

Collier, Shannon, Rill & Scott, PLLC

Attorneys-at-Law  
3050 K Street, N.W.  
Suite 400  
Washington, D.C. 20007

DOCKET FILE COPY ORIGINAL

Tel.: (202) 342-8400  
Fax: (202) 342-8451

10 Barrack Street  
Level 12  
Sydney, NSW 2000, Australia  
Tel.: 61-2-262-6700  
Fax: 61-2-262-3263

(202) 342-8898

July 9, 1998

Office of the Secretary  
Federal Communications Commission  
Room 222  
1919 M Street, N.W.  
Washington, D.C. 20554

Dear Sir or Madam:

Enclosed please find six copies (original and five copies) of the Reply Comments of GTE in response to Public Notice, Common Carrier Bureau Seeks Comments on State Forward-Looking Cost Studies For Universal Service Support, CC Docket Nos. 96-45, 97-160 and APD No. 98-1 released June 4, 1998.

Sincerely,



CHRISTOPHER S. HUTHER

CSH/am  
Enclosures

No. of Copies rec'd 0+5  
List A B C D E

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

RECEIVED  
JUL - 9 1998  
FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of:	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	CC Docket No. 97-160
	)	DA 98-1055
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	)	APD NO. 98-1
	)	

**REPLY COMMENTS OF GTE**

John F. Raposa  
GTE Service Corporation  
600 Hidden Ridge, HQE03J27  
Irving, Texas 75038  
(972) 718-6969

Gail L. Polivy  
GTE Service Corporation  
1850 M Street, N.W.  
Suite 1200  
Washington, D.C. 20036  
(202) 463-5214

Christopher S. Huther  
Ellen M. Quattrucci  
COLLIER, SHANNON, RILL & SCOTT, PLLC  
3050 K Street, N.W., Suite 400  
Washington, D.C. 20007  
(202) 342-8400

Its Attorneys

July 9, 1998

## TABLE OF CONTENTS

	<u>Page</u>
SUMMARY .....	ii
I. INTRODUCTION .....	1
II THE COMMISSION DOES NOT HAVE THE AUTHORITY TO MODIFY INPUT VALUES IN STATE-SUBMITTED COST STUDIES .....	2
III. THE HAI MODEL-BASED COST STUDIES SHOULD BE REJECTED .....	4
A. AT&T's Proposed Input Changes Should Be Rejected .....	4
B. The HAI Model's Geocoding Methodology Fails to Accurately Locate Customers .....	5
IV. BCPM SATISFIES THE COMMISSION'S TEN CRITERIA FOR COST STUDIES .....	12
A. BCPM's Switching Costs Reflect the Cost of Forward-Looking Technology .....	12
B. BCPM's Customer Location Methodology is More Accurate Than the HAI Model's Use of Geocoding .....	13
C. BCPM Uses Appropriate Fill Factors .....	15
V. AT&T'S CRITICISMS OF COSTMOD ARE UNFOUNDED .....	17
VI. CONCLUSION .....	19

## SUMMARY

By Public Notice dated June 4, 1998, the Common Carrier Bureau sought comment on two issues: (i) whether the state sponsored cost studies filed with the Commission comply with the ten criteria set forth in Paragraph 250 of the Commission's *Universal Service Order*<sup>1</sup> and should therefore be approved, and (ii) whether Criterion Five should be waived to permit states to adopt truly forward-looking economic lives to calculate depreciation expense. No party has opposed the waiver of Criterion Five.

Parties filed comments concerning the cost studies submitted by various state commissions. Some parties, however, have misinterpreted the scope of this docket – encouraging the Commission to remedy allegedly non-compliant cost studies by modifying various input values and platform assumptions. This is neither the appropriate time nor the appropriate forum for such action. The Commission should either accept or reject a model based upon its conformity with the ten criteria promulgated in the *Universal Service Order*. Any modifications to input values, model methodology, or model substitutions, must be made by the states – provided such modifications or substitutions are coordinated with and approved by the Commission.

