance (Alabama, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee)
 10. TELRIC pricing of unbundled elements (Alabama, Delaware, Maryland, Mississippi, New Jersey, North Carolina, South Carolina, Tennessee, Virginia, Washington DC, West Virginia)
 11. Access charge reform (Arizona, Nebraska, Pennsylvania)
 12. Rate rebalancing and welfare impacts (Ohio, Florida)
 13. Pricing flexibility under price caps (New Mexico, North Carolina, Wyoming)

14. Cost recovery for Operations Support Systems and service quality and performance measurement (Alabama, Arizona, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee)
 15. Reciprocal compensation for cellular, paging, and internet service providers (Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Kentucky, Louisiana, Massachusetts, Mississippi, Montana, Nebraska, New Mexico, North Carolina, Oregon, South Carolina, Tennessee, Washington)
 16. Payphone rates and new services test (Arizona, Louisiana, South Carolina, Tennessee)
 17. Telephone company mergers (Arizona, Minnesota, Montana, Utah, Washington, Wyoming)
 18. Reclassification of competitive services (Arizona, Nebraska, Washington, Wisconsin)
 19. Fair competition and promotions (Alabama)
- Federal Communications Commission in dockets or ex partes on
 1. Unbundled Network Element rules and pricing (for BellSouth)
 2. TELRIC rules (for BellSouth)
 3. CMRS interconnection (for NYNEX)
 4. Benchmark and proxy cost models (for BellSouth, Southwestern Bell, and NYNEX)
 5. Universal service (for BellSouth)
 6. InterLATA authority (for BellSouth)
 7. Access reform (for BellSouth)
 8. Regulatory forbearance for hicap services (for BellSouth)
 9. Depreciation reform (for USTA)
 10. Inter-carrier compensation for Internet-bound traffic (for U S WEST/Qwest)
 11. Unified Compensation Mechanism for All Forms of Interconnection (for BellSouth)
 - Canadian Radio-television and Telecommunications Commission in price cap proceeding (for Manitoba Telephone System)
 - Telefonica Spain, on matters of reciprocal compensation
 - Civil Action No. 94-324 (GK), FreBon International Corp. v. Bell Atlantic Corp., et al., Defendant's Expert Disclosure Statement

- Case No. 99-1706, U.S. District Court, Southern District of Florida, *Supra* Telecommunications & Information Systems v. BellSouth Telecommunications, Expert Reply Report on Economic Assessment of Damages
- Arbitration V, CPR Institute for Dispute Resolution Arbitral Tribunal, *Supra* Telecommunications & Information Systems v. BellSouth Telecommunications, Expert Reply Report on Economic Assessment of Damages

TELECOMMUNICATIONS-RELATED PAPERS

“Drivers of Demand Growth for Mobile Telecommunications Services: Evidence from International Panel Data,” 2003, forthcoming in book published by the International Telecommunications Society. Co-authored with Agustin Ros.

“Patterns in Global Fixed and Mobile Telecommunications Development: A Cluster Analysis,” 2003, forthcoming in *Telecommunications Policy*.

“Does Incentive Regulation “Cause” Degradation of Retail Telephone Service Quality?” *Information Economics and Policy*, Vol. 15, 2003, pp. 243-269.

“Interconnection Rules and Inter-Carrier Compensation: Implications for Carrier Incentives and Economic Welfare,” 2000. Co-authored with Agustin Ros.

“Telecommunications Privatization and Tariff Rebalancing: Evidence from Latin America” (with Agustin Ros), *Telecommunications Policy*, Vol. 24, 2000, pp. 233-252.

“The Internet: Implications for Regulation and Public Policy,” 1999. Co-authored with Agustin Ros.

“The Internet: Market Characteristics and Regulatory Conundrums,” 1999. Co-authored with Agustin Ros. Chapter in *Forecasting the Internet: Understanding the Explosive Growth of Data Communications*, edited by Lester D. Taylor and David G. Loomis, Kluwer Academic Publishers.

“Using Covariances of Share Changes to Determine Substitutability” (an application to media advertising), 1997. Co-authored with Michael Salinger.

“The Case Against Imputation of Access Charges in IntraLATA Toll Prices: Economic Efficiency and Fairness Reconsidered,” BellSouth Telecommunications, 1994.

“Pricing of Local Exchange Interconnection Service From the Perspective of Economic Theory,” BellSouth Telecommunications, 1993.

“Economies of Scale and Scope, Subadditivity of Costs, and Natural Monopoly Tests for Regulated Utilities,” BellSouth Telecommunications, 1993.

“Fairness and Economic Efficiency in Regulation: Imputation v. Equal Contributions in IntraLATA Toll Pricing,” Report to the Task Force on Imputation of Access Charges in IntraLATA Toll Price, BellSouth Telecommunications, 1993.

“Economic Analysis of Efficient versus Imputation-Based Pricing by a Regulated Public Utility,” Report to the Task Force on Imputation of Access Charges in IntraLATA Toll Price, BellSouth Telecommunications, 1993.

“E: A Maximum Likelihood Estimation Program, A User’s Guide to Some Applications,” Bell Communications Research, 1992.

“Error Components Panel Data Modeling of Share Equation Systems: An Application to Telecommunications Access Demand,” Bell Communications Research, 1989.

“Analysis of Demand Migration and Take Rates for Special Access High Capacity Services,” Bell Communications Research, 1990.

