ORIGINAL

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Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

October 8, 1998

Re: Docket No. 980696-TP
Determination of the cost of basic local telecommunications service, pursuant to Section 364.025, Florida Statutes

Dear Ms. Bayo:

On September 24, 1998, GTE Florida Incorporated filed a Notice of Service of Response in Support of BellSouth Telecommunications, Inc.'s Motion to Compel AT&T to Produce Documents in the above matter. However, the actual Response and accompanying exhibits were inadvertently omitted from the filing. We are, therefore, enclosing an original and fifteen copies of GTE Florida's Response for filing in the above matter. The parties of record in this docket were properly served with the entire filing. We apologize for any inconvenience this omission may cause.

Should you have any questions regarding the enclosed, please contact me.

Sincerely,

Kimberly Caswell

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Enclosures

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Determination of the Cost of Basic Local Telecommunications Service, pursuant to Section 364.025, Florida Statutes	)	Docket No.: 980696-TP Dated: September 24, 1998

GTE FLORIDA INCORPORATED'S RESPONSE IN SUPPORT OF BELLSOUTH TELECOMMUNICATIONS, INC.'S MOTION TO COMPEL AT&T TO PRODUCE DOCUMENTS

GTE Florida Incorporated ("GTEFL"), by and through undersigned counsel, hereby joins in support of BellSouth Telecommunications, Inc.'s ("BellSouth") Motion for entry of an Order compelling the production of documents by AT&T Communications of the Southern States, Inc. ("AT&T"). In submitting this Response in Support, GTEFL joins Sprint-Florida, Inc. ("Sprint-Florida") in asking this Commission to grant BellSouth's Motion. GTEFL and AT&T have conferred on this issue and have been unable to arrive at an adequate solution. Grounds in support of this Response are as follows:

1. AT&T and MCI are sponsoring in this proceeding the HAI Model, Version 5.0a ("HAI 5.0a" or "HAI Model") as a means of estimating the cost of basic local telecommunications service. AT&T/MCI sponsor the HAI Model through the testimony of Mr. Don Wood and Mr. James Wells.

2. Mr. Wood alleges in his direct testimony that HAI 5.0a is the "most accurate and reliable means" of determining the forward-looking cost of basic local telecommunications service. (Wood Direct at 3). Mr. Wood also claims that HAI 5.0a

offers "verifiable costs for universal service cost calculations," (*Id.* 7) and that the HAI Model satisfies the FCC's criteria requiring all "underlying data, formulae, computations and software associated with [a proposed] Model be available to all interested parties for review and comment." (*Id.* at 17-18).

3. As a necessary means of evaluating the HAI Model, and in accordance with Mr. Wood's assertion that HAI is "open," "verifiable," and that all components of the Model are "available for review and comment," on August 10, 1998 GTEFL served upon AT&T several interrogatories and requests for production of documents. The interrogatories and document requests at issue in this Response relate to the underlying data that eventually is used in HAI 5.0a's customer location assumptions. The specific requests for the production of documents and interrogatories relating to the underlying and pre-processed data served upon AT&T by GTEFL are attached as Exhibit A.[1] The discovery served by GTEFL seek exactly the same type of information that BellSouth and Sprint-Florida requested, and are the same materials subject of BellSouth's pending Motion to Compel. (*See* BellSouth's Motion to Compel, paragraphs 1-6; Sprint-Florida's Response in Support of BellSouth's Motion to Compel AT&T to Produce Documents, paragraphs 2-4). Indeed, on August 14, GTEFL requested the production of documents AT&T produced to BellSouth.

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[1]GTEFL has attached the entirety of AT&T's responses to GTEFL's First Set of Requests for Production of Documents and First Set of Interrogatories. For purposes of this Response, only Document Request numbers 10, 12, 13, 16, 17, 18, 19, 20, and 34 and Interrogatory numbers 3, 5, 6, 7, 8, 23 and 24 are at issue.

4. As AT&T has done in response to both BellSouth's and Sprint-Florida's requests for similar data, on August 19, 1998 and again on September 1, 1998, AT&T objected to GTEFL's discovery requests on the grounds that the requested information is the property of third party vendors and is "only available from PNR." On September 4, 1998 BellSouth filed the present Motion to Compel. On September 11, 1998 Sprint-Florida joined in support of BellSouth's Motion. GTEFL hereby supports BellSouth's Motion as well.

5. The data sought by GTEFL, BellSouth, and Sprint-Florida is designed to enable all parties and ultimately this Commission to evaluate whether HAI 5.0a satisfies what AT&T/MCI characterize as the "first fundamental step" that a cost model "must perform in order to accurately calculate costs." (Wood Direct at 4). Namely, whether HAI 5.0a can "accurately determine customer locations." (*Id.*). AT&T, through its unfounded objections and in stark contrast to the direct testimony of its own witnesses, is now attempting to prevent GTEFL, BellSouth, Sprint-Florida, and this Commission from reviewing the data necessary to determine whether HAI 5.0a fulfills what AT&T/MCI themselves argue is one of the two fundamental steps a cost model must take--accurately determining customer locations.

6. The significance of the data GTEFL, BellSouth, and Sprint-Florida seek cannot be understated. HAI 5.0a, and especially the customer location assumptions of HAI 5.0a, are the direct result of the data, programming, algorithms, software, and assumptions made or used by PNR and Associates ("PNR"). (*See* BellSouth's Motion at Paragraph 8). Simply put, without the PNR processing and resulting product, HAI

5.0a would not function. It is precisely because of the importance of the PNR data that GTEFL is seeking to review it. Without a proper review, GTEFL and this Commission must blindly accept AT&T/MCI's assertion that the data used in HAI 5.0a and HAI5.0a's output are correct. It is GTEFL's assertion, along with that of BellSouth, that an opportunity to review the data requested would demonstrate that the HAI Model is fatally flawed. (*See* BellSouth's Motion to Compel at Para. 10). GTEFL has been and remains willing to enter into an appropriate protective agreement to ensure that the confidentiality of the data is not compromised.

7. AT&T's refusal to produce PNR data is not new. Nor is the decision of public utility commissions to call AT&T's bluff. As Sprint-Florida notes in its Response in Support to BellSouth's Motion, in a recent proceeding before the Washington Utilities and Transportation Commission ("WUTC"), AT&T was ordered pursuant to GTE's Motion to Compel to produce the exact same type of data that GTEFL, BellSouth, and Sprint-Florida are seeking in this proceeding. In specifically granting GTE's Motion to Compel, the WUTC correctly held that "access to the pre-processed geocoding and clustering data used to 'geocode' customers and create the customer serving areas is critical to evaluate the HAI Model's database and software." (*In the Matter of Determining Costs for Universal Service*, Docket No. UT-98031(a), Seventh Supplemental Order Granting and Denying, in part, GTE's Motion to Compel, and Denying US West's Motion to Remove Testimony, Before the Washington Utilities and Transportation Commission, August 26, 1998, at 3) (Attached hereto as Exhibit B). The WUTC went on to hold that AT&T's position that PNR data is the intellectual property of

a third party vendor and is only available from PNR "*leaves the parties and the Commission in a totally unacceptable '**black hole**' with respect to evaluating this information.*" (*Id.*) (emphasis added). Accordingly, the WUTC ordered AT&T to provide the requested information. This Commission should do the same.

8. For all of the foregoing reasons, and for all of the reasons stated in both BellSouth's Motion to Compel and Sprint-Florida's Response in Support of BellSouth's Motion, GTEFL urges the Commission to compel AT&T to provide the documents and information requested in GTEFL's Requests for Production of Document numbers 10, 12, 13, 15, 16, 17, 18, 19, 20 and 34, and Interrogatory numbers 3, 5, 6, 7, 8, 23 and 24.

DATED this 24th day of September, 1998.

Respectfully submitted,

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COUNSEL FOR GTE FLORIDA INCORPORATED

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Determination of the cost of basic local telecommunications service, pursuant to Section 364.025, Florida Statutes.	DOCKET NO. 980696-TP DATED: September 1, 1998

AT&T'S RESPONSES, OBJECTIONS, AND MOTION FOR PROTECTIVE ORDER WITH RESPECT TO GTE FLORIDA, INCORPORATED'S FIRST REQUEST FOR PRODUCTION OF DOCUMENTS

AT&T Communications of the Southern States, Inc. (hereinafter "AT&T"), pursuant to Rules 25-22.034 and 25-22.035, Florida Administrative Code and Rules 1.340 and 1.280(b), Florida Rules of Civil Procedure, hereby submits the following Responses, Objections, and Motion for Protective Order with respect to GTE Florida Incorporated's (hereinafter "GTE") First Request for Production of Documents to AT&T Communications of the Southern States, Inc., dated August 11, 1998.

OBJECTIONS AND MOTION FOR PROTECTIVE ORDER

Pursuant to the terms of Order No. PSC-98-0813-PCO-TP issued by the Florida Public Service Commission ("Commission") in the above-referenced docket on June 19, 1998, AT&T served its Objections to GTEFL's First Request for Production of Documents on August 17, 1998. These objections are incorporated herein by specific reference thereto. AT&T's objections are submitted pursuant to the authority contained in Slatnick v. Leadership Housing Systems of Florida, Inc., 368 So.2d 79 (Fla. 3d DCA 1979). To the extent that a Motion for Protective Order is required, the objections

EXHIBIT A

attached hereto and incorporated herein by specific reference thereto are to be construed as a request for a protective order.

RESPONSES TO SPECIFIC REQUESTS

Subject to and without waiver of its General Objections, Specific Objections, or Motion for Protective Order, AT&T submits the following Responses to specific discovery requests of GTE.

1. Produce all documents AT&T and/or HAI Consultants reviewed or relied upon in responding to GTE Florida Incorporated's First Set of Interrogatories.

GTEFL DR 1 RESPONSE: See response to DR 2.

2. Produce all documents that members of AT&T or HAI, reviewed, wrote, or relied upon in establishing the default inputs and/or engineering assumptions contained in HAI Model Release 5.0a Inputs Portfolio. This production should include, but is not limited to, vendor quotes or survey results received by the HAI "engineering team," surveys, requests for information, or any similar correspondence sent by HAI or its "engineering team" to any contractor, vendor or equipment provider; and any work papers, charts, tables, notes, etc. produced, created or reviewed by HAI, the "engineering team," any member of the engineering team, and/or AT&T. (AT&T was ordered to produce similar documents in several proceedings, including, among others, the Washington Generic Cost Proceeding, the AT&T/GTE New Mexico Arbitration proceeding, and the Hawaii Generic Cost Proceeding. For ease of identification and production, the documents GTE

requests were commonly referred to in the three identified proceedings as the "Fassett" documents. The documents produced in these prior proceedings were subject to protective agreements that prevent GTE's use of these documents in this proceeding. Moreover, any "updates" to the previously produced materials should be produced in this proceeding.)