---

<sup>1/</sup> In the Matter of Federal-State Joint Board on Universal Service, *Report and Order*, CC Docket 96-45, 12 FCC Rcd. 8776, 8913-8916 (¶ 250)(1997). (*Universal Service Order*).

Endorsing the HAI Model based cost studies, AT&T asserts that the HAI Model's geocoding process is superior to BCPM's grid-square approach to customer location because it locates customers more accurately. As GTE's Comments demonstrate, the HAI Model's geocoding process is fatally flawed. Geocoding, as implemented in the HAI Model, does not accurately locate customers, results in a significant understatement of distribution plant, and artificially suppresses cost estimates.

The BCPM based cost studies comply with the Commission's ten cost model criteria and should be accepted for use in calculating federal universal service support. Notably, AT&T is the only party that challenged BCPM's compliance with the ten criteria. Contrary to AT&T's claims, the BCPM properly models forward-looking technology, accurately locates customers, and utilizes reasonable fill factors.

AT&T also challenges the adoption of COSTMOD in Illinois on the grounds that it: (1) does not deaverage costs to the wire center; (2) is inconsistent with other cost models adopted in Illinois; (3) incorporates SCIS for calculating switch costs; and (4) was not made available for review. In advancing these criticisms, AT&T ignores the directive of the Illinois Commerce Commission that COSTMOD be modified to deaverage costs to the wire center level by November 6, 1988, and the express pronouncement of this Commission that company-specific cost studies may be filed. Moreover, the SCIS Model uses engineering rules, service characteristics, and prices

reflective of vendor discounts to properly calculate the forward-looking costs of digital switching. And finally, as the Illinois Commerce Commission noted, COSTMOD has been reviewed and its estimates endorsed in previous proceedings.

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of:	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	CC Docket No. 97-160
	)	DA 98-1055
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	)	APD No. 98-1

**REPLY COMMENTS OF GTE**

GTE Service Corporation and its affiliated domestic telephone operating companies<sup>1</sup> (collectively "GTE") respectfully submit their Reply Comments to the arguments raised by various parties in response to the Common Carrier Bureau's Public Notice in the above-captioned proceedings.<sup>2</sup>

**I. INTRODUCTION.**

In response to the June 4, 1998 *Public Notice*, parties filed comments addressing whether the state-submitted cost studies comply with the Commission's ten

---

<sup>1/</sup> GTE Alaska, Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporated, GTE Hawaiian Telephone Company Incorporated, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc., GTE West Coast Incorporated, and Contel of the South, Inc.

<sup>2/</sup> Common Carrier Bureau Seeks Comment on State Forward-Looking Cost Studies for Universal Service Support, *Public Notice*, CC Docket Nos. 96-45 and 97-160, DA 98-1055 (rel. June 4, 1998), at 2 ("*Public Notice*").

criteria and whether Criterion Five should be waived to permit states to adopt truly forward-looking economic lives to calculate depreciation expense. Some parties, however, have misinterpreted the scope of this docket -- encouraging the Commission to remedy allegedly non-compliant cost studies by modifying various input values and platform assumptions. This is neither the appropriate time nor the appropriate forum for such action. Any modifications to input values, model methodology, or model substitutions, must be made by the states -- provided such modifications or substitutions are coordinated with and approved by the Commission.

On the merits, GTE, as well as Sprint, US West, and BellSouth, have demonstrated that the HAI Model based cost studies fail to conform to the Commission's ten criteria, and therefore must be rejected. The HAI 5.0a geocoding process is so flawed that it renders the Model useless for calculating universal service support. Conversely, GTE and numerous parties have conclusively demonstrated that the BCPM-based cost studies comply with the Commission's ten criteria and should be approved. Similarly, no party has opposed a waiver of Criterion Five.

**II. THE COMMISSION DOES NOT HAVE THE AUTHORITY TO MODIFY INPUT VALUES IN STATE-SUBMITTED COST STUDIES.**

AT&T Corp. ("AT&T") and Alliant Communications Co. improperly ask this Commission to modify (or direct modifications be made to) certain cost model input

values before the state-sponsored cost studies are approved.<sup>3</sup> Such action is outside the scope of this docket and exceeds the Commission's authority.