“Business Outbound Service System: An Empirical Modeling Framework,” AT&T, 1989.

MISCELLANEOUS PAPERS

“Does Futures Trading Destabilize Cash Prices? Evidence for U.S. Live Beef Cattle,” (with R.D. Weaver), Journal of Futures Markets, Vol 10(1), 1990, (pp. 41-60).

“Market Structure and the Dynamics of Retail Food Prices,” (with R.D. Weaver and P. Chattin), Northeastern Journal of Agricultural and Resource Economics, Vol 18(2), 1989, (pp. 160-170).

“Cash Price Variation in the Live Beef Cattle Market: The Causal Role of Futures Trade,” (with R.D. Weaver), Journal of Futures Markets, Vol 2(4), 1982, (pp. 367-389).

“Unemployment Rate Dynamics and Persistent Unemployment Under Rational Expectations: A Comment,” (with V. Moorthy), Working Paper No. 8-87-1, Department of Economics, The Pennsylvania State University, 1987.

“The Standard Errors of Characteristic Roots of a Dynamic Econometric Model: A Computational Simplification,” Working Paper No. 5-87-3, Department of Economics, The Pennsylvania State University, 1987.

“Market Structure, Market Power, and Dynamic Price Determination in the Retail Food Industry,” (with R.D. Weaver), Working Paper No. 5-87-2, Department of Economics, The Pennsylvania State University, 1987.

“Does Futures Trading Destabilize Cash Prices? Evidence for Live Beef Cattle,” (with R.D. Weaver), Working Paper No. 5-87-1, Department of Economics, The Pennsylvania State University, 1987.

“Existence of Portfolios with Simultaneous Trading in Unrelated Speculative Assets,” Working Paper No. 8-86-2, Department of Economics, The Pennsylvania State University, 1986.

“Models of Cash-Futures Market Complexes for Commodities Characterized by Production Lags,” Working Paper No. 7-86-2, Department of Economics, The Pennsylvania State University, 1986.

“Cash Price Stability in the Presence of Futures Markets: A Multivariate Causality Test for Live Beef Cattle,” (with R.D. Weaver), Staff Paper No. 45, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, 1981.

“Optimal Interpolation and Distribution of Time Series by Related Series Using a Spectral Estimator for the Residual Variance,” Bell Communications Research, 1990.

“Size and Power Characteristics of Three Tests of Nonlinearity in Time Series,” AT&T, 1989.

“Model Testing and Selection in Applied Econometrics,” AT&T, 1989.

CONFERENCE PRESENTATIONS

“Drivers of Demand Growth for Mobile Telecommunications Services: Evidence from International Panel Data,” International Telecommunication Society 14th Biennial Conference, Seoul, South Korea, August 18-21, 2002.

Discussant of “Providing Location and Context Aware Services for Mobile Commerce: Technological Approaches, Applications, and Policy Issues” by Charles Steinfield and Junghyun Kim, and “Explaining the Success of NTT DoCoMo’s I-Mode Wireless Internet Service,” by Martin Fransman, International Telecommunication Society 14th Biennial Conference, Seoul, South Korea, August 18-21, 2002.

Discussant of “The Impotence of Imputation,” by T.Randolph Beard, David Kaserman, and John Mayo, 21st Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Newport, RI, May 22-24, 2002.

“Does Incentive Regulation “Cause” Degradation of Retail Telephone Service Quality?” 20th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Tamiment, PA, May 23-25, 2001. Also presented at 19th Annual International Communications Forecasting Conference, Washington DC, June 26-29, 2001, and National Association of Regulatory Utility Commissioners, Summer Committee Meetings, Seattle, WA, July 17, 2001.

“Telecommunications Privatization and Tariff Rebalancing: Evidence from Latin America and Relevance to India,” India Telecom 2000 Conference Keynote Speech, New Delhi, India, October 31-November 2, 2000.

“Interconnection Rules and Inter-Carrier Compensation: Implications for Carrier Incentives and Economic Welfare,” (with Agustin Ros), 19th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Lake George, Bolton Landing, NY, May 24-26, 2000. Also presented at International Telecommunication Society 13th Biennial Conference, Buenos Aires, Argentina, July 2-5, 2000.

“The Internet: Implications for Regulation and Public Policy,” (with Agustin Ros), 27th Annual Telecommunications Policy Research Conference, Alexandria, VA, September 25-27, 1999.

“The Internet: Market Characteristics and Regulatory Conundrums,” (with Agustin Ros), International Communications Forecasting Conference, Denver, CO, June 15-18, 1999.

“Telecommunications Privatization and Tariff Rebalancing: Evidence from Latin America,” (with Agustin Ros), 18th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Newport, RI, May 26-28, 1999.

“An Estimate of Current Universal Service Obligations and the Likely Impact of Federal and State Universal Service Plans,” (with Agustin Ros and Neil Zoltowski), International Communications Forecasting Conference, St. Louis, MO, June 9-12, 1998.

“Competitive Telecommunications and its Aftermath: Economic Policy Issues and Modeling Needs,” International Communications Forecasting Conference, Dallas, TX, April 16-19, 1996.

“On Modelling the Dynamics of Demand for Optional and New Services,” International Communications Forecasting Conference, Toronto, Canada, June 13-16, 1995.

“The Case Against Imputation of Access Charges in IntraLATA Toll Prices: Economic Efficiency and Fairness Reconsidered,” Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Seventh Annual Western Conference, San Diego, CA, July 6-8, 1994.