GTEFL DR 2 RESPONSE:

Documents/publications provided in California. The following documents identified in the Hatfield Model 5.0 inputs portfolio were produced to GTE in a state regulatory proceeding in California, Docket ONAD-R.93-04-003/I.93-04-002. Due to the volume of this documentation, as has been discussed by counsel for AT&T and GTE, AT&T is still gathering the following documents:

"Statement of Joint Pole Units and Annual Pole Unit Changes by Regular Members", Monthly Financial Statements of the Southern Alabama Joint Pole Committee, October 1996.

Northern Telecom, DMS-STP Planner 1995, Product/Service Information, 57005.16, Issue 1, April 1995.

Blake, V.A., P.V. Flynn and F.B. Jennings, "A Study of AT&T's Competitor's Capacity to Absorb Rapid Demand Growth," June 20, 1990, Filed in CC Docket No. 90-132.

Brand, T.L., G.A. Hallas, et al.,"An Updated Study of AT&T's Competition's Capacity to Absorb Rapid Demand Growth," April 19, 1995, compiled by AT&T Bell Laboratories.

AT&T Form M and other data examined in developing variable overhead factor.

AT&T Outside Plant Engineering Handbook, August 1994, page 14-10. Footnoted in HIP as AT&T, Outside Plant Systems.

Documents/Publications that cannot be provided but are available to GTE. The following documents which are identified in the Hatfield Model 5.0 inputs portfolio have not been provided to GTE for the reasons described below, but are otherwise publicly available to GTE. All Bell Communications Research document/publications listed below and referenced in the Hatfield Model are protected by copyright; Bellcore has refused AT&T permission to copy its documents. Bellcore documents can be obtained from Bellcore, Piscataway, NJ.

Bellcore, BOC Notes on the LEC Networks - 1994.

Bellcore, Telecommunications Transmission Engineering, 1990.

Bellcore, Clearance for Aerial Cable and Guys in Light, Medium and Heavy Loading Areas (BR 627-070-015), Issue 1, 1987;

Bellcore, Clearance for Aerial Plant, (BR 918-117-090), Issue 5, 1987;

Bellcore, Long Span Construction (BR 627-370-XXX), date unknown;

Bellcore, LATA Switching Generic Requirements, Section 17: Traffic Capacity and Environment, TR-TRY-000517, Issue 3, March 1989.

R.S. Means, Square Foot Costs, 18th Annual Edition, 1996 and Residential Cost Data, 15th Edition, R.S. Means Construction Publishers, Kingston, MA 1996. R.S. Means publications are copyrighted publications. The publications are available commercially from R.S. Means Company Kingston, MA

Martin D. and Marques Allyn (eds.), 1997 National Construction Estimator, 45th Edition. This is a copyrighted publication that can be obtained commercially from Craftsman Book Company, Carlsbad, CA.

Lee, Frank E., Outside Plant, abc of the Telephone Series, Volume 4, is a copyrighted publication that can be obtained from abc TeleTraining, Inc., Geneva, IL.

Statistical Abstract of the United States, 1995, 115th. Edition, US Department of Commerce, Economic and Statistics Administration, Bureau of the Census. Available from the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C. 20402-9328.

Cable Construction Manual, 4th Edition, is a copyrighted publication by CommScope, Inc. The publication can be obtained from CommScope, Inc., Hickory, NC.

Northern Business Information, U.S. Central Office Equipment Market, 1995 Edition, Northern Business Information, a division of McGraw-Hill Book Company, New York, January 1996. This document is copyrighted by McGraw-Hill; AT&T is not authorized to provide copies to other parties. The document is available commercially from McGraw-Hill, Avenue of the Americas, New York, NY.

Reed, David P., Residential Fiber Optic Networks and Engineering and Economic Analysis, Artech House, Inc., Boston 1992. This a copyrighted publication that AT&T believes is available commercially from Artech House, Inc., Canton Street, Norwood, MA.

Kiley, Martin D., 1996 National Construction Estimator, Craftsman Book Company, 6058 Corte del Cedro, Carlsbad, CA 92018.

AT&T Network Systems (now Lucent Technologies), Outside Plant Systems, Select Code 2268B, February 1992, 2000 Northeast Expressway, Norcross, GA 30071.

Bell Telephone Laboratories, Incorporated, Engineering and Operations in the Bell System, Indiana Publication Center - Select Code No. 500-478, P.O. Box 26205, Indianapolis, Indiana 46226, 1977.

AT&T Network Systems (now Lucent Technologies), Fiber Optic Products Catalog, Indiana Publication Center - Select Code No. 2492C, P.O. Box 26205, Indianapolis, Indiana 46226, 1995.

Documents/publications that are a matter of public record. GTE can obtain the following documents from the appropriate Federal or State agency or department using the citations provided below:

Federal Communications Commission documents of record:

Bell Atlantic ONA filing (FCC Docket 92-91), February 13, 1992 and SBC ONA filing (FCC Docket 92-91), May 18, 1992.

FCC Monitoring Report. Docket No. 87-339, May 1995, Table 4.15. In the Matter of Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board, Docket 80-286, Order, December 1, 1994, 9 FCC Rcd 7962 (1994). See Universal Service Fund Data Request, File 1 of 4, page 8 of 11, 9 FCC Rcd 7962, 7976.

Ex parte submission by AT&T to the FCC in CC Docket No. 95-116, dated May 22, 1996.

"Statement of Matthew I. Kahal Concerning Cost of Capital," In the Matter of Rate of Return Prescription for Local Exchange Carriers, File No. AAD95-172, March 11, 1996. Also, AT&T ex parte filing of February 12, 1997, "Estimating the Cost of Capital of Local Telephone Companies for the Provision of Network Elements," by Bradford Cornell, September, 1996. An updated version of Dr. Cornell's white paper is attached.

FCC CS Docket No. 97-98 NPRM, March 14, 1997

State documents of record:

1993 New Hampshire Incremental Cost Study, provided by New England Telephone Company in compliance with New Hampshire Public Utility Commission's Order Number 20,082, Docket 89-010/85-182, March 11, 1991. Page 90 for Public Telephone Equipment per station; pages 122 & 126 for Billing per line per month; and page 394 for Alternative Central Office Switching Expense Factor and Alternative Circuit Equipment Factor.

Direct Panel Testimony of Richard Wolf, Clay T. Whitehead, Donald Fiscella, David Peacock and Dr. Miles Bidwell on Behalf of the Electric Utilities, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997;

New York Telephone's Response to Interrogatory of January 22, 1997, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

3. Produce the most recent set of Florida input values and equipment prices used by AT&T in its Transport Incremental Cost Model ("TICM") for the inputs listed below. These input values are the same TICM input values AT&T was ordered to produce in several proceedings, including the Washington Generic Cost Proceeding, the AT&T/GTE New Mexico Arbitration Proceeding, and the Hawaii Generic Cost Proceeding. (The input values produced in these three proceedings are subject to protective agreements that prevent GTE from using these previously produced values in this proceeding.)

a. the actual number of minutes of use per month, per DS-0 level switched access trunk;

b. the investment per DS-0 level trunk port;

c. the investment per installed foot of fiber;

d. the tandem common equipment investment;

e. the power investment per switch;

f. the cost of construction per square foot of a wire center building;

g. the land price per square foot of land that contains switch buildings;

h. the busy hour fraction of daily usage;

i. the annual to daily usage reduction factor;

j. IOF wire center EF&I fully loaded labor rate per hour in;

k. Optical Distribution Panel cost to connect 24 fibers to the transmission equipment;

l. the number of hours required to install the equipment associated with IOF transmission systems.

GTEFL DR 3 RESPONSE:

AT&T has no responsive documents. AT&T no longer maintains an operable version of TICM. Use of TICM was discontinued and the model was deactivated as part of a larger effort to reduce AT&T's internal operating costs. TICM is being archived and is currently in the process of being completely removed from the large computer server on which it resided. Unlike Hatfield Model 5.0, which could be produced on a CD-ROM, TICM required approximately 30 gigabytes of storage. Retrieving the model from archives would require locating a server, re-creating an interface for the model and locating personnel who could run the model. It cannot be produced in its current form. Recreation of TICM would be burdensome and oppressive. TICM is

irrelevant to the scope of this proceeding and not reasonably calculated to lead to the discovery of admissible evidence.

4. If AT&T contends that GTE's existing network in Florida is inefficient, produce all documents supporting this contention.

GTEFL DR RESPONSE 4:

This request seeks documents that are irrelevant to the scope of this proceeding nor reasonably calculated to lead to the discovery of admissible evidence. There has been no such evaluation done on any ILEC existing network as implied in the request. The primary reason is that these models are based on FCC assumptions such as the "scorched node" approach of building an entirely new network and forward-looking costs (i.e., specifically not using the costs of the embedded network). Notwithstanding, the embedded LEC networks still work on a substantial basis with excessive bridged tap, load coils, and gauge designs that exceed standard resistance design. There are also many loops beyond 18,000 feet using pure copper feeder and distribution cables. The HAI Model by design has eliminated all these conditions. The HAI Model uses fiber optic cable feeds extensively thus providing better transmission qualities and lower maintenance. See also response to DR No. 2.

5. If AT&T contends that GTE's current costs for forward-looking technology in its present network are too high, produce all documents supporting this contention.

GTEFL DR 5 RESPONSE:

There has been no such evaluation done on any ILEC existing network as implied in the request. The primary reason is that these models are based on FCC assumptions such as the "scorched node" approach of building an entirely new network and forward-looking costs (i.e., specifically not using the costs of the embedded network).

6. Provide any and all documents, workpapers, or correspondence that supports the claim that the NBI study assumes a line to trunk ratio of 6:1 as stated in the HAI Model Description section 6.5.3.1, page 53.

GTEFL DR 6 RESPONSE:

There are no documents, work papers, or correspondence relied upon to support the claim that the NBI study assumes a line to trunk ratio of 6:1 other than those referenced documents in section 6.5.3.1 of Model Description.

7. Page 2 of the HAI 5.0a Model Description states that "the level of service quality engineered into the HAI Model exceeds, by a substantial margin, the customary level of basic service quality offered by LECs over their embedded network." (a) Produce all documents, studies, empirical data, or other analysis that support the contention that the service quality engineering into the HAI Model exceeds, "by a substantial margin," service quality in the LECs present network; (b) define and/or quantify the "substantial

margin" to which the Model Description refers; and (c) produce all documentation, workpapers, engineering guidelines, engineering practices, or industry standards that describe or define the "customary level of basic service quality offered by LECs."

GTEFL DR 7 RESPONSE:

The embedded LEC networks still work on a substantial basis with excessive bridged tap, load coils, and gauge designs that exceed standard resistance design. There are also many loops beyond 18,000 feet using pure copper feeder and distribution cables. The HAI Model by design has eliminated all these conditions. The HAI Model uses fiber optic cable feeds extensively thus providing better transmission qualities and lower maintenance. Also, see response to DR 2 for further documentation.