The primary issue upon which the Commission sought comment is "*whether* the cost studies submitted by individual states meet the Commission's specified criteria."<sup>4</sup> Nowhere does the Commission seek guidance on how allegedly non-compliant studies should be remedied; nor has the Commission expressed an intent to modify inputs. In fact, the Commission lacks authority to engage in such conduct.<sup>5</sup> Moreover, the Commission has previously addressed the consequence of submitting a non-compliant cost study: "[i]f a state cost study fails to meet the criteria . . . *the Commission will determine non-rural carriers' forward-looking economic cost of providing universal service in that state according to the Commission's forward-looking cost methodology.*"<sup>6</sup> Accordingly, this attempt to relitigate cost model inputs in this forum should be rejected.

This is not to suggest that *states* cannot modify, update, or substitute cost models after they have been approved -- provided such modifications or substitutions are consistent with the ten criteria and are coordinated with and approved by the

---

<sup>3/</sup> Comments of AT&T Corp. on State Universal Service Cost Studies, at 2; Comments of Alliant Communications Co., at 2.

<sup>4/</sup> *Public Notice* at 1 (emphasis supplied).

<sup>5/</sup> See generally *Iowa Utilities Board v. FCC*, 120 F.3d 753 (8<sup>th</sup> Cir. 1997), *cert. granted*, 118 S.Ct. 879 (1998).

<sup>6/</sup> State Forward-Looking Cost Studies for Federal Universal Service Support, *Public Notice*, CC Docket Nos. 96-45 and 97-160, DA 98-217 (rel. Feb. 27, 1998), at 1 (emphasis supplied).

Commission. Indeed, states will require the flexibility to update their universal service cost model to ensure that costs are captured and treated consistently between universal service and unbundled network element cost dockets.<sup>7</sup> Only then will the states be able to diminish arbitrage opportunities and avoid the marketplace distortions identified in the *Universal Service Order*.<sup>8</sup>

**III. THE HAI MODEL-BASED COST STUDIES FAIL THE COMMISSION'S COST STUDY CRITERIA AND MUST BE REJECTED.**

**A. AT&T's Proposed Input Changes Should Be Rejected.**

For the reasons stated above, the Commission should decline AT&T's invitation to relitigate the validity of certain state-selected cost model input values. Though misguided, AT&T's request is significant in one respect. It further demonstrates the bias with which the HAI Model was developed. While peddling its HAI Model as "user-adjustable" before state commissions, AT&T now claims this feature should not be used if the result is to increase cost estimates. In contrast, not a single input value adjustment made by state commissions that decreased costs has been challenged by AT&T. For example, the Kentucky Public Service Commission's submission of the HAI Model contained fifteen input categories that were changed from the default inputs that

---

<sup>7/</sup> For example, states must have the capability to calculate unbundled network element pricing, universal service support, and retail rates at the same geographic unit of analysis. See also Comments of the State of Hawaii Division of Consumer Advocacy, at 4.

<sup>8/</sup> In the Matter of Federal-State Joint Board on Universal Service, *Report and Order*, CC Docket 96-45, 12 FCC Rcd. 8776, 8913-8916 (¶ 250)(1997)(*"Universal Service Order"*).

result in a reduction in universal service requirements.<sup>9</sup> None of these modifications to the default values were challenged by AT&T.

As discussed at length in GTE's Comments, the HAI Model default inputs are the product of a biased, unverifiable, pick and choose methodology that does not reflect the current cost of forward-looking technology.<sup>10</sup> Accordingly, each of AT&T's seven suggested input changes should be summarily rejected by the Commission.