“Future Directions in Modeling the Demand for Vertical Services,” National Telecommunications Demand Study Conference, La Jolla, CA, March 24-25, 1994.

“E: A Maximum Likelihood Estimation Program,” National Telecommunications Forecasting Conference, Crystal City, VA, June 1-4, 1993.

Discussant of "The National Telecommunications Demand Study," National Regulatory Research Conference on Telecommunications Demand, Denver, CO, August 3-5, 1992.

"Using Demographics to Predict New Service Take Rates: Discrete Choice Analysis vs. Categorical Data Analysis," National Telecommunications Forecasting Conference, Atlanta, GA, May 5-8, 1992.

"Price Cap Regulations for the LECs: Implications for Demand and Revenue Forecasting," National Telecommunications Forecasting Conference, Boston, MA, May 30, 1991.

"Demand Migration for Special Access High Capacity Services," Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Third Annual Western Conference, San Diego, CA, July 11-13, 1990.

"Error Components Panel Data Modeling of Telecommunications Access Demand," Bellcore-Bell Canada Telecommunications Demand Analysis Conference, Hilton Head, SC, April 22-25, 1990, and Bell Atlantic Business Research Conference, Baltimore, MD, October 24-27, 1989.

"Analysis of Integrated Demand Systems," Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Second Annual Western Conference, Monterey, CA, July 5-7, 1989.

Panel Discussion on "The Regulatory and Operational Impacts of Price Caps," National Telecommunications Forecasting Conference, San Francisco, CA, May, 1989.

December 22, 2003

Exhibit AXB-2: Customer locations that meet the criteria for potential deployment of high-capacity loop facilities

Index	Address	City
1	120 E PALMETTO PARK RD	BOCA RATON
2	1200 N FEDERAL HWY	BOCA RATON
3	150 E PALMETTO PARK RD	BOCA RATON
4	1515 N FEDERAL HWY	BOCA RATON
5	1515 S FEDERAL HWY	BOCA RATON
6	201 W PALMETTO PARK RD	BOCA RATON
7	225 NE MIZNER BLVD	BOCA RATON
8	2255 GLADES RD	BOCA RATON
9	2381 NW EXECUTIVE CENTER DR	BOCA RATON
10	301 NE 51ST ST	BOCA RATON
11	4400 N FEDERAL HWY	BOCA RATON
12	4800 N FEDERAL HWY	BOCA RATON
13	4960 CONFERENCE WAY N	BOCA RATON
14	501 E CAMINO REAL	BOCA RATON
15	5201 CONGRESS AVE	BOCA RATON
16	5900 BROKEN SOUND PKWY NW	BOCA RATON
17	6000 GLADES RD	BOCA RATON
18	6111 BROKEN SOUND PKWY NW	BOCA RATON
19	621 NW 53RD ST	BOCA RATON
20	6300 PARK OF COMMERCE BLVD	BOCA RATON
21	6400 CONGRESS AVE	BOCA RATON
22	6551 PARK OF COMMERCE BLVD	BOCA RATON
23	777 GLADES RD	BOCA RATON
24	777 NW 51ST ST	BOCA RATON
25	791 PARK OF COMMERCE BLVD	BOCA RATON
26	800 MEADOWS RD	BOCA RATON
27	855 S FEDERAL HWY	BOCA RATON
28	900 BROKEN SOUND PKWY NW	BOCA RATON
29	901 NW 51ST ST	BOCA RATON
30	902 CLINT MOORE RD	BOCA RATON
31	925 S FEDERAL HWY	BOCA RATON
32	951 BROKEN SOUND PKWY NW	BOCA RATON
33	990 S ROGERS CIR	BOCA RATON
34	999 NW 51ST ST	BOCA RATON
35	801 N CONGRESS AVE	BOYNTON BEACH
36	1320 S DIXIE HWY	CORAL GABLES
37	1500 SAN REMO AVE	CORAL GABLES
38	2 ALHAMBRA PLZ	CORAL GABLES
39	201 ALHAMBRA CIR	CORAL GABLES
40	2100 PONCE DE LEON BLVD	CORAL GABLES
41	2121 PONCE DE LEON BLVD	CORAL GABLES
42	220 ALHAMBRA CIR	CORAL GABLES
43	2333 PONCE DE LEON BLVD	CORAL GABLES
44	2511 PONCE DE LEON BLVD	CORAL GABLES
45	255 ALHAMBRA CIR	CORAL GABLES
46	2600 S DOUGLAS RD	CORAL GABLES
47	2655 LEJEUNE RD STE	CORAL GABLES
48	2800 PONCE DE LEON BLVD	CORAL GABLES
49	2801 PONCE DE LEON BLVD	CORAL GABLES
50	355 ALHAMBRA CIR	CORAL GABLES
51	55 ALHAMBRA PLZ	CORAL GABLES
52	550 BILTMORE WAY	CORAL GABLES
53	75 VALENCIA AVE	CORAL GABLES
54	800 S DOUGLAS RD	CORAL GABLES
55	901 PONCE DE LEON BLVD	CORAL GABLES
56	95 MERRICK WAY	CORAL GABLES
57	999 PNCE DE LN BVD	CORAL GABLES
58	3111 N UNIVERSITY DR	CORAL SPRINGS
59	3300 N UNIVERSITY DR	CORAL SPRINGS
60	1855 GRIFFIN RD	DANIA
61	1700 W INTERNATIONAL SPEEDWAY BLVD	DAYTONA BEACH
62	100 JIM MORAN BLVD	DEERFIELD BEACH
63	600 W HILLSBORO BLVD	DEERFIELD BEACH
64	700 W HILLSBORO BLVD	DEERFIELD BEACH
65	800 FAIRWAY DR	DEERFIELD BEACH
66	100 E LINTON BLVD	DELRAY BEACH
67	190 CONGRESS PARK DR	DELRAY BEACH
68	1 E BROWARD BLVD	FORT LAUDERDALE
69	1 FINANCIAL PLZ	FORT LAUDERDALE
70	100 N ANDREWS AVE	FORT LAUDERDALE
71	100 W CYPRESS CREEK RD	FORT LAUDERDALE
72	1000 CORPORATE DR	FORT LAUDERDALE