8. Produce all documents sent to or obtained from NBI that provide any identification or description of switching software features included or excluded from the per line prices used in the HAI 5.0a switch cost curve. If no such documentation exists, describe in detail any communication between HAI (or AT&T) and NBI relating to such information. Provide the date of the communication, the person(s) involved, and the details of what was communicated.

FLGT DR 8 RESPONSE:

See Attached "HM Switching Curves" document.

Communication between AT&T and NBI regarding switching has taken place over the past 24-36 months in the form of conversations either by telephone, in person at one-to-one meetings or at larger meetings, and by E-

mail. It would not be possible to recreate all the conversations, meeting and/or E-mail messages that may have had some bearing on switching within HAI.

9. In calculating switching costs, identify and provide the information sources that were used to determine the discount off list prices that large and small telephone companies (respectively) will receive from switching equipment vendors. If the discount values selected or implied in the HAI 5.0a are weighted averages of multiple discounts, please provide all information sources supporting the weights which are used or implied in the weighted average discount calculation.

FLGT DR 9 RESPONSE:

See Attached "HM Switching Curves" document and response to DR 2.

1. **Regarding the request for information sources supporting discounts - Prices of telecommunications equipment and materials are notoriously difficult to obtain from manufacturers and large sales organizations. The HM5.0 developers thus have often been forced to rely on informal discussions with vendor representatives and personal experience in purchasing or recommending such equipment and materials. Nevertheless, a great deal of experience and expertise in the industry underlies the estimates, where they were necessary to augment explicit, publicly available information.**

10. Provide in electronic form the geo-coded data for the State of Florida that is used to produce the clusters in the HAI 5.0a.

GTEFL DR 10 RESPONSE:

AT&T objects to this request for the reasons set forth in its preliminary objections to GTEFL's request no. See attached "Affidavit 2.4.98 (Clarke) – PNR & Geocode"

11. Provide all documents, studies performed by AT&T or HAI, or other analyses which support AT&T's contention that HAI 5.0a's geo-coded locations are accurate to within six decimal places of a degree.

FLGT DR 11 RESPONSE:

Geocoding

Geocoding is used in order to most accurately assign known customer locations to actual, physical locations. Geocoding is also known as location coding. It involves the assignment of latitude and longitude coordinates to actual street addresses. Geocoding software is sophisticated enough to provide information regarding the source and precision of the lat/long coordinates selected. This precision indicator allows PNR and Associates of Jenkintown, PA (PNR), to select only those addresses that have been geocoded to a highly precise point location. Almost uniformly, geographical address locations are derived from enhanced versions of the USGS' TIGER database.

To perform its geocoding, PNR uses a program by Qualitative Marketing Software called Centrus Desktop. The enhanced data behind Centrus is

provided by GDT. Premium GDT data are updated bi-monthly to ensure accuracy. These data integrate new information from US Postal Service ("USPS") databases and private sources so that new streets and additions and changes to ZIP codes, street names, and address ranges are included as soon as possible.

Centrus Desktop allows geocoding on two levels. The first is a match to the actual address -- which is the only type of geocoding used in HM 5.0a customer location. The second is a match to a ZIP code (ZIP, ZIP+4, ZIP+2) level. Because of the lesser accuracy in the second method, these geocodes are not used in PNR's process of assigning customer locations.

Data hierarchy in address geocoding starts with the State. The hierarchy continues with City, Street Name, Street Block, and finally, House Range. Typically, a Street Block is the same as an actual physical block but it can also represent a partial block as well. The House Range displays address information from the USPS. Additionally, where there are gaps in the actual address range, the House range will account for these gaps.

Initially, the address-coding module in Centrus Desktop compares the street addresses from the input file to the records contained in the USPS ZIP+4 directory and the enhanced street network files. If the address is located in the USPS files, the address is standardized and a ZIP+4 is also returned. If

this address is also found in the street network files, Centrus Desktop determines a latitude and longitude for the location. Optionally, if the address is not found in the street network files, location information may be applied from the ZIP level.[1]

Location codes generated by Centrus Desktop indicate the accuracy of the geocode. For purposes of customer location clustering in the HM 5.0a only those geocodes assigned at the 6-decimal place point location made directly to the street segment are used.[2]

While the software and data used allow for a much more comprehensive output of data elements, for use in HM 5.0a customer location, the following addressing elements are extracted:

Address

City

State

ZIP

ZIP+4

---

[1] Note that ZIP+4 codes may be very precise. In general, they are specific to the face of single city block. While it may turn out that accuracy to the street block face is quite sufficient for accurate cost modeling of local telephone networks, in the interest of conservatism, these type of geocodes are not presently used in HM 5.0a data.

[2] Furthermore, placement of the address along the street segment is quite precise. The Centrus geocoding software and reference data also make use of USPS determinations of whether the segment contains a continuous or discontinuous range of address numbers. Thus, if the addresses on a block face run from 200 to 250 and 274 to 298 (with the range between 252 and 272 missing), an address of 250 will be geocoded, it will not simple be geocoded as at midblock.

Latitude

Longitude

Census Block

Match Code

Location Code

Gross-up

The above-derived precisely geocoded locations are then counted by CB. These geocoded location counts by CB are then compared to target total line counts for that CB derived by the PNR NALM (described in section 2.3 of the HM5.0a Model Description). If the geocoded location counts are less than the target count, the residual number of customer location points is then computed, and geographical locations for these points are generated. This process is performed by PNR using TIGER file CB boundaries. Each of the additional number of customer location points that a CB requires to total to its target count is generated and assigned a geocode so as to place these "surrogate" points uniformly along the CB's boundary. While these boundary-assumed locations for the gross-up or surrogate points are plausible – because most CBs are bounded by roads – this is also a conservative placement of the gross-up points because it assumes they are maximally separated from one another.

As a result of this gross up process, the customer location file now contains records for each of the U.S.'s more than 100 million customer locations with

a geocode (either calculated precisely or through the gross up process) associated with it.

See attached "Affidavit 2.4.98 (Clarke) – PNR & Geocode"

12. Provide a copy of the PNR National Access Line Model, Version 2.0, along with all associated inputs which were used to produce the runs of HAI 5.0a for Florida. Include in this response copies of all software programs and any input files mentioned in the Model Description that were used in any way to produce or affect the numbers which were used to produce the runs of HAI 5.0a for Florida.

FLGT DR 12 RESPONSE:

See Preliminary objections to DR No. 12. See the affidavit of Richard N. Clarke attached.

13. Provide copies of the regression analysis and the results of that analysis, which are discussed at p. 22 or the HAI Model Description.

GTEFL DR 13 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession

of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

14. Provide all documents relating to any analysis done by the sponsors of HAI 5.0a to demonstrate that the procedure of "grossing up" customer sites for which geocoded points or addresses are not available by placing such sites on the census block boundaries does not understate the facilities required to actually serve such customers on a forward looking basis. If no such analysis has been conducted, so state.

GTEFL DR 14 RESPONSE:

See "Gross Up" portion of response to DR 11.

15. Provide all workpapers associated with the projection of lines by PNR for the 1 million businesses which are not included in the Dun and Bradstreet database.

GTEFL DR 15 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through

AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

16. Provide all documents related to the estimated total business count of 12 million which is used as the basis of the business adjustment described at pp.22 and 23 of the HAI Model Description.

GTEFL DR 16 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense

of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

17. Provide an electronic copy of the Dun & Bradstreet National Database along with all relevant documentation used to derive the HAI 5.0a's database.

GTEFL DR 17 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

18. Provide an electronic copy of the Metromail. Inc. National Database along with all relevant documentation used to derive HAI 5.0a's database.

GTEFL DR 18 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

19. Provide an electronic copy of the Point-Coding Reference Data for CENTRUS point coding software.

GTEFL DR 19 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this

proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its posse sion custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

20. Provide an electronic copy of the Data Preparation and Clustering Software along with all relevant documentation used to drive the HAI 5.0a's database.

GTEFL DR 20 RESPONSE: AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense

of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

21. Provide all documents referring or relating to any external validation tests or studies that have been performed on HAI 5.0a. "External validation" refers to any comparisons of the HAI 5.0a's output with actual, publicly reported data.

GTEFL DR 21 RESPONSE:

There have been comparisons of Hatfield Model 5.0 with BCPM. [Jim Wells will provide]

22. Provide all correspondence, contracts, letters, memoranda, or any other documents sent to or received from PNR concerning the development of HAI 5.0a or any of the Model's earlier versions.

GTEFL DR 22 RESPONSE: AT&T objects to this request on the grounds that whatever remote relevance it may have is outweighed by the enormous burden of developing the list requested.

23. Produce all documentation supporting the reduction of investment in site preparation and power for low-density remote terminal DLC systems from $2,500 in version 4.0 of the HAI Model to $1,300 in version 5.0a of the HAI Model.

GTEFL DR 23 RESPONSE:

3.5.1. DLC Site and Power per Remote Terminal

Definition: The investment in site preparation and power for the remote terminal of a Digital Loop Carrier (DLC) system.

Default Values:

Remote Terminal Site and Power	
High Density GR-303 DLC	Low density GR-303 DLC
$3,000	$1,300

Support: The incremental per site cost was estimated by a team of outside plant experts with extensive experience in contracting for remote terminal site installations. Low Density DLC cabinets can be mounted on a small 41" x 38" prefabricated concrete or fiberglass pad.

There are a wide variety of DLC products available for low-density applications. These DLC products are designated as NGDLC (Next Generation Digital Loop Carrier), and are also GR-303 compliant. While there are many quality DLC products available, it is normally better to model a single manufacturer since components are not interchangeable. In HM 4.0, low density DLC deployment was modeled on the DSC Communications Corp. ONU-96. This unit is compatible with the DSC Litespan-2000 units used in the model for large size DLC. HM 4.0 used products by Seiscor for long loop T-1 copper extensions. The engineering team, in doing its continuing review of industry improvements, decided to

switch to the UMC-1000 small digital loop carrier systems manufactured by Advanced Fibre Communications, Inc. (AFC) for HAI5.0. This unit is rapidly capturing a significant portion of the low-density fiber fed DLC market, and is of very high quality. In addition, the engineering team was able to secure list prices for the equipment which assists in documenting assumptions.

The following is excerpted from the Hatfield Inputs Portfolio for further information. Since AFC was willing to give our engineers list prices, New England Telephone should be able to secure their own pricing information from this vendor to verify our assumptions.

The incremental per site cost was estimated by a team of outside plant experts with extensive experience in contracting for remote terminal site installations. Low Density DLC cabinets can be mounted on a small 41" x 38" prefabricated concrete or fiberglass pad.

24. Section 7 of the HAI 5.0a Inputs Portfolio lists the source of the "Regional Labor Adjustment Factor" table as "Martin D. Kiley and Marques Allyn, eds., 1997 National Construction Estimator 45th Edition, pp. 12-15. [Normalized for New York State as 1.00]."

a. Provide any documents, work papers, reports, etc. used in the development of the 4.66 figure. Identify any loadings that are included. If no documents exist, provide the rationale for the 4.66 figure.

b. Provide any documents, work papers, reports, etc. used in the development of the 0.55 figure. If no documentation exists, provide the rationale for the 0.55 figure. Include the reasons for using this data to represent the components identified in subsection (f), above.