**B. The HAI Model's Geocoding Methodology Fails to Accurately Locate Customers.**

GTE and others have described the numerous shortcomings of HAI 5.0a in their comments.<sup>11</sup> Of these many shortcomings, the HAI Model's use of geocoded data is the most significant. Geocoding, as implemented by HAI 5.0a, is a methodology that purports to determine the "*actual precise locations* of as many customers as possible."<sup>12</sup> Geocoding is both the HAI Model's defining feature and its fatal flaw. The limitations of

---

<sup>9/</sup> The input values were for Distribution Cable Fill, Distribution Drop Placement, NID Case, Drop Cable Investment per Foot, Underground Excavation/Restoration, Buried Excavation/Restoration, Copper Feeder Fill, Fiber Feeder Strand Fill, Fiber Feeder Strand Fill, Fiber Feeder Investment per Foot, Fiber Investment Strand-Foot, and Distribution Aerial Sharing Fraction, TR-303 Channel Unit, Trunk Port per End, DLS Optical Patch Panel, and Low Density Channel Unit.

<sup>10/</sup> Comments of GTE, CC Docket Nos. 96-45, 97-160 at 19-26, Exhibit 3 (filed June 1, 1998) ("GTE Comments June 1, 1998")

<sup>11/</sup> Comments of U S WEST Communications, Inc. on State Forward-Looking Cost Studies for Universal Service, at 8-11; Comments of BellSouth, at 3; Comments of Sprint Corporation, at 1-3.

<sup>12/</sup> HAI Model Documentation, at 5 (emphasis supplied).

geocoding are well documented and the HAI Model's dismal results speak for themselves. GTE will not reiterate all the shortcomings of HAI 5.0a's approach to customer location, but will focus its response on the misleading claims made by AT&T.

In its Comments, AT&T (at 3) asserts that because BCPM does not employ geocoded data, "BCPM cannot model customer locations - and therefore universal service costs - as accurately as the HAI Model..." Contrary to AT&T's claims, HAI 5.0a's use of geocoded data causes the Model's cost estimates to be inaccurate and incomplete. The deficiencies of HAI 5.0a and its heralded geocoding methodology are glaring when measured against two basic but undisputed principles: 1) assumptions about customer location can have a large impact on universal support amounts,<sup>13</sup> and 2) locating customers in high-cost areas is vital to accurately assess universal support needs.<sup>14</sup> As demonstrated in GTE's previous comments<sup>15</sup> and as reinforced below, because HAI 5.0a strays significantly from both principles, the Model produces inaccurate cost estimates and should, therefore, be rejected by the Commission.

---

<sup>13/</sup> In the Matter of Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non Rural LECs, *Further Notice of Proposed Rulemaking*, CC Docket Nos. 96-45 and 97-160, FCC 97-256 (rel. July 18, 1997), at ¶ 44.

<sup>14/</sup> On a nationwide basis, approximately 99 percent of customers entitled to universal service support are located in the two density zones below 100 lines/sq. mile. In the Matter of Federal-State Joint Board on Universal Service, *Ex Parte* Submission of MCI Telecommunications Corporation, Letter to Magalie Roman Salas from Chris Frentrup, CC Docket No. 96-45, (filed Feb. 3, 1998), at 1-2 ("*Ex Parte* Submission of MCI").

<sup>15/</sup> GTE Comments June 1, Exhibit 1.

The geocoding deficiencies of HAI 5.0a are many. The HAI Model's own sponsors concede that nothing approaching an acceptable threshold of households can be geocoded, a fact which undermines the accuracy of the Model's results and the ultimate credibility of the Model itself.<sup>16</sup> This deficiency is further compounded by the HAI Model's clustering algorithm, which reduces the actual dispersion of customers by essentially reversing the already suspect geocoded data and aggregating all customers into a set of arbitrary clusters. Given the fallacy of both the underlying geocoding data and the Model's clustering and design methodology, HAI 5.0a unsurprisingly produces total distribution plant length, or Distribution Route Distance ("DRD"), that is shorter than the minimum distance between the actual geocoded customer locations in GTE's network. GTE detailed HAI 5.0a's "fatal" flaw in its Comments by describing the analysis GTE conducted in Minnesota.