73	1000 S PINE ISLAND RD	FORT LAUDERDALE
74	1000 SAWGRASS CORPORATE PKWY	FORT LAUDERDALE
75	101 NE 3RD AVE	FORT LAUDERDALE
76	110 E BROWARD BLVD	FORT LAUDERDALE
77	110 SE 6TH ST	FORT LAUDERDALE
78	115 S ANDREWS AVE	FORT LAUDERDALE
79	1200 S PINE ISLAND RD	FORT LAUDERDALE
80	12801 S SUNRISE BLVD	FORT LAUDERDALE
81	1451 W CYPRESS CREEK RD	FORT LAUDERDALE
82	1500 CONCORD TER	FORT LAUDERDALE
83	1600 W COMMERCIAL BLVD	FORT LAUDERDALE
84	1625 SE 3RD AVE	FORT LAUDERDALE
85	1801 S PERIMETER RD	FORT LAUDERDALE
86	1900 W OAKLAND PARK BLVD	FORT LAUDERDALE
87	200 E BROWARD BLVD	FORT LAUDERDALE
88	200 E LAS OLAS BLVD	FORT LAUDERDALE
89	200 S ANDREWS AVE	FORT LAUDERDALE
90	201 NW 82ND AVE	FORT LAUDERDALE
91	201 SE 6TH ST	FORT LAUDERDALE
92	2050 SPECTRUM BLVD	FORT LAUDERDALE
93	2455 E SUNRISE BLVD	FORT LAUDERDALE
94	300 NW 82ND AVE	FORT LAUDERDALE
95	300 SE 2ND ST	FORT LAUDERDALE
96	3015 N OCEAN BLVD	FORT LAUDERDALE
97	3045 N FEDERAL HWY	FORT LAUDERDALE
98	3200 N FEDERAL HWY	FORT LAUDERDALE
99	321 N UNIVERSITY DR	FORT LAUDERDALE
100	3383 N STATE ROAD 7	FORT LAUDERDALE
101	350 E LAS OLAS BLVD	FORT LAUDERDALE
102	450 E LAS OLAS BLVD	FORT LAUDERDALE
103	4725 N FEDERAL HWY	FORT LAUDERDALE
104	4850 EEST OKLANDJ PK BLVD	FORT LAUDERDALE
105	4901 NW 17TH WAY	FORT LAUDERDALE
106	500 E BROWARD BLVD	FORT LAUDERDALE
107	500 W CYPRESS CREEK RD	FORT LAUDERDALE
108	5000 W OAKLAND PARK BLVD	FORT LAUDERDALE
109	501 E LAS OLAS BLVD	FORT LAUDERDALE
110	5100 NW 33RD AVE	FORT LAUDERDALE
111	515 E LAS OLAS BLVD	FORT LAUDERDALE
112	5200 NW 33RD AVE	FORT LAUDERDALE
113	5757 N DIXIE HWY	FORT LAUDERDALE
114	5900 N ANDREWS AVE	FORT LAUDERDALE
115	600 SE 3RD AVE	FORT LAUDERDALE
116	6600 N ANDREWS AVE	FORT LAUDERDALE
117	6700 N ANDREWS AVE	FORT LAUDERDALE
118	721 NE 44TH ST	FORT LAUDERDALE
119	777 AMERICAN EXPRESS WAY	FORT LAUDERDALE
120	8000 W BROWARD BLVD	FORT LAUDERDALE
121	801 S UNIVERSITY DR	FORT LAUDERDALE
122	8050 SW 10TH ST	FORT LAUDERDALE
123	8211 W BROWARD BLVD	FORT LAUDERDALE
124	1 UNIVERSITY OF FLORIDA	GAINESVILLE
125	1250 E HALLANDALE	HALLANDALE
126	1920 E HALLANDALE BEACH BLVD	HALLANDALE
127	2500 E HALLANDALE BEACH BLVD	HALLANDALE
128	14201 NW 60TH AVE	HIALEAH
129	7150 W 20TH AVE	HIALEAH
130	2600 HOLLYWOOD BLVD	HOLLYWOOD
131	3501 JOHNSON ST	HOLLYWOOD
132	4000 HOLLYWOOD BLVD	HOLLYWOOD
133	6100 HOLLYWOOD BLVD	HOLLYWOOD
134	1 RIVERSIDE AVE	JACKSONVILLE
135	10300 SOUTHSIDE BLVD	JACKSONVILLE
136	117 W DUVAL ST	JACKSONVILLE
137	1200 RIVERPLACE BLVD	JACKSONVILLE
138	1301 RIVERPLACE BLVD	JACKSONVILLE
139	2 INDEPENDENT DR	JACKSONVILLE
140	200 W FORSYTH ST	JACKSONVILLE
141	21 W CHURCH ST	JACKSONVILLE
142	225 WATER ST	JACKSONVILLE
143	3131 SAINT JOHNS BLUFF RD S	JACKSONVILLE
144	330 E BAY ST	JACKSONVILLE
145	3599 UNIVERSITY BLVD S	JACKSONVILLE
146	400 W BAY ST	JACKSONVILLE
147	4190 BELFORT RD	JACKSONVILLE
148	4201 BELFORT RD	JACKSONVILLE
149	4345 SOUTHPOINT BLVD	JACKSONVILLE
150	4800 DEERWOOD CAMPUS PKWY	JACKSONVILLE
151	50 N LAURA ST	JACKSONVILLE