GTEFL DR 24 RESPONSE: AT&T objects to these requests on the grounds that AT&T did not author nor publish the 1997 National Construction Estimator 45th Edition. The information contained in the referenced material is a nationally recognized source commonly relied upon by business and government agencies and is deemed to be accurate and current.

25. The following formula is located in cell B26 of HAI Release 5.0a's Operator Worksheet of the Expense Output Workbook:

=(("Investment Input"!$D3 + "Investment Input"!$E3 + "Investment Input"!$G3) * (4.66*0.55)) + (("Investment Input"!$D12 + "Investment Input"!$E12 + "Investment Input"!$G12) * (4.66*0.55))

a. Provide any documents, work papers, reports, etc. used in the development of the 4.66 figure. Identify any loadings that are included. If no documents exist, provide the rationale for the 4.66 figure.

b. Provide any documents, work papers, reports, etc. used in the development of the 0.55 figure. If no documentation exists, provide the rationale for the 0.55 figure. Include the reasons for using this data to represent the components identified in subsection (f), above.

GTEFL DR 25 RESPONSE:

a. The 4.66 value is based on a compilation of values provided in line item 6621 on the ARMIS report.

b. The value is based on a ratio of the values provided in line item 700 of the ARMIS 43-02 report.

26. The Distribution Module of HAI 5.0a references "Riser", "Intrabuilding", "Block" and "Building" cable.

a. Define each of these cable types.

b. For each cable type, identify the situations in which each cable type would be used within the Distribution Module of HAI 5.0a.

GTEFL DR 26 RESPONSE:

Block - cable attached to the [out]sides of buildings, normally found in higher density areas, and referred to as "block cable," is appropriately classified to the aerial cable account.

Intrabuilding - To facilitate modeling, HM 5.0a also reasonably includes Intrabuilding Network Cable under its treatment of aerial cable. Thus the default percentages (section 2.5.1, HM5.0a HIP) above 2,550 lines per square mile indicate a growing amount of block and intrabuilding cable, rather than cable placed on pole lines.

Riser cable – placed vertically in a riser cable shaft or conduit inside of a high rise building. Typically it would go from the building entrance terminal in the basement of a building up a riser cable shaft to be terminated or spliced to distribution cables on multiple floors in a high-rise building.

Building Cable is a general term without specific application.

27. If the HAI 5.0a Model does not assume there will be distribution plant supported on poles in the top two density zones, provide all documents, studies, and empirical data supporting this assumption.

GTEFL DR 27 RESPONSE:

Definition:

The relative amounts of different structure types supporting distribution and feeder cable in each density zone. For distribution cable, in the highest two density zones, aerial structure includes riser and block cable.

Based on the fact that increasing density drives more placement in developed areas, and that as developed areas become more dense, placements will more likely occur under pavement conditions, it is assumed in HM5.0a that density, measured in Access Lines per Square Mile, is a good determinant of structure type.

Aerial/Block Cable:

The most common cable structure is still the pole line. Where an existing pole line is available, cable is normally placed on the existing poles. Abandoning an existing pole line in favor of buried plant is not usually done.

HM 5.0a accounts for drop wire separately; drop wire is not considered part of aerial cable in HM 5.0a. However, cable attached to the [out]sides of buildings, normally found in higher density areas, and referred to as "block

cable," is appropriately classified to the aerial cable account. To facilitate modeling, HM 5.0a also reasonably includes Intrabuilding Network Cable under its treatment of aerial cable. Thus the default percentages (section 2.5.1, HM5.0a HIP) above 2,550 lines per square mile indicate a growing amount of block and intrabuilding cable, rather than cable placed on pole lines.28. The Copper Feeder Manhole Spacing table in Section 3.1.2 of the HAI Release 5.0a Inputs Portfolio uses distances between manholes of 400 feet, 600 feet or 800 feet for various density zones.

28. The Copper Feeder Manhole Spacing table in Section 3.1.2 of the HAI Release 5.0a Inputs Portfolio uses distances between manholes of 400 feet, 600 feet or 800 feet for various density zones.

a. For each density zone, provide any documents, work papers, etc. used in the development of the default distance between manholes.

b. If no documents exist, provide the rationale for using the listed distance between manholes in each density zone.

GTEFL DR 28 RESPONSE:

a. There are no workpapers other than the HIP Binder and the documents/publications listed in response to DR 2 above.

b. The variation in the distance between manholes reflects the real-world condition of the typical OSP feeder network. In higher density, more urban area manholes are placed closer together than in lower density, more rural areas. The reason is that in urban areas there are more customer buildings

and streets that cross the feeder route which require manholes for the splicing of subfeeder cables.

29. With respect to the GTE Florida Incorporated network modeled by the HAI Model:

a. How many switches that function solely as operator tandems have been modeled?

b. For each of the operator tandems identified in subsection (a), list the specific CLLI code.

c. For each of the operator tandems identified in subsection (a), list the exact cell locations within the HAI Model's work and distance files where information related to each operator tandem (such as the operator tandem names, CLLI codes, etc.) can be found, as well as the specific value shown in each of the cell locations.

GTEFL DR 29 RESPONSE:

See attached spreadsheet DR29.

30. Produce the most current AT&T engineering guidelines (electronic and hard copy) and/or documents used by AT&T personnel to engineer AT&T's long distance and local exchange networks (this should include outside plant, local switch, and tandem switch guidelines).

GTEFL DR 30 RESPONSE:

AT&T Engineering Guidelines were not used by the HAI OSP Engineering Team to develop the HAI Model. Furthermore, they are not relevant for the type of narrowband, residential access network being modeled in this proceeding.

31. Produce what the HAI 5.0a sponsors believe to be the most current publicly available outside plant engineering guidelines.

GTEFL DR 31 RESPONSE:

See response to DR 2.

32. Produce any and all AT&T and/or Lucent Technologies updates to the AT&T Outside Plant Engineering Handbook dated August 1994.

GTEFL DR 32 RESPONSE:

See response to DR 2. There were no updates by AT&T. Lucent owns the document.

33. Produce a copy of any and all outside plant engineering guidelines relied upon, reviewed, or used by HAI or any consultants thereto to develop HA1 5.0a.

GTEFL DR 33 RESPONSE:

See response to DR 2.

34. Please provide GTEFL either:

(a) access to the HAI Model version 5.0a preprocessing data for Florida, to at least the same extent as such data were made available to GTE pursuant to the Minnesota

Public Utilities Commission's May 12, 1998 Order Granting GTE Motion to Compel Discovery in the Universal Service Docket, Docket No. P-999/M-97-909 on the premises of PNR or other mutually convenient location, including without limitation the ability to view all geocoded and surrogate customer locations for each original main and outlier cluster for Florida, the ability to measure the minimum spanning tree distance for such each cluster in Florida from the geocoded and surrogate locations using software provided by Stopwatch Maps, and the ability to record and take from PNR's premises, the cluster identification number, wire center with which the cluster is associated, the diagonal length of the minimum bounding rectangle of the original PNR cluster, and the minimum spanning tree distance for each such cluster in Florida; or

(b) Produce in electronic form data from PNR that identifies each wire center in GTEFL's serving area, the cluster identification number for each cluster in such serving area, the wire center with which each cluster is associated, the diagonal length of the minimum bounding rectangle of the original PNR cluster, and the minimum spanning tree distance for each such cluster in Florida.

GTEFL DR 34 RESPONSE: : AT&T objects to this Request for Production of Documents on the grounds that this information is the proprietary intellectual property of third party vendors and is only available from PNR. PNR is not related to AT&T in any way and PNR is not a party to this proceeding. GTEFL's attempt to conduct nonparty discovery through AT&T is inappropriate and not allowed by the rules civil procedure. In addition, the information requested is not and never as been in the possession

of AT&T. This information is commercially available to GTEFL from PNR. AT&T will arrange a visit to PNR to enable GTEFL to view this information as long as GTEFL makes arrangements to visit PNR and assume the expense of obtaining the requested data. Without waiver, AT&T will produce the requested documents in its possession custody or control subject to a determination of confidentiality by AT&T and the execution of an appropriate protective agreement.

SUBMITTED this 1st day of September, 1998.

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ATTORNEY FOR AT&T
COMMUNICATIONS OF THE
SOUTHERN STATES, INC.

HM SWITCHING CURVES

The model uses two switching cost curves, one for large telephone companies and one for small independent telephone companies (ICOs). Both curves reflect the decreasing cost of switching per line as a function of increasing switch size. The RBOC/Large LEC curve differs from the curve describing small LEC switching costs to reflect these lower equipment prices negotiated by large volume purchasers of switching equipment, such as the RBOCs and other large local exchange companies.

The switching cost curves were developed using typical per-line prices paid by BOCs, GTE and other independents as reported in the Northern Business Information (NBI) publication, "U.S. Central Office Equipment Market: 1995 Database."[1] In addition, public line and switch data from the ARMIS 43-07 and responses to the USF NOI (Universal Service Fund Notice of Inquiry) data request from 1994 are employed as well.

Four points were developed to create large LEC switching investment curve. Two of these points are from the RBOC and GTE average switching costs per line reported in the NBI study. These two switching cost points were then paired with the average sizes of current RBOC and GTE switches derived from 1995 ARMIS 43-07 line and switch data. A third cost point for large switches of 80,000 lines was developed from other industry sources. The fourth point reflects the average line size and cost of switches bought by small ICOs, but is adjusted to reflect the lower price paid by large LECs. The 1993 USF NOI data was used to estimate an average line size for small LEC switches. A 1995 average line size was estimated by assuming the ICOs have experienced growth in average lines per switch between 1993 and 1995 similar to that experienced by GTE. A logarithmic curve was then fit to these data using least-squares regression, resulting in an equation: $y=-14.992 \ln(x)+\$242.73$.

The value on the large LEC curve corresponding to the small LEC average line size was compared to the ICO per line value from the NBI report. This produced a 1.7 factor which was applied to the constant term in the logarithmic functional form to produce a curve of identical shape, but shifted upward by $173 per line compared to the large LEC curve, resulting in an equation: $y=-14.992 \ln(x)+\$416.11$.

[1] Northern Business Information study: U.S. Central Office Equipment Market -- 1995, McGraw-Hill, New York, 1996

SWITCH CURVE

Lines Per Local Switch

	1995		1993	
RBOC	12,600	A)	11,500	C)
GTE	2,700	B)	2,500	D)
Smaller IC	1,700	F)	1,600	E)

A) Average RBOC 1995, ARMIS 43-07
B) GTE 1995, ARMIS 43-07
C) Average RBOC 1993, ARMIS 43-07
D) GTE 1993, ARMIS 43-07
E) Industry less RBOC, GTE, Sprint, SNET 1993, USF NOI
F) Estimated using GTE 1995 to 1993 relationship

LARGE LEC SWITCH CURVE

Switch Cost vs Linesize

	Linesize	Cost Per Line
Large Switch	80,000	$ 75
Avg RBOC Linesize	12,000	$ 102
Avg GTE Linesize	2,700	$ 118
Avg Smaller ICO Linesiz	1,700	$ 138

	Current Curve
Constant	242.73
Slope	-14.992

Michigan, and Master's and Doctoral degrees in economics from Harvard. Prior to joining AT&T with Bell Labs in 1986, I was an Assistant Professor of Economics at the University of Wisconsin-Madison, and worked as an economist with the Antitrust Division of the U.S. Department of Justice.