GTE recently confirmed that the fatal flaw in HAI 5.0a is not state-specific, but rather inherent to the Model. For Texas, GTE conducted the same analysis of the geocoding data and network modeling methodology employed by HAI 5.0a as it conducted with respect to Minnesota. Using the same mathematical graph theory algorithm described in GTE's Comments, a Minimum Spanning Tree ("MST") was calculated for HAI 5.0a produced customer location clusters in a number of Texas

---

<sup>16/</sup> The HAI sponsors concede that only 56 percent, 66 percent, and 76 percent of households are geocoded in the states of Hawaii, Kentucky, and Minnesota, respectively *Ex Parte* Submission of MCI, at 7 .

servicing areas. The MST calculates the absolute shortest possible distance between a set of points, or in this instance, the shortest possible distance that telephone plant must span to connect all customers in a telephone network. GTE then compared the distribution length (including drop length) produced by HAI 5.0a to the distance calculated by the MST for 1,882 HAI 5.0a produced main clusters in 92 wire centers. Of the 1,882 clusters examined in Texas, 674, or 36 percent had less DRD than the associated MST indicated was necessary to connect the customers. Moreover, 17 percent of all the main clusters had less than half the DRD that the MST indicated would be necessary to connect the customers.

Perhaps most significantly, the deficiencies in the amount of plant modeled by HAI 5.0a are even more understated when real world factors are considered. The MST is a *low-end* benchmark because it measures the absolute minimum distance between two points. The MST does not account for the additional plant that even the HAI Model sponsors admit would be required to account for changes in terrain, right-of-way, and other factors that increase the actual route miles in any telephone network.<sup>17</sup> The failure to account for these factors further amplifies the HAI Model's inaccuracy.

---

<sup>17</sup> In the Matter of Federal State Joint Board on Universal Service, *Ex Parte* Submission of GTE, Letter to Magalie R. Salas from W. Scott Randolph, CC Docket Nos. 96-45, 97-160 (filed May 7, 1998).

The ultimate failure of HAI 5.0a, however, is its dismal underestimation of plant in the lowest density zones in Texas -- the two density zones most likely to need universal service support. In the lowest two density zones in Texas, 77 percent of the HAI Model clusters have less than the minimum distribution plant required to connect the customers located in the clusters. More significantly, 37 percent of these clusters have less than half of the required distribution plant. The HAI Model's accuracy plummets even further when examining only the lowest density zone in Texas, which has 439 clusters. An astounding 94 percent of these clusters have less distribution plant than is necessary, with 55 percent having less than half of the required distribution plant.

The frequency of the HAI Model's inaccuracy engenders no confidence in the Model's output. The significant variance of the HAI Model's inaccuracy establishes that there are fundamental problems with the Model's methodology itself. The HAI Model's performance in less populated areas, where universal support is most critical, is statistically similar to a random assignment of plant distribution. Considered independently, each of these factors justify the rejection of the HAI Model. When considered collectively, they unequivocally undermine the credibility of the geocoding methodology used by AT&T, conclusively prove the Model's inability to determine the "actual precise location" of customers, and compel the unqualified rejection of HAI 5.0a.

In their recent *Ex Parte* submission<sup>18</sup>, the HAI Model developers try to resurrect their PNR clustering algorithm. This attempt, however, is futile. AT&T and MCI point to three alleged flaws in the MST analysis, all of which are easily refuted.

First, the HAI Model developers claim that the MST analysis is misleading because it did not include the length of the drop. GTE's MST analysis is simply not guilty of this oversight.<sup>19</sup>

Second, AT&T and MCI attempt to dismiss GTE's analysis by hiding behind the average loop length produced by the HAI Model. They claim that because HAI 5.0a's average loop lengths are approximately the same as BCPM's, or in some cases are longer than those produced by BCPM, GTE's analysis is meaningless. This argument, however, misses the point. As even the HAI Model developers admit, average loop length is *not* a good indicator of the efficiency of loop plant design.<sup>20</sup> Rather, it is the total route mileage produced by the models that is the relevant measure for judging their accuracy. Here, even AT&T cannot deny that HAI 5.0a produces significantly less

---

<sup>18/</sup> In the Matter of Federal-State Joint Board on Universal Service, *Ex Parte* Submission of AT&T, CC Docket No. 96-45 (rel. June 10, 1998), Attachment A.