152	500 WATER ST	JACKSONVILLE
153	532 RIVERSIDE AVE	JACKSONVILLE
154	580 W 8TH ST	JACKSONVILLE
155	655 W 8TH ST	JACKSONVILLE
156	6620 SOUTHPOINT DR S	JACKSONVILLE
157	6622 SOUTHPOINT DR S	JACKSONVILLE
158	6630 SOUTHPOINT PKWY	JACKSONVILLE
159	7077 BONNEVAL RD	JACKSONVILLE
160	800 PRUDENTIAL DR	JACKSONVILLE
161	8100 NATIONS WAY	JACKSONVILLE
162	815 S MAIN ST	JACKSONVILLE
163	836 PRUDENTIAL DR	JACKSONVILLE
164	8948 WESTERN WAY	JACKSONVILLE
165	9487 REGENCY SQUARE BLVD	JACKSONVILLE
166	9501 ARLINGTON EXPY	JACKSONVILLE
167	1001 N US HIGHWAY 1	JUPITER
168	1000 AAA DR	LAKE MARY
169	2950 LAKE EMMA RD	LAKE MARY
170	300 INTERNATIONAL PKWY	LAKE MARY
171	600 BUSINESS CENTER DR	LAKE MARY
172	615 CRCNCE EXEC CT	LAKE MARY
173	100 RIALTO PL	MELBOURNE
174	1025 W NASA BLVD	MELBOURNE
175	1700 W NEW HAVEN AVE	MELBOURNE
176	1900 S HARBOR CITY BLVD	MELBOURNE
177	1901 S HARBOR CITY BLVD	MELBOURNE
178	777 E MERRITT ISLAND CSWY	MERRITT ISLAND
179	1 ALHAMBRA PLZ	MIAMI
180	1 BISCAYNE BLVD	MIAMI
181	1 SE 3RD AVE	MIAMI
182	1000 BRICKELL AVE	MIAMI
183	1001 BRICKELL BAY DR	MIAMI
184	10300 SW 72ND ST	MIAMI
185	1050 CARIBBEAN WAY	MIAMI
186	1080 CARIBBEAN WAY	MIAMI
187	111 NW 1ST ST	MIAMI
188	1110 BRICKELL AVE	MIAMI
189	1111 BRICKELL AVE	MIAMI
190	1111 PARK CENTRE BLVD	MIAMI
191	11222 QUAIL ROOST DR	MIAMI
192	11401 NW 12TH ST	MIAMI
193	1150 NW 72ND AVE	MIAMI
194	1175 NE 125TH ST	MIAMI
195	11900 BISCAYNE BLVD	MIAMI
196	1200 BRICKELL AVE	MIAMI
197	12000 BISCAYNE BLVD	MIAMI
198	1201 BRICKELL AVE	MIAMI
199	1201 NW 16TH ST	MIAMI
200	1221 BRICKELL AVE	MIAMI
201	12550 BISCAYNE BLVD	MIAMI
202	14 NE 1ST AVE	MIAMI
203	140 W FLAGLER ST	MIAMI
204	1400 NW 12TH AVE	MIAMI
205	1401 BRICKELL AVE	MIAMI
206	1450 NE 2ND AVE	MIAMI
207	1455 NW 107TH AVE	MIAMI
208	150 ALHAMBRA CIR	MIAMI
209	1500 BISCAYNE BLVD	MIAMI
210	1600 NW 10TH AVE	MIAMI
211	169 E FLAGLER ST	MIAMI
212	1717 N BAYSHORE DR	MIAMI
213	175 NW 1ST AVE	MIAMI
214	19 W FLAGLER ST	MIAMI
215	1900 NW 92ND AVE	MIAMI
216	19495 BISCAYNE BLVD	MIAMI
217	19501 BISCAYNE BLVD	MIAMI
218	19575 BISCAYNE BLVD	MIAMI
219	200 BISCAYNE BLVD	MIAMI
220	25 SE 2ND AVE	MIAMI
221	25 W FLAGLER ST	MIAMI
222	2601 S BAYSHORE DR	MIAMI
223	2655 S LE JEUNE RD	MIAMI
224	2875 NE 191ST ST	MIAMI
225	2999 NE 191ST ST	MIAMI
226	300 BISCAYNE BLVD	MIAMI
227	300 NE 2ND AVE	MIAMI
228	3191 CORAL WAY	MIAMI
229	330 BISCAYNE BLVD	MIAMI
230	36 NE 1ST ST	MIAMI