2. The purpose of this affidavit is to respond to several ill-informed claims made by U S WEST that the customer location data that underlie the placement and engineering of distribution plant in the Hatfield Model 5.0 ("HM 5.0") are insufficiently open and verifiable, thus the entire model should be stricken from the Commission's consideration.

3. Before addressing the individual U S WEST allegations, it is useful to provide a correct description of the basic data used in the HM 5.0, how these data are developed, and what parties are responsible for each stage of this development.

4. Because the HM 5.0 has as its goal the modeling of distribution plant that is engineered as precisely and efficiently as possible to the locations at which customers demand telephone service, the HM 5.0 requires as input the best possible latitude and longitude data on these precise customer locations. These latitude and longitude specifications of customer geographical locations are called "geocodes." There is widespread agreement that such geocodes are superior descriptors of customer location to "surrogate" methods such as use of road locations.[1] The data sources that the HM 5.0 uses for its customer

[1] This is because many roads are devoid of telephone customers; telephone customers may not be located along the set of roads entered in certain limited road databases; and even when customers are located along roads, their concentration along roads is typically uneven.

geocodes are commercially available direct mail address lists from Metromail for residence locations, and Dun and Bradstreet ("D&B") for business locations.[2] These data are obtained by the HM 5.0's independent data vendor, PNR and Associates, through agreements that PNR has with Metromail and D&B. PNR then converts these address lists into geocode points by processing these data through a commercially available geocoding software program known as Centrus™ Desktop that is distributed by QMS Software.[3] PNR continues to use only the geocodes that Centrus Desktop returns with an indicator that the location is accurate to the precise address level, and which identify the Census Block in which the geocode is located. The remaining less accurate geocodes are discarded as being insufficiently precise for current use within the HM 5.0.[4]

5. Because Metromail and D&B data contain only about 90% of all residence and business addresses, and because PNR discards those address geocodes that are not precise to the address level, this data process will typically yield geocodes for only about 70 to 75% of the total number of residence and business customer locations that are believed to exist. This geocode success fraction is computed by dividing the number of successful (or "actual") geocodes for a unit of geography (e.g., a Census Block, a county, a state) by an estimate of the full number of customer locations believed to exist in that unit of

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[2] The Metromail and D&B databases are described in detail in Sections 5.4.1 and 5.4.2 of the *HM 5.0 Model Description*, that has been placed into the record of this proceeding.

[3] The procedures used by Centrus Desktop to convert addresses into latitude and longitude geocodes are described in Section 5.4.3 of the HM 5.0 Model Description. In addition, the operations manual for Centrus Desktop, which provides even fuller detail about these techniques and procedures was entered by AT&T into the public record of the FCC's universal service proceeding (CC Dkt. No. 96-45) on December 23, 1997.

[4] These geocodes may only have located an address accurate to a Census Block Group or a ZIP or ZIP+4 centroid.

geography. These denominator estimates are developed by PNR for residence and business locations, by Census Block, from PNR's National Access Line Model.[5]

6. The raw estimates that PNR develops from its National Access Line Model are normalized to be specific to a particular collection of wire centers, and to add up to the total business and residence line counts reported by LECs for their study areas through lists of eligible wire centers and study area line count totals provided by AT&T to PNR. These normalized "target" counts, then, become the denominator for the geocode success rate. If the number of successful geocodes for a Census Block falls short of PNR's calculated "target" number of customer locations for that Census Block, PNR creates an additional number of "surrogate" geocodes for that Census Block that are latitude and longitude pairs uniformly spaced along the Census Block's periphery. Thus, the number of "actual" geocodes plus "surrogate" geocodes for each Census Block will add up to the target number of customer locations that PNR has estimated for the Census Block.

7. Once this collection of actual plus surrogate geocodes is complete, these geocodes are associated with a serving wire center through PNR's use of BLR wire center service area data.[6] A complete wire center's collection of customer geocodes are then processed by PNR's Spatial Clustering Module to identify naturally occurring clusters of customer locations that can be served efficiently

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[5] Indeed, U S WEST's sponsored BCPM3 Model makes use of business line counts purchased from PNR and developed from PNR's National Access Line Model.

[6] It is my understanding that BLR data are also used by the BCPM3 for this same purpose.

from common distribution and feeder facilities.[7] The location, the area, the relative North/South to East/West dimensions, and the line counts associated with each of these clusters are then compiled by PNR and returned to AT&T for inclusion in the input data that are used directly by the HM 5.0.

8. It is now useful to review the opportunities available to U S WEST (or any other interested party) to audit each of these stages of the HM 5.0 data development processes. As a threshold point, U S WEST does not appear to provide evidence that any of these data development steps is improperly performed, but, rather, questions the verifiability of the geocoding process. "Without this basic information, U S WEST is deprived of its opportunity to demonstrate the likely errors and deficiencies in the geocoding process and is being deprived of obtaining a fair hearing in this matter" shall now demonstrate that each of these stages is verifiable by U S WEST; and to the extent that U S WEST claims that it is not able to verify these steps, it is either because U S WEST has: (1) ignored information that has been placed on the public record; or (2) has fundamentally misunderstood how the data are developed and used by the HM 5.0; or (3) because U S WEST has failed to make a clear request for the required information to the party that can appropriately provide it to U S WEST.

Claim 1: U S WEST claims that the Metromail residential data have coverage less than that claimed by AT&T.

[7] The source code for PNR's Spatial Clustering Module was filed with the FCC in CC Dkt. No. 96-45 on September 30, 1997 and on January 13, 1998.

Although it is difficult to understand how U S WEST can claim both that the Metromail data are unavailable, and at the same time claim that it has found the coverage of these data to be incomplete, both statements are false. As Metromail has stated directly in a memo filed publicly with the FCC on December 23, 1997, the number of address records in their National Consumer Database is approximately 98.2 million – and not the 69 million alleged by INDETEC on behalf of U S WEST. In light of Metromail's correction of U S WEST's erroneous view of its data, it is not clear what subsequent efforts U S WEST may have made to clear up its misunderstanding of the content of the Metromail data and to obtain a complete and appropriate set of these data from Metromail.

Claim 2: U S WEST claims PNR will not provide them with the actual geocode points from the Metromail and D&B data.

9. While it is true that PNR will not provide these geocode points to U S WEST, neither does PNR provide these points to AT&T. The reason is straightforward. The address information PNR obtains from Metromail and Dun & Bradstreet is commercially valuable and provides revenues to Metromail and D&B. Thus, PNR is prohibited by these two vendors from giving their data away. Mr. William Newman, Executive Vice President of PNR, noted this concern in his letter to Mr. Steve G. Parsons, INDETEC, dated January 13, 1998. "Because of the potential negative revenue implications, our data vendors insist that we act responsibly in using their data." Furthermore these vendors' concerns are very real because U S WEST competes with Metromail and Dun & Bradstreet in the mailing list business. One need only look at the U S WEST Yellow Pages in Denver, Colorado under "Mailing Lists." Large advertisements appear for

U S WEST Marketing Resources and for Dun & Bradstreet. Metromail Corporation also has an ad.

10. These competitive concerns aside, the Metromail and D&B databases are available for use by U S WEST, but U S WEST has simply not followed the instructions in the letter from PNR to INDETEC stating that these vendors must be approached directly to seek a license to use their commercial data. Instead, U S WEST states that it has attempted to obtain this basic information from PNR and the Hatfield Sponsors. These entities do not have a right to distribute these data – and in the case of the Hatfield Sponsors, do not even have access to these raw data themselves. U S WEST has not alleged that it approached Metromail and D&B to obtain the basic information and that Metromail and D&B have refused to provide the information after U S WEST executes an acceptable proprietary agreement and pays the requisite sum. Thus, U S WEST has not made any showing that the information is not available from the proper owners of these data.

11. Furthermore, U S WEST may not even need to secure access to the raw data to receive the information it deems essential. Based on further processing, PNR has now been able to develop geocode rate statistics by density zone for each of the 52 state jurisdictions that the HM 5.0 models.[8] For Minnesota these results are:

[8] These geocode rate data have been filed publicly by MCI with the FCC in CC Dkt. No. 96-45 on February 3, 1998.

Density Zone	Geocode Pct
0 – 5	8%
5 – 100	44%
100 – 200	77%
200 – 650	84%
650 – 850	88%
850 – 2550	91%
2550 – 5000	92%
5000 – 10,000	91%
10,000 +	87%
Average	76%

If U S WEST believes that this level of granularity is insufficient, and that it needs to determine the counts of actual geocoded customer locations individually by Census Block, it must acquire commercially the requisite residential and business addresses from Metromail and D&B, and the Centrus Desktop geocoding software from QMS. With these data and software in hand, U S WEST can develop these counts in the same fashion as PNR – or may request PNR to perform these processes.

12. Similarly, U S WEST may develop an appropriate set of "target" location counts by Census Block to serve as the denominator in its calculations of geocode percents. As PNR indicated in its letter to INDETEC, PNR will sell its unnormalized National Access Line Model outputs to any interested party. Purchasers may either provide PNR with their own list of eligible wire centers and total line counts by study area for normalization purposes; or in the alternative, provide PNR with the same values for these data items as provided by AT&T to PNR for use in the HM 5.0.[9] In any event, if U S WEST is unsure

[9] U S WEST may develop these normalization data by examining the input database provided on the HM 5.0's CD-ROM. This database contains the list of eligible wire centers used in the

how to proceed in this regard, the best way to proceed is to take PNR up on its good faith offer to work with them to develop the data that U S WEST requires. If U S WEST chooses to work in this fashion, and to obtain from the data vendors appropriate use licenses for their data, U S WEST would be able to develop and analyze specifics of the data that have not even been available to AT&T -- because AT&T is not a direct licensee of the granular Metromail and D&B data. What is key to note, is that it is incumbent upon U S WEST to seek access to the different data sources used in the HM 5.0 from the party who has authority to grant it. U S WEST was misguided in trying to gain access to the D&B and Metromail data through PNR, and similarly misguided in trying to gain access to the inputs that AT&T provided to PNR though PNR. A simple request to the party that originated the particular data item would have been the most availing.