<sup>19/</sup> GTE's Comments, at 11.

<sup>20/</sup> Supplemental Testimony of Robert Mercer Before the Public Utilities Commission of Texas, Docket 18515, at 7 (June 5, 1998).

distribution plant than BCPM.<sup>21</sup> In fact, AT&T had always claimed this reduction was due to the "efficiency gains" of a competitive new entrant. Now, this reduction has been exposed for what it really is – a physical impossibility.

Third, the HAI Model developers insist that the MST analysis is flawed because no adjustment was made for the excess area that exists within the Model's clusters. AT&T and MCI claim that because clusters are formed in part from surrogate points placed along the Census Block boundaries, such a correction is necessary.<sup>22</sup> This claim, even if true, adds nothing to the argument. According to the HAI Model's own analysis, such an adjustment results in a 2.6% increase in the MST distances. Considering that GTE's analysis demonstrated that 37% of the clusters analyzed in Texas have less than half the necessary distribution plant, this far from rehabilitates the Model.

---

<sup>21/</sup> Rebuttal Testimony of John C. Klick on Behalf of MCI Telecommunications and AT&T Communications of the Southwest, Inc., Before the Public Utility Commission of Texas, Docket No. 18515, Exhibit JCK-11 (February 27, 1998).

<sup>22/</sup> This claim is incorrect and unsubstantiated for several reasons. First, the HAI developers have consistently argued that their data is highly inaccurate. See HAI Model Description, at 28. If this is true, then a few surrogate points should not make a difference. Second, the HAI sponsor have never shown that the surrogate method is a conservative method – a method that adds area (or distance) to the customer dispersion. Depending upon the set up of the cluster, the surrogate method can lead to an increase or a decrease of customer dispersion.

#### **IV. BCPM SATISFIES THE COMMISSION'S TEN CRITERIA FOR COST STUDIES.**

In its Comments, AT&T (at 12-13) claims that the BCPM "has so many fundamental flaws that it cannot reliably be used to estimate universal service costs, regardless of the input assumptions that are employed." Yet, AT&T proceeds to identify only three alleged defects in the BCPM -- thereby conceding BCPM's compliance with the Commission's ten criteria in all other respects. Specifically, AT&T (at 3, 13-16) faults BCPM for its use of: (i) proprietary, embedded data in determining switching costs; (ii) a purportedly imprecise, inferior methodology for locating customers; and (iii) allegedly unreasonable fill factors. These criticisms, however, miss the mark. In fact, they are an indictment of AT&T's own HAI Model.

##### **A. BCPM's Switching Costs Reflect the Cost of Forward-Looking Technology.**

AT&T's criticism (at 3) of BCPM's switching module is two-fold: it is designed to recover the ILECs' embedded costs from their legacy networks; and it relies on "complicated, proprietary models and data" to conceal this fact. These claims are demonstrably false.

First and foremost, the BCPM switching module does not improperly include embedded costs from the incumbents' networks. Rather, BCPM properly models the current costs of digital switching equipment only. Although GTE and other incumbent

local exchange carrier networks currently include analog switches, these switches are properly excluded from BCPM's forward-looking analysis.

Similarly, BCPM does not incorporate any more proprietary data than the HAI Model. To generate switching investment, BCPM develops a regression curve from Bellcore's Switching Cost Information System ("SCIS") runs that is based on the forward-looking costs of digital switches. The HAI Model also develops its regression curve from a proprietary data source -- the Northern Business Information ("NBI") study. Unlike BCPM, the HAI Model regression curve -- consisting of four data points -- cannot be validated. The sole basis for the fourth data point is an undocumented conversation, the participants of which remain unknown (or undisclosed). Conversely, Bellcore's SCIS model has been audited by the Commission and subjected to rigorous analysis by state commissions in a multitude of dockets. Consequently, AT&T's criticisms of BCPM's switching module are entirely without merit and should be dismissed.

