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

ORIGINAL

In the Matter of	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	)	CC Docket No. 97-160
	)	DA 98-848

REPLY COMMENTS OF AT&T CORP. AND MCI TELECOMMUNICATIONS CORPORATION ON DESIGNATED INPUT AND REVENUE BENCHMARK ISSUES

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Pursuant to the Commission's Public Notice,[1] AT&T Corp. ("AT&T") and MCI Telecommunications Corporation ("MCI") hereby submit their joint reply comments on the designated input and revenue benchmark issues.

INTRODUCTION AND SUMMARY

The comments reveal that, with a single exception, there is little dispute over the *facts* relevant to the issues addressed in the Notice. Thus, for example, no commenter disputes that geocoding is the most accurate method of estimating customer locations, that geocode data are

[1] Public Notice, Common Carrier Bureau Requests Further Comment On Selected Issues Regarding The Forward-Looking Economic Cost Mechanism For Universal Service Support, DA 98-848 (rel. May 4, 1998) ("Notice").

presently available for most customer locations, or that accurate geocode data for additional customer locations are readily obtainable through global positioning system ("GPS") readings. Because the HAI model uses geocode data and the BCPM model does not, however, the BCPM proponents make a series of makeweight cost objections that not only rely on facially erroneous cost assumptions, but also simply ignore the availability of geocode data that these incumbents concede they already possess -- but refuse to disclose. In short, a geocode data approach to customer location is far superior to any suggested alternative, and the Commission should accordingly mandate the use of geocode data for all customer locations for which it can be obtained.

With respect to line card costs for longer copper loops, the facts *are* disputed. AT&T and MCI contend, based on signal loss data and the opinions of the HAI engineering team (comprised primarily of former incumbent LEC engineers), that a standard line card is adequate for copper distribution loops up to nearly 18,000 feet, and that such cards cost no more than $100/line. GTE and other incumbents allege that extended range line cards must be used for copper distribution loops over 12,000 feet and that the cost of such cards exceeds the cost of standard cards many times over. These incumbents fail to provide a shred of evidence that extended range cards are required—or even widely used—for 12-18 kft loops. Because the relevant evidence is peculiarly within the possession and control of these incumbents, the Commission clearly should construe the incumbents' failure to provide it as proof that the evidence does not support their allegations.

No commenter disputes that the incumbent LECs' "household" proposal to model to *all* households will result in a modeled network that builds facilities to many empty houses. Indeed, the North Dakota Public Service Commission demonstrates that in many rural areas the resulting

overbuild may be as much as 50 percent (because up to one-third of existing houses in these rural areas are unoccupied). The incumbents' mantra-like focus on their "carrier of last resort" obligations cannot conceivably justify that result. The issue here is not *whether* a LEC must hold itself out to serve all households that request service, but what is the *cost* of doing so. To make the false assumption that all houses are occupied by customers with phone service is to overstate the cost of meeting that regulatory obligation.

On the issue of forward-looking depreciation lives, the incumbents do little more than repeat the same flawed economic and technological change arguments that have been considered and rejected by the Commission and state commissions. The Commission's most recent depreciation lives and salvage values, determined in the triennial review process with incumbent LEC input, *are* forward-looking, and arguments that changed circumstances require depreciation adjustments are appropriately addressed in that depreciation-focused forum, not in this proceeding, in which depreciation, is just one of many issues.

The incumbents largely ignore the two outside plant issues the Commission specifically identified in its Notice. As AT&T and MCI demonstrated in their initial comments, Dr. David Gabel's Rural Utilities Service data analysis validates the HAI model's cost estimates for those areas. And the HAI model's forward-looking use of nationwide composite data for inputs that are unlikely to experience significant regional cost differences and area-specific defaults for inputs that are significantly impacted by geography are superior to the incumbent LECs' embedded focus on regional and even company-specific data. GTE and other incumbents largely focus on attacks on a handful of HAI model defaults. Although AT&T and MCI have repeatedly rebutted these claims before the Commission and state commissions, AT&T and MCI address the most

egregious claims yet again in these reply comments. In almost every case, the incumbents' criticisms reflect blatant mischaracterizations of the relevant documents.

Finally, a number of commenters, including one incumbent LEC, join AT&T and MCI in supporting the Commission's $31/$51 revenue benchmarks. Those benchmarks are conservative estimates of expected revenues (using current revenues as a proxy) that will be generated by local telephone assets when basic service rates are maintained at affordable levels. As such, those benchmarks properly implement the goal of setting universal service subsidies at the minimum amount necessary to encourage carriers to serve high cost areas while maintaining affordable rates. The incumbent LECs' objections to this approach reflect misunderstandings of both the costs modeled by the HAI model and the requirements of the 1996 Act and are, at bottom, designed only to inflate the universal service fund in pursuit of the incumbents' illegitimate make-whole strategy.