13. In this regard, it is useful to draw an analogy to the openness with which certain input data used by U S WEST's BCPM3 model are available. It is my understanding that the BCPM3 uses terrain data from Stopwatch Maps, and processes these data through MapInfo programs, to develop the average terrain characteristics associated with each wire center. It is also my understanding that U S WEST will not provide these data and software programs to any interested party. Rather, should AT&T wish to verify BCPM3's process, it would have to approach Stopwatch Maps to purchase the base terrain data, and purchase the MapInfo software to process these data – as these data and software programs are not in the public domain.[10]

HM 5.0, and also contains the line count totals by type for each study area that were used by PNR to normalize counts to HM 5.0 specifications.

[10] Perhaps less open to potential public view is the Bellcore SCIS or U S WEST SCM models that BCPM3 relies on to develop its switching costs. Furthermore, AT&T has been unable to

14. It is also instructive to note that while the HM 5.0 Sponsors' have made available granular statistical information about the success of their customer geocoding over 468 different state/density zone geographical units across the U.S., I am unaware that BCPM3 has made public any analogous information about the success of its customer location process. It certainly would be useful for BCPM3 to state (a) the number and percent of actual customer locations that are located along the roads that are mapped in the BCPM3 model; (b) a statistical measure indicating how evenly these actual customer locations are dispersed along these roads; (c) the number and percent of actual customer locations that are located within the "road-reduced square" where the BCPM3 lays its distribution plant; and (d) the percent of all road mileage mapped in the BCPM3 model that falls within the "road-reduced square" where the BCPM3 lays its distribution plant. The provision of these statistics on a national basis, by state, and by density zone within each state would add usefully to an informed debate over the relative merits of each of the models.

15. Finally, the use of Metromail and D&B data within the HM 5.0 to determine actual customer geocodes is because the HM 5.0 Sponsors' believe these to be the best current publicly available data. To the extent that the LECs maintain lists of addresses of the locations to which they provide telephone service – or the actual geocodes of these locations, the HM 5.0 Sponsors' would be pleased to substitute this source of customer geocodes for the sources now used. Indeed, the HM 5.0 Sponsors' expect that Commissions will order LECs that seek to be eligible to receive universal service support to make available any data that they might have in this regard to improve the accuracy of the cost

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ascertain any avenue for determining the values of the proprietary input parameters that

modeling process. Similarly, to the extent that the LECs have data superior to that developed by the PNR National Access Line Model on the number of lines by type that are demanded by customers in each specific Census Block and wire center, the HM 5.0 Sponsors' also would expect that Commissions would order LECs that seek to be eligible to receive universal service support to make available any such data to improve the accuracy of the cost modeling process.

FURTHER AFFIANT SAYETH NOT.

Respectfully submitted this _____ day of February, 1998.

By: _____
Richard N. Clarke

U S WEST and the other BCPM3 sponsors' have chosen to insert into these closed models.

STATE OF COLORADO)

)ss.

COUNTY OF DENVER)

SUBCRIBED AND SWORN to before me this ____ day of February, 1998, the above named **RICHARD N. CLARKE**, as an expert witness for AT&T Communications of the Midwest, Inc., who certifies that the foregoing is true and correct to the best of his knowledge and belief.

_____

NOTARY PUBLIC
My Commission Expires:

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF MINNESOTA

Edward Garvey	Chair
Joel Jacobs	Commissioner
Marshall Johnson	Commissioner
Gregory Scott	Commissioner
Leroy Koppendrayer	Commissioner

IN THE MATTER OF THE STATE OF MINNESOTA'S POSSIBLE ELECTION TO CONDUCT ITS OWN FORWARD-LOOKING ECONOMIC COST STUDY TO DETERMINE THE APPROPRIATE LEVEL OF UNIVERSAL SERVICE SUPPORT	PUC DOCKET NOs. P-999/M-97-909 OAH DOCKET NO. 12-2500-11342-2

AFFIDAVIT OF WITNESS

I, Richard N. Clarke, being first duly sworn, depose and say as follows:

1. My name is Richard N. Clarke. I am a Division Manager in AT&T's Local Services and Law and Public Policy Divisions. In this position I am responsible for AT&T's economic policies related to local telecommunications services and I have directed AT&T's participation in the development of the Hatfield Model of forward looking economic costs of local exchange networks and services. I have a Bachelor's degree in mathematics and economics from the University of

Michigan, and Master's and Doctoral degrees in economics from Harvard. Prior to joining AT&T with Bell Labs in 1986, I was an Assistant Professor of Economics at the University of Wisconsin-Madison, and worked as an economist with the Antitrust Division of the U.S. Department of Justice.

2. The purpose of this affidavit is to respond to several ill-informed claims made by U S WEST that the customer location data that underlie the placement and engineering of distribution plant in the Hatfield Model 5.0 ("HM 5.0") are insufficiently open and verifiable, thus the entire model should be stricken from the Commission's consideration.

3. Before addressing the individual U S WEST allegations, it is useful to provide a correct description of the basic data used in the HM 5.0, how these data are developed, and what parties are responsible for each stage of this development.

4. Because the HM 5.0 has as its goal the modeling of distribution plant that is engineered as precisely and efficiently as possible to the locations at which customers demand telephone service, the HM 5.0 requires as input the best possible latitude and longitude data on these precise customer locations. These latitude and longitude specifications of customer geographical locations are called "geocodes." There is widespread agreement that such geocodes are superior descriptors of customer location to "surrogate" methods such as use of road locations.[1] The data sources that the HM 5.0 uses for its customer

[1] This is because many roads are devoid of telephone customers; telephone customers may not be located along the set of roads entered in certain limited road databases; and even when customers are located along roads, their concentration along roads is typically uneven.

geocodes are commercially available direct mail address lists from Metromail for residence locations, and Dun and Bradstreet ("D&B") for business locations.[2] These data are obtained by the HM 5.0's independent data vendor, PNR and Associates, through agreements that PNR has with Metromail and D&B. PNR then converts these address lists into geocode points by processing these data through a commercially available geocoding software program known as Centrus™ Desktop that is distributed by QMS Software.[3] PNR continues to use only the geocodes that Centrus Desktop returns with an indicator that the location is accurate to the precise address level, and which identify the Census Block in which the geocode is located. The remaining less accurate geocodes are discarded as being insufficiently precise for current use within the HM 5.0.[4]

5. Because Metromail and D&B data contain only about 90% of all residence and business addresses, and because PNR discards those address geocodes that are not precise to the address level, this data process will typically yield geocodes for only about 70 to 75% of the total number of residence and business customer locations that are believed to exist. This geocode success fraction is computed by dividing the number of successful (or "actual") geocodes for a unit of geography (e.g., a Census Block, a county, a state) by an estimate of the full number of customer locations believed to exist in that unit of

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[2] The Metromail and D&B databases are described in detail in Sections 5.4.1 and 5.4.2 of the *HM 5.0 Model Description*, that has been placed into the record of this proceeding.

[3] The procedures used by Centrus Desktop to convert addresses into latitude and longitude geocodes are described in Section 5.4.3 of the HM 5.0 Model Description. In addition, the operations manual for Centrus Desktop, which provides even fuller detail about these techniques and procedures was entered by AT&T into the public record of the FCC's universal service proceeding (CC Dkt. No. 96-45) on December 23, 1997.

[4] These geocodes may only have located an address accurate to a Census Block Group or a ZIP or ZIP+4 centroid.

geography. These denominator estimates are developed by PNR for residence and business locations, by Census Block, from PNR's National Access Line Model.[5]

6. The raw estimates that PNR develops from its National Access Line Model are normalized to be specific to a particular collection of wire centers, and to add up to the total business and residence line counts reported by LECs for their study areas through lists of eligible wire centers and study area line count totals provided by AT&T to PNR. These normalized "target" counts, then, become the denominator for the geocode success rate. If the number of successful geocodes for a Census Block falls short of PNR's calculated "target" number of customer locations for that Census Block, PNR creates an additional number of "surrogate" geocodes for that Census Block that are latitude and longitude pairs uniformly spaced along the Census Block's periphery. Thus, the number of "actual" geocodes plus "surrogate" geocodes for each Census Block will add up to the target number of customer locations that PNR has estimated for the Census Block.

7. Once this collection of actual plus surrogate geocodes is complete, these geocodes are associated with a serving wire center through PNR's use of BLR wire center service area data.[6] A complete wire center's collection of customer geocodes are then processed by PNR's Spatial Clustering Module to identify naturally occurring clusters of customer locations that can be served efficiently

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[5] Indeed, U S WEST's sponsored BCPM3 Model makes use of business line counts purchased from PNR and developed from PNR's National Access Line Model.

[6] It is my understanding that BLR data are also used by the BCPM3 for this same purpose.

from common distribution and feeder facilities.[7] The location, the area, the relative North/South to East/West dimensions, and the line counts associated with each of these clusters are then compiled by PNR and returned to AT&T for inclusion in the input data that are used directly by the HM 5.0.

8. It is now useful to review the opportunities available to U S WEST (or any other interested party) to audit each of these stages of the HM 5.0 data development processes. As a threshold point, U S WEST does not appear to provide evidence that any of these data development steps is improperly performed, but, rather, questions the verifiability of the geocoding process. "Without this basic information, U S WEST is deprived of its opportunity to demonstrate the likely errors and deficiencies in the geocoding process and is being deprived of obtaining a fair hearing in this matter" shall now demonstrate that each of these stages is verifiable by U S WEST; and to the extent that U S WEST claims that it is not able to verify these steps, it is either because U S WEST has: (1) ignored information that has been placed on the public record; or (2) has fundamentally misunderstood how the data are developed and used by the HM 5.0; or (3) because U S WEST has failed to make a clear request for the required information to the party that can appropriately provide it to U S WEST.

Claim 1: U S WEST claims that the Metromail residential data have coverage less than that claimed by AT&T.

[7] The source code for PNR's Spatial Clustering Module was filed with the the FCC in CC Dkt. No. 96-45 on September 30, 1997 and on January 13, 1998.

Although it is difficult to understand how U S WEST can claim both that the Metromail data are unavailable, and at the same time claim that it has found the coverage of these data to be incomplete, both statements are false. As Metromail has stated directly in a memo filed publicly with the FCC on December 23, 1997, the number of address records in their National Consumer Database is approximately 98.2 million – and not the 69 million alleged by INDETEC on behalf of U S WEST. In light of Metromail's correction of U S WEST's erroneous view of its data, it is not clear what subsequent efforts U S WEST may have made to clear up its misunderstanding of the content of the Metromail data and to obtain a complete and appropriate set of these data from Metromail.

Claim 2: U S WEST claims PNR will not provide them with the actual geocode points from the Metromail and D&B data.

9. While it is true that PNR will not provide these geocode points to U S WEST, neither does PNR provide these points to AT&T. The reason is straightforward. The address information PNR obtains from Metromail and Dun & Bradstreet is commercially valuable and provides revenues to Metromail and D&B. Thus, PNR is prohibited by these two vendors from giving their data away. Mr. William Newman, Executive Vice President of PNR, noted this concern in his letter to Mr. Steve G. Parsons, INDETEC, dated January 13, 1998. "Because of the potential negative revenue implications, our data vendors insist that we act responsibly in using their data." Furthermore these vendors' concerns are very real because U S WEST competes with Metromail and Dun & Bradstreet in the mailing list business. One need only look at the U S WEST Yellow Pages in Denver, Colorado under "Mailing Lists." Large advertisements appear for

U S WEST Marketing Resources and for Dun & Bradstreet. Metromail Corporation also has an ad.