**B. BCPM's Customer Location Methodology is More Accurate Than the HAI Model's Use of Geocoding.**

In its Comments, AT&T (at 15) asserts "[c]ommenters . . . uniformly recognize the superiority of using geocode data to model customer locations" and contend that the commenters' only quarrel with the use of such data is "the potential cost of collecting additional geocode data." While the geocoding methodology may hold great

promise for increasing the accuracy with which customers are located, as implemented by the HAI Model none of the promise of geocoding is realized. As GTE pointed out in its June 1, 1998, and June 12, 1998 Comments:

- an accurate database with longitude and latitude coordinates for the United States does not exist;
- the reliability and accuracy of the Metromail database used by the HAI Model is unknown;
- geocoding has a very low accuracy rate for low density areas most needing universal service support ;
- there are flaws in the geocoding software used by the HAI Model;
- the HAI Model does not even use the geocoded data to any great extent.

Rather than addressing the multitude of criticisms GTE has lodged against the HAI's geocoding methodology in this proceeding, AT&T simply pretends they do not exist. As GTE and others have demonstrated, HAI's customer location methodology is materially and fatally flawed. BCPM's grid-based modeling methodology, on the other hand, ensures the most accurate location of customers in high-cost areas.

The central premise in BCPM is that telecommunications plant generally exists near roadways. The logic of this premise is irrefutable. BCPM designs plant based upon carrier serving areas ("CSAs") and distribution areas ("DAs"). Wire centers are located, and customer data is obtained from Business Location Research ("BLR").

Using computerized street and road data, households are then located using streets and roads where telephone plant is likely to be placed. This methodology allows BCPM to more accurately locate customers than the HAI Model, and thereby, accurately estimate costs. In fact, a comparison of BCPM and the HAI Model in the rural areas of the Albany and Vernon, Texas wire centers demonstrates this point. The correlation between actual housing unit locations and those predicted by BCPM is 0.69 and 0.79, respectively. The correlation between actual housing unit locations and those predicted by HM 5.0 is 0.45 and 0.60. This empirical evidence establishes that BCPM locates customers more accurately than does the HAI Model.<sup>23</sup> Indeed, BCPM's accuracy was noted by numerous state commissions in their selection of the model for submission to the FCC.<sup>24</sup>

**C. BCPM Uses Appropriate Fill Factors.**

Finally, AT&T (at 15) claims the BCPM "inflates universal service cost estimates by using unreasonably low fill factors." In fact, BCPM's fill factors recognize that, for

---

<sup>23/</sup> Rebuttal Testimony of Kevin T. Duffy-Deno Before the North Carolina Public Service Commission, Docket No. P-100, Sub 133b, Exhibit KDD-1, at 3 (Jan. 30, 1998).

<sup>24/</sup> State of North Carolina Utilities Commission, Docket No. P-100, Sub 133b, Order Adopting Forward Looking Economic Cost Model and Inputs, at 6-9 (April 21, 1998); Public Service Commission of South Carolina, Docket No. 97-239-C, Order No. 98-322, at 36-40 (May 6, 1998); Department of Public Service Regulation Before the Public Service Commission of the State of Montana, Docket No. D97.9.167, at 28 (May 26, 1998).

reasons of future efficiency and cost savings, a model must anticipate and plan for future growth in customer demand. The BCPM developers are merely abiding by well-established engineering guidelines. As the *AT&T Handbook* recommends, distribution cables should be sized for the "ultimate" pair requirements: two pair per residential unit, five pair per business unit. This practice avoids the long-term inefficiencies of adding facilities, trenching in paved areas, *etc.*, when new customers are added to the system. Incumbent Local Exchange Carriers have traditionally taken this approach in actually designing systems.