I. INPUT ISSUES

A. Collection And Use Of Geocode Data Is The Most Affordable and Accurate Method For Estimating Customer Location.

No commenter disputes that geocoding is the most accurate method of determining customer locations or that geocode data is presently available for most customer locations. As AT&T and MCI explained in their opening comments, the Commission therefore should give primacy to obtaining the most geocode data possible, and to ensuring that the selected cost model is capable of employing those data to produce accurate cost estimates.

At present, the HAI Model is the *only* model that uses geocoded customer location data to estimate universal service costs. BCPM supporters thus predictably urge the Commission to

disregard geocode data altogether merely because the HAI Model sponsors do not currently possess geocode location data for *all* customers. *See, e.g.,*, Aliant at 1-2. At most, however, the absence of geocode data for some customer locations could support the use of other, less accurate, location approaches or data only for *those* customers. The HAI Model has the flexibility to substitute other customer location algorithms (including but not limited to the road location surrogate algorithm of the BCPM) where geocode location data are unavailable. Even at its worst, the HAI Model customer location methodology thus is as good as the best of its rivals. Hence, there is no justification for not using geocode data for the majority of customer locations, for which highly accurate geocode data *are* available.[2]

Accordingly, the fact that the HAI Model's existing geocode data generally is more complete in suburban and urban areas than in rural areas only confirms the need for the Commission to take immediate steps to accelerate geocode data collection. This additional geocode data can be added as it is obtained, producing increasingly accurate customer location results. And even the BCPM proponents concede that accurate geocode data for additional customer locations *is* readily obtainable through global positioning satellite ("GPS") readings. *See, e.g.*, BCPM Sponsors at 3 ("the BCPM Sponsors agree that a set of longitudinal/latitudinal

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[2] GTE's litany of problems with geocoding software (GTE at 4-5) merely explains why gecode data have not been generated for some points. GTE fails to identify any inaccuracies in the geocode data that do exist.

Likewise, the incumbent LECs point to various geocoding software and data flaws in support of their contention that geocoding "will never result in an exact latitude/longitude assignment" for all customers. *See* GTE at 5. Perfection is not the relevant benchmark, however. *No* customer location estimation approach will produce perfect results for all customers. The critical, and indisputable, fact is that geocoding is more accurate than the available alternatives.

coordinates based on actual customer locations could, in theory, be obtained using these [GPS] devices"); GTE at 7 ("GPS data can be quite accurate").

Proponents of BCPM's flawed "grid cell" approach to customer location estimation nonetheless complain that "geocoding all customers using GPS would be prohibitively expensive." GTE at 7. These claims reflect grossly overstated cost estimates. GTE, for example, asserts that GPS devices adequate to overcome a plus or minus 100-yard error "can cost between $4,500 and $15,000." GTE at 7. In fact, GPS devices twice that accurate are available now in any electronics store for a little as $100, and prices of such GPS devices continue to fall.[3] Similarly, incumbent LEC assumptions that GPS data collection would require armies of new LEC employees, *see* GTE at 8 ("GTE estimates it would require 748 employees working for one year to obtain the exact latitude/longitude using the GPS option for all of its customers"), ignore the existence of more efficient arrangements, including, for example, contracting with electric and gas utilities to have their "meter readers" record GPS data on their regular rounds. Most fundamentally, however, even if incumbents were to incur the "millions" of dollars in GPS data collection costs they predict, that would be a very small price to pay whether measured against the *billions* of dollars in *annual* subsidies the incumbents seek.[4]

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[3] *See* Adventure GPS Products on-line catalog, www.gps4fun.com/compare1.html (reproduced in relevant part at Appendix A, *infra*). Without cancellation for security induced "fuzz," accuracy of even inexpensive GPS units is within plus or minus 15 meters. *Id.* Accuracy can be improved to within one meter by linking to a known survey point, and transmitting the offset distance to the receiver.

[4] To put the ILECs' cost argument in perspective, the $47.5 million cost alleged by GTE for developing geocode data for 16.7 million customer locations equates to a one-time cost of only *$2.85* per customer location.