231	3600 NW 82ND AVE	MIAMI
232	3655 NW 87TH AVE	MIAMI
233	3663 S MIAMI AVE	MIAMI
234	3750 NW 87TH AVE	MIAMI
235	3785 NW 82ND AVE	MIAMI
236	3900 NW 79TH AVE	MIAMI
237	3915 BISCAYNE BLVD	MIAMI
238	400 NW 2ND AVE	MIAMI
239	401 BISCAYNE BLVD	MIAMI
240	401 NW 2ND AVE	MIAMI
241	4300 ALTON RD	MIAMI
242	44 W FLAGLER ST	MIAMI
243	4400 BISCAYNE BLVD	MIAMI
244	4400 NW 87TH AVE	MIAMI
245	444 BRICKELL AVE	MIAMI
246	444 SW 2ND AVE	MIAMI
247	48 E FLAGLER ST	MIAMI
248	501 BRICKELL KEY DR	MIAMI
249	51 SW 1ST AVE	MIAMI
250	5200 BLUE LAGOON DR	MIAMI
251	5201 BLUE LAGOON DR	MIAMI
252	5301 BLUE LAGOON DR	MIAMI
253	555 NE 15TH ST	MIAMI
254	5701 SUNSET DR	MIAMI
255	5959 NW 7TH ST	MIAMI
256	600 BRICKELL AVE	MIAMI
257	601 BRICKELL KEY DR	MIAMI
258	6100 BLUE LAGOON DR	MIAMI
259	6161 BLUE LAGOON DR	MIAMI
260	6200 SW 73RD ST	MIAMI
261	6262 SUNSET DR	MIAMI
262	6303 BLUE LAGOON DR	MIAMI
263	700 BRICKELL AVE	MIAMI
264	700 NW 107TH AVE	MIAMI
265	7220 NW 36TH ST	MIAMI
266	7270 NW 12TH ST	MIAMI
267	73 W FLAGLER ST	MIAMI
268	7665 NW 19TH ST	MIAMI
269	777 BRICKELL AVE	MIAMI
270	777 NW 72ND AVE	MIAMI
271	7795 W FLAGLER ST	MIAMI
272	780 NW 42ND AVE	MIAMI
273	799 BRICKELL PLZ	MIAMI
274	80 SW 8TH ST	MIAMI
275	800 BRICKELL AVE	MIAMI
276	801 BRICKELL AVE	MIAMI
277	8052 NW 14TH ST	MIAMI
278	8125 NW 53RD ST	MIAMI
279	8180 NW 36TH ST	MIAMI
280	8181 NW 36TH ST	MIAMI
281	8249 NW 36TH ST	MIAMI
282	8300 NW 53RD ST	MIAMI
283	8350 NW 52ND TER	MIAMI
284	8400 NW 52ND ST	MIAMI
285	8405 NW 53RD ST	MIAMI
286	848 BRICKELL AVE	MIAMI
287	8675 NW 53RD ST	MIAMI
288	8685 NW 53RD TER	MIAMI
289	8888 SW 136TH ST	MIAMI
290	8900 N KENDALL DR	MIAMI
291	909 SE 1ST AVE	MIAMI
292	9100 NW 36TH ST	MIAMI
293	9250 NW 36TH ST	MIAMI
294	9688 SW 24TH ST	MIAMI
295	9700 COLLINS AVE	MIAMI
296	999 BRICKELL AVE	MIAMI
297	1910 WELLS RD	ORANGE PARK
298	100 E PINE ST	ORLANDO
299	100 W GORE ST	ORLANDO
300	1000 LEGION PL	ORLANDO
301	1000 UNIVERSAL STUDIOS PLZ	ORLANDO
302	10401 POST OFFICE BLVD	ORLANDO
303	109 E CHURCH ST	ORLANDO
304	111 N ORANGE AVE	ORLANDO
305	135 W CENTRAL BLVD	ORLANDO
306	1414 KUHL AVE	ORLANDO
307	20 N ORANGE AVE	ORLANDO
308	200 E ROBINSON ST	ORLANDO
309	201 S ROSALIND AVE	ORLANDO