10. These competitive concerns aside, the Metromail and D&B databases are available for use by U S WEST, but U S WEST has simply not followed the instructions in the letter from PNR to INDETEC stating that these vendors must be approached directly to seek a license to use their commercial data. Instead, U S WEST states that it has attempted to obtain this basic information from PNR and the Hatfield Sponsors. These entities do not have a right to distribute these data -- and in the case of the Hatfield Sponsors, do not even have access to these raw data themselves. U S WEST has not alleged that it approached Metromail and D&B to obtain the basic information and that Metromail and D&B have refused to provide the information after U S WEST executes an acceptable proprietary agreement and pays the requisite sum. Thus, U S WEST has not made any showing that the information is not available from the proper owners of these data.

11. Furthermore, U S WEST may not even need to secure access to the raw data to receive the information it deems essential. Based on further processing, PNR has now been able to develop geocode rate statistics by density zone for each of the 52 state jurisdictions that the HM 5.0 models.[8] For Minnesota these results are:

[8] These geocode rate data have been filed publicly by MCI with the FCC in CC Dkt. No. 96-45 on February 3, 1998.

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Average	76%

If U S WEST believes that this level of granularity is insufficient, and that it needs to determine the counts of actual geocoded customer locations individually by Census Block, it must acquire commercially the requisite residential and business addresses from Metromail and D&B, and the Centrus Desktop geocoding software from QMS. With these data and software in hand, U S WEST can develop these counts in the same fashion as PNR -- or may request PNR to perform these processes.

12. Similarly, U S WEST may develop an appropriate set of "target" location counts by Census Block to serve as the denominator in its calculations of geocode percents. As PNR indicated in its letter to INDETEC, PNR will sell its unnormalized National Access Line Model outputs to any interested party. Purchasers may either provide PNR with their own list of eligible wire centers and total line counts by study area for normalization purposes; or in the alternative, provide PNR with the same values for these data items as provided by AT&T to PNR for use in the HM 5.0.[9] In any event, if U S WEST is unsure

[9] U S WEST may develop these normalization data by examining the input database provided on the HM 5.0's CD-ROM. This database contains the list of eligible wire centers used in the

how to proceed in this regard, the best way to proceed is to take PNR up its good faith offer to work with them to develop the data that U S WEST requires. If U S WEST chooses to work in this fashion, and to obtain from the data vendors appropriate use licenses for their data, U S WEST would be able to develop and analyze specifics of the data that have not even been available to AT&T -- because AT&T is not a direct licensee of the granular Metromail and D&B data. What is key to note, is that it is incumbent upon U S WEST to seek access to the different data sources used in the HM 5.0 from the party who has authority to grant it. U S WEST was misguided in trying to gain access to the D&B and Metromail data through PNR, and similarly misguided in trying to gain access to the inputs that AT&T provided to PNR though PNR. A simple request to the party that originated the particular data item would have been the most availing.

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FURTHER AFFIANT SAYETH NOT.

Respectfully submitted this 4th day of February, 1998.

By: Richard N. Clarke

Richard N. Clarke

U S WEST and the other BCPM3 sponsors' have chosen to insert into these closed models.

STATE OF NEW JERSEY)

)ss.

COUNTY OF SOMERSET)

SUBCRIBED AND SWORN to before me this 4th day of February, 1998, the above named RICHARD N. CLARKE, as an expert witness for AT&T Communications of the Midwest, Inc., who certifies that the foregoing is true and correct to the best of his knowledge and belief.

Karen L. Reilly

NOTARY PUBLIC
My Commission Expires:

KAREN L. REILLY
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires Aug 6, 2000

da GTE

Center	STP A Link Distance Sum	Local Tandem Distance	OS Tandem Distance	Ring Distance	NECA WC Company Code	NECA WC Vert Coord	NECA WC Horiz Coord	Serving Tandem	NECA Tandem Company Code	NECA Tandem Vert Coord	NECA Tandem Horiz Coord	Tandem LATA (From NECA Data)	WC Connection to SCC CLLI	Total DS-3 Equivalents in Ring	Company Code	Total Tandems in Study Area	Total OS Tandems in Study Area	Total Tandem/ STP A-Link Distance	Total STP Pairs in Study Area	Total STP/STP Distance
WFLXA	245	40	54		210341	8251	867	AVPKFLXA	210341	8141	851	838			210291	-	-	-	-	-
WFLXA	186	0	83		210341	8141	851	AVPKFLXA	210341	8141	851	838			210318	-	-	-	-	-
WFLXA	166	26	80		210341	8167	1008	AVPKFLXA	210341	8141	851	838			210328	1	1	27	1	109
WFLXA	146	22	70		210341	8164	1018	AVPKFLXA	210341	8141	851	838			210329	-		-	-	-
WFLXA	158	48	76		210341	8041	895	AVPKFLXA	210341	8141	851	838			210330	-	-	-	-	-
WFLXA	251	33	59		210341	8157	893	AVPKFLXA	210341	8141	851	838			210331	-	-	-	-	-
WFLXA	284	48	103		210341	8142	797	AVPKFLXA	210341	8141	851	838			210335	-	-	-	-	-
WFLXA	211	13	71		210341	8157	927	AVPKFLXA	210341	8141	851	838			210336	1	1	26	-	-
WFLXA	226	20	64		210341	8159	905	AVPKFLXA	210341	8141	851	838			210338	-		-	-	-
WFLXA	185	28	84		210341	8164	995	AVPKFLXA	210341	8141	851	838			210339	1	1	39	-	-
WFLXA	196	28	78		210341	8163	986	AVPKFLXA	210341	8141	851	838			210340	4	2	873	1	11
WFLXA	370	8	38		210340	8027	2150	CRVWFLXA	210340	8025	2138	448			210341	4	2	681	1	27
WFLXA	355	0	32		210340	8025	2128	CRVWFLXA	210340	8025	2138	448			215191	7	2	145	8	659

number of operator tandems		1
total operator traffic, CCS		142,952
total operator DS-3s		210
total operator positions		806
total OS tdm common equipment	$	1,000,000
total OS tdm, per line	$	0.48
total operator position investment	$	3,241,000
total operator pos. investment/line	$	1.55
total OS tdm wire center	$	1,750,000
total OS tdm wire center, per line	$	0.84
total additional bridge ADMs required		20
total added ADM and DCS investment per line	$	11.38
total tandem ADM inv per tdm loc	$	160,810
total tandem DCS inv per tdm loc	$	18,780,000
average inter-office distance, mi		10.33
total OS tdm ADM inv per loc	$	368,184.00
total OS tdm DCS inv per loc	$	4,330,000.00

entrance facility calculations		
terminal multiplexer, per line	$	0.3429
cable investment, per line	$	0.0434
u/g placement, per line	$	0.0050
buried placement, per line	$	0.0019
pole inv, per line	$	0.0009
pullbox inv, per line	$	0.0001
conduit inv, per line	$	0.0014
total per line e f investment	$	0.3975
total SA lines		348,771
total switched access trunks		83,110
total OC-48s, w/fill		11
no. of entrance facilities		5

SERVICE DATE
AUG 26 1998

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of Determining Costs for Universal Service	)	DOCKET NO. UT-980311(a)
	)	SEVENTH SUPPLEMENTAL ORDER GRANTING AND DENYING, IN PART, GTE'S MOTION TO COMPEL, AND DENYING U S WEST'S MOTION TO REMOVE TESTIMONY

This proceeding addresses the cost-related matters for providing universal service throughout the State of Washington. GTE Northwest Incorporated (GTE) has filed a motion to compel production of documents and data from AT&T Communications of the Pacific Northwest, Inc. (AT&T). In addition to production of the requested discovery, GTE requests a reasonable amount of time to supplement its prefiled testimony. U S WEST Communications, Inc. has filed a motion to remove portions of the testimony filed by AT&T and NEXTLINK Washington, Inc. (NEXTLINK) from the adjudication to the rule making phase of this docket.

GTE'S MOTION TO COMPEL

GTE requests the Commission to order AT&T to produce documents and data concerning: (1) inputs to AT&T's Transport Incremental Cost Model (TICM); (2) the underlying geocoding information, databases, and software used in the HAI Model; (3) the documents AT&T used in costing out local loops in connection with its normal business operations; (4) two illustrations of clusters fitting certain criteria; (5) the documentation relied upon for certain claims in the HAI Model Documentation; (6) the engineering criteria and service levels modeled, as well as any validation tests performed on the Model. According to GTE, neither it nor this Commission can effectively evaluate the HAI Model without this information. GTE represents that it has conferred with AT&T regarding the required discovery and has been unable to resolve the matter. AT&T filed a response in opposition to the production of the data requested.

A. The TICM Data Request (Data Request No. 2)

GTE explains that TICM is the forward-looking incremental cost model that AT&T has used for making business and financial decisions concerning its long distance network. GTE asserts that it is seeking the TICM input values as a means of testing the reasonableness of the HAI Model's inputs for similar network components. It argues that this Commission previously ordered AT&T to produce thirteen TICM inputs in the Sixth Supplemental Order, Docket Nos. UT-960369, et al.

EXHIBIT B

It further argues that since the Washington Generic Cost Proceeding, GTE has received TICM -related information in California, New Mexico, and Hawaii, which includes information that AT&T claimed was unavailable in Washington. GTE has offered to tender the requested information to AT&T in order for it to be reproduced to GTE to alleviate any potential burden.

AT&T responds that it no longer maintains an operable version of TICM and thus there are no current input values for Washington. To the extent that GTE seeks inputs used historically, AT&T argues that those are not relevant to the purpose of this proceeding. AT&T points out that the inputs GTE apparently obtained are specific to the geographic region for which the model was run. AT&T also argues that GTE did not include California in its Request No. 2 so there are no grounds for ordering production of that information.

The Commission agrees with GTE that the information it seeks in this request may be useful as a means of testing the reasonableness of the HAI Model's inputs for similar network components. The Commission is not persuaded by AT&T's relevancy argument. Relevancy applies to the admissibility of this material, not its discoverability. Moreover, GTE has offered to tender the requested information so that it can be reproduced to GTE, thus alleviating any potential burden on AT&T. The Commission orders AT&T to produce the information requested in Data Request No. 2, except for California, since it was not included in the original request.

B. Underlying Geocoding Information, Databases and Software Used in the HAI Model (Data Request Nos. 10, 15, 16, 17, 18, 21, 32, 33, 34, 35, 39, 48, and 66)

GTE asserts that despite AT&T's contention that theirs is an "open" model, GTE does not have access to the critical pre-processed geocoding and clustering data contained in the HAI Model that AT&T used to "geocode" customers and create the customer serving areas. GTE contends that the underlying information is critical to its ability to evaluate the HAI Model's database and software. GTE indicates that it is willing to enter into an appropriate protective agreement to ensure the confidentiality of the data is not compromised.