HAI 5.0a, on the other hand, sacrifices future growth in favor of short-term savings. The fill factors utilized by the HAI Model are unreasonably high. As AT&T witness James Wells made clear in testimony before the North Carolina Public Utilities Commission:

the Hatfield Model does not specifically make allowances for growth. It allows for spare capacity for administration, maintenance and some, allows for defectives. In the rounding up to the next cable size there are additional cable pairs that could be used for growth. But these models should not reflect that current ratepayers or CLECs that want to lease the network should not be paying for future capacity. The model should just serve the demand that's out there. And so to answer your question it does not – the Hatfield Model does not

allow for growth and I would suggest that these models should not allow for growth.<sup>25</sup>

AT&T's approach to fill factors is merely a transparent attempt to suppress costs that lacks engineering support or foundation. Accordingly, because BCPM's fill factors properly account for future growth, they are reasonable.

**V. AT&T's CRITICISMS OF COSTMOD ARE UNFOUNDED.**

The Illinois Commerce Commission submitted COSTMOD for use in calculating universal service support in GTE's serving areas. AT&T contends this state study should be rejected because: (i) it does not deaverage cost to the wire center level; (ii) the GTE cost study is inconsistent with that approved for Ameritech Illinois; (iii) the model and supporting documentation were not made available; and (iv) the model calculates switching costs through use of the SCIS model. Each of these criticisms is belied by the record evidence in the proceeding before the Illinois Commerce Commission, and therefore, does not merit an extended discussion.

AT&T's claim (at 17) that COSTMOD does not deaverage cost to the wire center is dubious at best. As AT&T is well aware, the Illinois Commerce Commission

---

<sup>25/</sup> Testimony of James Wells on Behalf of AT&T Communications of the South Central States, Inc. Before the North Carolina Public Service Commission, Docket P-100 Sub 133b, at 136-137 (February 4, 1998).

specifically ordered GTE to modify COSTMOD to deaverage cost to the wire center by November 6, 1998.<sup>26</sup>

AT&T (at 19) objects to COSTMOD because "it is totally different than the Ameritech Illinois cost method." The Commission, however, has definitively addressed this issue in its November 12, 1997 Public Notice.<sup>27</sup> This Commission specifically authorized states to submit separate cost studies for each ILEC, stating "[i]n order to ensure maximum coordination between state cost studies for unbundled network element prices and universal service costs, states may file cost studies that *incorporate company-specific assumptions or data.*"<sup>28</sup>

AT&T (at 19) also asserts that "GTE never made COSTMOD or its supporting documentation available to the parties for examination." In selecting the COSTMOD, the Illinois Commerce Commission stated, "[w]e have reviewed the COSTMOD run and

---

<sup>26/</sup> Order of the Illinois Commerce Commission, Docket No. 97-0515, at 22 (May 6, 1998) ("*Illinois Commerce Commission Order*").

<sup>27/</sup> Frequently Asked Questions on Universal Service Support for Non-Rural Carriers Serving Rural, Insular, and High Cost Areas, *Public Notice*, CC Docket Nos. 96-45 and 97-160, DA 97-2383 (rel. Nov. 12, 1997).

<sup>28/</sup> *Id.* at 2 (emphasis supplied).

results on several occasions and determined that this model produces accurate estimates of the forward-looking cost of providing service by GTE."<sup>29</sup>

AT&T (at 17) notes that COSTMOD incorporates Bellcore's SCIS model to estimate costs for Nortel and Lucent switches. AT&T's assertion (at 17) that SCIS improperly relies on vendor and equipment-specific costs that are not fully forward-looking is patently false. As discussed above, SCIS is an engineering model that uses vendor engineering rules, service characteristics, and prices reflective of vendor discounts to calculate the forward-looking cost for digital switching equipment.

## **VI. CONCLUSION.**

Based upon the foregoing, the Commission should adopt the state submitted cost studies that conform to the Commission's ten criteria, and reject in their entirety the state submitted cost studies that fail to conform to the Commission's ten criteria.

---

<sup>29/</sup> *Illinois Commerce Commission Order*, at 21.