310	225 E ROBINSON ST	ORLANDO
311	250 N ORANGE AVE	ORLANDO
312	300 S ORANGE AVE	ORLANDO
313	301 E PINE ST	ORLANDO
314	315 E ROBINSON ST	ORLANDO
315	3201 E COLONIAL DR	ORLANDO
316	324 W GORE ST	ORLANDO
317	37 N ORANGE AVE	ORLANDO
318	400 E SOUTH ST	ORLANDO
319	400 S ORANGE AVE	ORLANDO
320	400 W ROBINSON ST	ORLANDO
321	445 W AMELIA ST	ORLANDO
322	450 S ORANGE AVE	ORLANDO
323	500 S ORANGE AVE	ORLANDO
324	5201 N ORANGE BLOSSOM TRL	ORLANDO
325	5601 WINDHOVER DR	ORLANDO
326	5850 T G LEE BLVD	ORLANDO
327	5900 LAKE ELLENOR DR	ORLANDO
328	6220 S ORANGE BLOSSOM TRL	ORLANDO
329	6277 SEA HARBOR DR	ORLANDO
330	633 N ORANGE AVE	ORLANDO
331	7380 W SAND LAKE RD	ORLANDO
332	800 N MAGNOLIA AVE	ORLANDO
333	8001 S ORANGE BLOSSOM TRL	ORLANDO
334	801 N MAGNOLIA AVE	ORLANDO
335	9333 S JOHN YOUNG PKWY	ORLANDO
336	9955 AIRTRAN BLVD	ORLANDO
337	2400 PALM BAY RD NE	PALM BAY
338	1 S COUNTY RD	PALM BEACH
339	340 ROYAL POINCIANA WAY	PALM BEACH
340	2401 PGA BLVD	PALM BEACH GARDENS
341	3360 BURNS RD	PALM BEACH GARDENS
342	3801 PGA BLVD	PALM BEACH GARDENS
343	4200 WACKENHUT DR	PALM BEACH GARDENS
344	4500 PGA BLVD	PALM BEACH GARDENS
345	11401 PINES BLVD	PEMBROKE PINES
346	9050 PINES BLVD	PEMBROKE PINES
347	1000 W MORENO ST	PENSACOLA
348	101 E ROMANA ST	PENSACOLA
349	316 S BAYLEN ST	PENSACOLA
350	5100 N 9TH AVE	PENSACOLA
351	7171 N DAVIS HWY	PENSACOLA
352	8333 N DAVIS HWY	PENSACOLA
353	8383 N DAVIS HWY	PENSACOLA
354	1000 W MCNAB RD	POMPANO BEACH
355	1300 NW 22ND ST	POMPANO BEACH
356	150 SW 12TH AVE	POMPANO BEACH
357	1801 N ANDREWS AVE	POMPANO BEACH
358	2900 W SAMPLE RD	POMPANO BEACH
359	4100 N POWERLINE RD	POMPANO BEACH
360	5259 COCONUT CREEK PKWY	POMPANO BEACH
361	110 LONGWOOD AVE	ROCKLEDGE
362	40 ORANGE ST	SAINT AUGUSTINE
363	75 KING ST	SAINT AUGUSTINE
364	1 N CLEMATIS ST	WEST PALM BEACH
365	1309 N FLAGLER DR	WEST PALM BEACH
366	1411 N FLAGLER DR	WEST PALM BEACH
367	1555 PALM BEACH LAKES BLVD	WEST PALM BEACH
368	1601 BELVEDERE RD	WEST PALM BEACH
369	1601 FORUM PL	WEST PALM BEACH
370	1675 PALM BEACH LAKES BLVD	WEST PALM BEACH
371	1801 PALM BEACH LAKES BLVD	WEST PALM BEACH
372	222 LAKEVIEW AVE	WEST PALM BEACH
373	224 DATURA ST	WEST PALM BEACH
374	250 S AUSTRALIAN AVE	WEST PALM BEACH
375	2751 S DIXIE HWY	WEST PALM BEACH
376	301 CLEMATIS ST	WEST PALM BEACH
377	301 N OLIVE AVE	WEST PALM BEACH
378	3101 PGA BLVD	WEST PALM BEACH
379	3111 S DIXIE HWY	WEST PALM BEACH
380	319 CLEMATIS ST	WEST PALM BEACH
381	3228 GUN CLUB RD	WEST PALM BEACH
382	3920 RCA BLVD	WEST PALM BEACH
383	505 S FLAGLER DR	WEST PALM BEACH
384	515 N FLAGLER DR	WEST PALM BEACH
385	777 S FLAGLER DR	WEST PALM BEACH
386	801 CLEMATIS ST	WEST PALM BEACH
387	901 45TH ST	WEST PALM BEACH

Exhibit AXB-3: Routes between BellSouth wire centers in the same LATA that meet the criteria for potential deployment of transport facilities