In addition, GTE requests that AT&T be compelled to provide supplemental responses to Data Request Nos. 32, 33, 34, 35, 36, 37, and 38 pertaining to GTE's query as to what validation efforts AT&T has undertaken to assure the accuracy of the databases and data from which the HAI Model databases and data were derived. According to GTE, AT&T provided no response. GTE argues that it is seeking AT&T's validation efforts, not its vendors efforts, so there cannot be any third-party proprietary claim for this information.

Furthermore, in Data Requests 10 and 66, GTE requests information and data relating to the HAI Model's success rates for geocoding with respect to business customers, pay phones, and special access phones. GTE contends that

this information is critical in evaluating whether there really is significant "geocoding" with respect to these services. GTE acknowledges that AT&T provided success rates for residential customers and all customers, but it did not provide the other information specifically requested.

AT&T responds that in these sixteen requests, GTE seeks access to databases that GTE acknowledges are commercially available. According to AT&T, these vendors, the information that they have provided to PNR and Associates and the relationship that exists among those parties are explained in the Affidavit of Richard Clarke, attached to Response to Request No. 16. Based on this explanation, AT&T contends that GTE is demanding something that AT&T does not possess and does not have the right to provide. AT&T maintains that GTE's offer to execute a protective agreement does not address this fact and will not resolve the situation.

In response to GTE's requests that AT&T list all validation efforts that were undertaken to assure the accuracy of this data, AT&T asserts that it does not know what validation efforts were undertaken. AT&T represents that it did not conduct any such efforts. It indicates that this statement can be used to supplement its responses, if that will clarify the matter.

AT&T asserts that Data Request Nos. 12, 15, 42, 48, 51, 56, 58, 59, 60, 61,and 66 were all repetitive in seeking the number of customer locations that are actually geocoded in Washington. AT&T indicates that it provided a copy of this information in response to Public Counsel Request No. 8, and that a copy of this response was provided to GTE. AT&T represents that it has no other information, and indicates that this statement can be used to supplement AT&T's responses, if that will clarify the matter.

The Commission agrees with GTE that access to the pre-processed geocoding and clustering data used to "geocode" customers and create the customer serving areas is critical to evaluate the HAI Model's database and software. The Commission is also sensitive to the concerns of AT&T with respect to this information. However, AT&T's position leaves the parties and the Commission in a totally unacceptable "black hole" with respect to evaluating this information. Accordingly, the Commission orders AT&T to provide the information.

We order additional restrictive protective provisions to preclude GTE and any other party from sharing this information, or using it except for the purposes of this proceeding. The information must be sent to GTE's lead attorney, or to the attorney that the lead assigned. It may be viewed by only one additional person, who my evaluate it for the proposes specified. GTE must specify the recipient and the staff person or consultant no later than August 28, 1998, at 5 p.m. Eastern daylight time. Data may not be copied. It must be returned immediately upon use unless permission to retain it longer is granted by the presiding officer based upon a showing you need and of appropriate security. Except when being used, the data must be locked in the attorney's office or another place subject to entry only by the

attorney. With respect to the validation request and success rates for geocoding business customers, pay phones, and special access phones, AT&T is directed to provide responses to GTE.

C. Documents AT&T Used in Costing Out Local Loops in Connection With its Normal Business Operations (Data Request Nos. 3, 4, 5, 6, 7)

The documents GTE seeks in these requests are those that AT&T witness, Mr. James Wells, reviewed in developing cost estimates for AT&T for building local networks and testified about in the Kentucky Universal Service Proceeding. GTE asserts that these documents concern price quotes obtained by AT&T in order to develop cost estimates for building local facilities. It argues that these documents, collected in the 1996 time frame, will allow GTE and the Commission to test the "expert opinion" of the HAI engineering team, upon which the HAI Model Developers so heavily rely.

In response, AT&T argues that the information on costs would be voluminous and widely-scattered. AT&T further argues that such information has no relevance to the issue in this proceeding: determining the costs to the incumbents of providing local exchange service. Additionally, AT&T points out that these requests seek information within the mind of an individual no longer employed by AT&T. AT&T asserts that if GTE has requests of Mr. Wells, it can ask him. Finally, AT&T maintains that none of the information sought by GTE in these requests was used to establish the inputs for HAI 5.0a.

The Commission agrees with GTE that these documents may be helpful to test the expert opinion of the HAI engineering team. Again, AT&T's relevancy argument applies to the admissibility of this material, not its discoverability. AT&T is directed to respond to these requests.

D. Illustration of Clusters (Data Requests No. 40 and 41)

In these data requests, GTE asks AT&T to illustrate in a figure a cluster containing an odd number of branch cable and a cluster containing fifty-two customer locations. GTE contends that it cannot illustrate either cluster because the HAI Model Description does not contain sufficient information for GTE to do so. According to GTE, because these requests refer to a location algorithm, a visual illustration is of utmost importance if GTE and this Commission are to estimate the size of various cable and conduit required and fully evaluate the HAI Model.

In response, AT&T argues that GTE asks for drawings that do not exist. It cites WAC 480-09-480(2)(c), which provides that data requests seek "extant documents." AT&T asserts that it should not be required to expend time and money to create material for GTE.

In light of WAC 480-09-480(2)(c) the Commission will not compel AT&T to respond to these requests. However, AT&T is encouraged to respond since this may enhance understanding of its model and expedite the hearing.

E. Documents Relied Upon for Certain Claims in the HAI Model Documentation (Data Request Nos. 20 and 30)

In these requests, GTE seeks all documents relied upon by AT&T for two claims made in the HAI Model Documentation: (i) its geocoded locations are accurate to within six decimal places to a degree; and (ii) the HAI Model identifies actual locations accurate to within 50 feet of most telephone customers. GTE argues that the Centrus Desktop software, to which it was referred by AT&T, is used to geocode locations and could not possibly speak to the results of the process.

AT&T responds that the geocoded locations are provided by PNR which has represented their accuracy. In addition, AT&T argues because the intellectual property of third-party vendors is involved, it is not able to provide further documentation.

The Commission finds these requests to be reasonable ones. The HAI Model Documentation makes specific statements of accuracy and GTE should be allowed to look at the documentation which supports those claims. AT&T's response places the parties and the Commission back in a "black hole" situation. As we stated in (B) above, the information should be provided subject to the same restrictive protective provisions order.

F. Information Concerning the Engineering Criteria and Service Levels in the HAI Model as well as Documents Concerning Validation Tests (Data Request Nos. 8 and 47)

These requests seek information concerning the engineering criteria and service levels modeled by the HAI Model, as well as documents relating to any external validation tests performed on the Model. GTE notes that it did not limit its request to the public information in the many state proceedings to which AT&T has referred GTE. GTE requests any external validity tests performed by AT&T that are not in the public domain. Similarly, the section of the Model Documentation to which AT&T refers GTE does not discuss the engineering criteria or the service levels modeled by the HAI Model.

AT&T responds that it referred GTE to the HAI Model Documentation. AT&T maintains that all information relied upon by the model sponsors and model developers as support for HAI 5.0a is set forth in that document.

The Commission finds that these requests are reasonable and that the

information sought is likely to lead to facts which bear upon the validity of the HAI Model. AT&T must provide the required information.

U S WEST'S MOTION TO REMOVE TESTIMONY TO THE RULE MAKING

U S WEST requests removal of certain testimony filed by NEXTLINK and AT&T from the adjudicative phase to the rule making phase of this proceeding. In support of its position, U S WEST asserts that, through a series of prehearing orders, the Commission has delineated and specified the types of issues that will be resolved in this adjudicative proceeding. According to U S WEST, those issues concern the determination of the appropriate methodology for ascertaining the cost of providing basic local service, and other cost-related issues concerning Universal Service. It contends that NEXTLINK and AT&T have submitted evidence which is outside the scope of this proceeding.

Specifically, U S WEST objects to the testimony of NEXTLINK witness, Rex Knowles. According to U S WEST, this testimony consists primarily of argument about why the Commission's refusal to deaverage loop costs in Docket Nos. UT-960369 et al. (Costing Docket), allegedly impedes the development of effective local exchange competition and perpetuates implicit geographic subsidies. Likewise, U S WEST objects to the testimony of AT&T witness, Natalie Baker. U S WEST argues that the first two sections of this testimony are completely unrelated to the determination of cost, and instead are focused on the issues in the rule making phase of the docket. Specifically, Ms. Baker discusses implementation timing issues, and the delay of the FCC's universal service supports.

In response, NEXTLINK argues that the challenged portions of Mr. Knowles testimony explain that by deciding not to deaverage unbundled network element rates, the Commission perpetuates implicit subsidies that, among other effects, will result in an overstated universal service fund estimate. Citing the Fifth Supplemental Order in this docket, NEXTLINK asserts that the Commission has already recognized that the effect of geographic deaveraging on cost estimates is an appropriate issue for consideration in the adjudicative phase of this docket. NEXTLINK maintains it is not challenging the Commission's Eighth Supplemental Order in the Costing Docket. According to NEXTLINK, the Commission in that docket declined to geographically deaverage unbundled loop prices "at this time" and expressly provided that the issue of geographic deaveraging should be considered in the context of "universal service reform." NEXTLINK agrees that geographic averaging of unbundled network element costs and prices raises policy issues that should be considered in the rule making phase of this docket, but also maintains that the portions of the NEXTLINK testimony addressing that issue also raise cost quantification issues.

AT&T responds that U S WEST's motion apparently was prepared before the Commission's Fifth Supplemental Order was issued. According to AT&T, Ms. Baker's

testimony is completely consistent with the Commission's statements in that order. AT&T argues that Ms. Baker's testimony concerns the fundamental issue of this phase: selection of a cost model and estimation of the size of the fund. AT&T points out that the testimony then discusses reconciling the state-wide averaged costs for UNEs with the determination of costs in this proceeding. AT&T maintains that this discussion relates to geographic deaveraging, a topic that the Commission explicitly stated would be considered in this phase.

The Commission clarified the scope of this proceeding in the Fifth Supplemental Order, issued on August 14, 1998, which is also the filing date of U S WEST's motion. Our discussion in that Order would clearly allow in the adjudicative phase the testimony that U S WEST requests be moved to the rule making phase. Consistent with that Order, we deny the motion of U S WEST.

ORDER

THE COMMISSION ORDERS:

1. The motion of GTE to compel production of documents and data from AT&T, is granted in part and denied in part as set forth herein;

2. AT&T must produce the requested documents and data by August 31, 1998; GTE may file supplemental testimony by September 4, 1998; and

3. The motion of U S WEST to remove testimony to the rule making phase is denied.

DATED at Olympia, Washington, and effective this 26th day of August 1998.

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

ANNE LEVINSON, Chair

RICHARD HEMSTAD, Commissioner