Index	CLLI 1	CLLI 2	LATA
1	DYBHFLMA	DYBHFLPO	DAYTONA BCH, FL
2	JCBHFLMA	JCVLFLAR	JACKSONVILLE, FL
3	JCBHFLMA	MNDRFLAV	JACKSONVILLE, FL
4	JCVLFLAR	JCVLFLNO	JACKSONVILLE, FL
5	JCVLFLCL	JCVLFLNO	JACKSONVILLE, FL
6	JCVLFLCL	JCVLFLOW	JACKSONVILLE, FL
7	ORLDFLSA	OVIDFLCA	ORLANDO, FL
8	BCRTFLBT	NDADFLOL	SOUTHEAST, FL
9	BCRTFLMA	DLBHFLKP	SOUTHEAST, FL
10	BCRTFLMA	FTLDFLSG	SOUTHEAST, FL
11	BCRTFLMA	JPTRFLMA	SOUTHEAST, FL
12	BCRTFLMA	MIAMFLNM	SOUTHEAST, FL
13	BCRTFLMA	MIAMFLSO	SOUTHEAST, FL
14	BCRTFLMA	NDADFLAC	SOUTHEAST, FL
15	BCRTFLMA	NDADFLOL	SOUTHEAST, FL
16	BCRTFLMA	PMBHFLCS	SOUTHEAST, FL
17	DLBHFLKP	DLBHFLMA	SOUTHEAST, FL
18	DLBHFLKP	FTLDFLMR	SOUTHEAST, FL
19	DLBHFLKP	FTLDFLPL	SOUTHEAST, FL
20	DLBHFLKP	MIAMFLGR	SOUTHEAST, FL
21	DLBHFLKP	MIAMFLNM	SOUTHEAST, FL
22	DLBHFLKP	WPBHFLAN	SOUTHEAST, FL
23	DLBHFLKP	WPBHFLHH	SOUTHEAST, FL
24	DLBHFLMA	JPTRFLMA	SOUTHEAST, FL
25	DLBHFLMA	MIAMFLNM	SOUTHEAST, FL
26	DLBHFLMA	NDADFLAC	SOUTHEAST, FL
27	DRBHFLMA	NDADFLAC	SOUTHEAST, FL
28	FTLDFLCY	NDADFLAC	SOUTHEAST, FL
29	FTLDFLJA	FTLDFLSG	SOUTHEAST, FL
30	FTLDFLMR	FTLDFLSG	SOUTHEAST, FL
31	FTLDFLMR	MIAMFLNM	SOUTHEAST, FL
32	FTLDFLMR	NDADFLAC	SOUTHEAST, FL
33	FTLDFLOA	FTLDFLSG	SOUTHEAST, FL
34	FTLDFLOA	MIAMFLNM	SOUTHEAST, FL
35	FTLDFLOA	NDADFLAC	SOUTHEAST, FL
36	FTLDFLPL	FTLDFLSG	SOUTHEAST, FL
37	FTLDFLPL	JPTRFLMA	SOUTHEAST, FL
38	FTLDFLPL	MIAMFLNM	SOUTHEAST, FL
39	FTLDFLPL	NDADFLAC	SOUTHEAST, FL
40	FTLDFLSG	HLWDFLPE	SOUTHEAST, FL
41	FTLDFLSG	MIAMFLGR	SOUTHEAST, FL
42	FTLDFLSG	NDADFLGG	SOUTHEAST, FL
43	FTLDFLSG	WPBHFLGA	SOUTHEAST, FL
44	FTLDFLSG	WPBHFLGR	SOUTHEAST, FL
45	HLWDFLHA	NDADFLAC	SOUTHEAST, FL
46	HLWDFLMA	NDADFLAC	SOUTHEAST, FL
47	JPTRFLMA	MIAMFLAE	SOUTHEAST, FL
48	JPTRFLMA	MIAMFLGR	SOUTHEAST, FL
49	JPTRFLMA	MIAMFLPL	SOUTHEAST, FL
50	JPTRFLMA	WPBHFLAN	SOUTHEAST, FL
51	JPTRFLMA	WPBHFLHH	SOUTHEAST, FL
52	MIAMFLAE	MIAMFLNM	SOUTHEAST, FL
53	MIAMFLAE	NDADFLOL	SOUTHEAST, FL
54	MIAMFLCA	NDADFLOL	SOUTHEAST, FL
55	MIAMFLCA	WPBHFLGA	SOUTHEAST, FL
56	MIAMFLGR	MIAMFLNM	SOUTHEAST, FL
57	MIAMFLGR	NDADFLAC	SOUTHEAST, FL
58	MIAMFLGR	NDADFLOL	SOUTHEAST, FL
59	MIAMFLHL	NDADFLOL	SOUTHEAST, FL
60	MIAMFLHL	WPBHFLGA	SOUTHEAST, FL

61	MIAMFLNM	MIAMFLPL	SOUTHEAST, FL
62	MIAMFLNM	NDADFLGG	SOUTHEAST, FL
63	MIAMFLNM	WPBHFLAN	SOUTHEAST, FL
64	MIAMFLNM	WPBHFLGA	SOUTHEAST, FL
65	MIAMFLNM	WPBHFLGR	SOUTHEAST, FL
66	MIAMFLNM	WPBHFLHH	SOUTHEAST, FL
67	MIAMFLPB	NDADFLOL	SOUTHEAST, FL
68	MIAMFLPL	NDADFLOL	SOUTHEAST, FL
69	MIAMFLRR	NDADFLOL	SOUTHEAST, FL
70	MIAMFLRR	WPBHFLGA	SOUTHEAST, FL
71	MIAMFLSH	WPBHFLGR	SOUTHEAST, FL
72	MIAMFLSH	WPBHFLHH	SOUTHEAST, FL
73	MIAMFLSO	NDADFLOL	SOUTHEAST, FL
74	MIAMFLSO	WPBHFLGA	SOUTHEAST, FL
75	MIAMFLWM	NDADFLOL	SOUTHEAST, FL
76	MIAMFLWM	WPBHFLGA	SOUTHEAST, FL
77	NDADFLAC	NDADFLGG	SOUTHEAST, FL
78	NDADFLAC	PMBHFLFE	SOUTHEAST, FL
79	NDADFLAC	WPBHFLAN	SOUTHEAST, FL
80	NDADFLAC	WPBHFLGR	SOUTHEAST, FL
81	NDADFLAC	WPBHFLHH	SOUTHEAST, FL
82	NDADFLGG	NDADFLOL	SOUTHEAST, FL
83	NDADFLOL	PMBHFLMA	SOUTHEAST, FL
84	NDADFLOL	WPBHFLAN	SOUTHEAST, FL
85	NDADFLOL	WPBHFLGR	SOUTHEAST, FL
86	NDADFLOL	WPBHFLHH	SOUTHEAST, FL
87	PMBHFLCS	WPBHFLAN	SOUTHEAST, FL
88	PMBHFLCS	WPBHFLGA	SOUTHEAST, FL
89	PMBHFLCS	WPBHFLGR	SOUTHEAST, FL
90	PMBHFLCS	WPBHFLHH	SOUTHEAST, FL
91	PRRNFLMA	WPBHFLGA	SOUTHEAST, FL