Finally, the incumbent LECs' own comments also confirm that they overstate the necessary scope of GPS data collection efforts. Much additional geocode data is apparently already in these LECs' possession. SBC, for example, concedes that it already possesses "proprietary" geocoded data for many locations. SBC at 4. The BCPM Sponsors likewise recognize that "many LECs" may already have geocoded terminal location engineering "maps in their possession." BCPM Sponsors at 3-4 ("It is certainly an option to combine the two approaches and use GPS systems to augment existing LEC data on terminal location"). As with other key data in their sole possession, however, these incumbents either refuse to make the data available or urge the Commission to conduct "an investigation" as to "availability." *See* BCPM Sponsors at 4; SBC at 4. No further "investigations" are needed. Rather, all carriers should be directed to supply geocode data for their customers by a date certain; those, such as Bell Operating Companies, who already possess such data, will then have proper incentives to disclose that data rather than incur additional expense to duplicate it. In this regard, AT&T and MCI agree that so long as their data and collection methods are adequately documented and verifiable, "LECs should be allowed to pursue whatever locating methodology can provide the needed [geocode] data, at the required level of accuracy, in the most efficient and cost-effective manner possible." BCPM Sponsors at 3. As AT&T and MCI explained in their opening comments, the HAI Model's flexible location algorithms can accommodate virtually any types of geocode data as they become available.

B. The Cost Of A Line Card Used For A Loop 12,000 To 18,000 Feet Long Does Not Differ Significantly From The Cost Of A Line Card Used To Serve Loops Under 12,000 Feet.

AT&T and MCI showed in their initial comments that the standard line card assumed by the HAI model is adequate for copper loop lengths up to 17,600 feet, and that the engineering algorithms employed in the HAI model generally limit the maximum copper loop length to approximately 17,700 feet. Hence, no adjustment to the inputs or algorithms of the HAI model is necessary to estimate line card costs accurately. AT&T/MCI Comments at 5-6.

Several incumbent LECs reassert their claims that loops in the 12-18 kft range require costly extended-range line cards. *See* SBC at 6; GTE at 13-15. These claims merit no weight. First, these parties continue to refuse to provide proof that extended-range cards are required (or even widely used) for 12-18 kft loops, let alone that extended-range cards are significantly more costly than standard-range cards. *See* GTE Comments at 14 ("the specific line cards GTE uses and the price GTE pays are proprietary"); SBC at 6.

Second, the limited data that GTE has produced support the *HAI model* default values, not the higher values asserted by other LECs. GTE has assumed a cost per line ranging between $45 and $81 for a normal-range line card. GTE Comments at 14. The HAI default value is at the *high* end of this range (the HAI model default input value for a 4-line card is $310). With normal cards available for as little as $45, the HAI default value is therefore adequate to cover extended range cards that are nearly twice as expensive.

GTE vs. BCPM vs. HAI Model					
	GTE	BCPM		HAI Model	
		Low Density	High Density	Low Density*	High Density
POTS Card	$45-81	$94.00	$89.11	$100.00	$77.50
Extended Range	$84-194	$125.00	$187.50	$100.00	$96.88

*HAI Model assumes all low density POTS cards are extended range cards.

Third, GTE's claim that an 18,000 foot copper loop is too long to support ISDN, ADSL or other advanced services (GTE Comments at 13-14) is completely unsupported. It is important to keep in mind that there are two separate ADSL standards, ADSL1 (the North American 1.5 Mb/s standard) and ADSL2 (a 6.1 Mb/s standard). *See* www.adsl.com (website materials). No commenter does or could allege that the facilities modeled by the HAI model are unable to support ADSL1 out to 18,000 feet of 24-gauge cable. While the HAI plant design cannot support ADSL2 to this full distance, the greater speed of ADSL2 (6.1 Mb/s vs. 1.5 Mb/s) is hardly a component of *basic* service for which universal service support is appropriate.[5]

As a consequence, GTE once again resorts to misrepresentation. GTE claims that AT&T witness John Lynott "has stated that the use of T-1 DLCs on copper loops under any circumstances cannot be considered forward-looking." GTE at 12. In fact, Mr. Lynott stated in the cited testimony only that copper T-1 technology is not forward-looking for use in feeding GR-303 IDLC—a point on which HAI and BCPM sponsors are in agreement and which has nothing whatever to do with the Commission's inquiry as to the use of copper in the distribution portion

[5] In the past, 1.5 Mb/s was considered broadband. Moreover, the consortium of Intel, Microsoft, Compaq and the RBOCs has standardized on the ADSL1 system. There is little immediate push for ADSL2. Should ADSL2 achieve widespread adoption, the HAI Model loop design would permit the provision of ADSL2 service by adding ADSL2 "modems."

of long loops. GTE also mischaracterizes a Bell Atlantic press release, which GTE claims supports the proposition that copper loops in excess of two miles in length cannot support ADSL (GTE Br. 12-13). In fact, the press release publicized Bell Atlantic's selection of a vendor, DSC, to provide cards in its Litespan 2000 system to extend the range of ADSL *on copper*. The press release makes no mention of a two mile distance. Rather, it states:

> The agreement calls for DSC to provide Bell Atlantic with the technology to overcome existing distance limitations of ADSL technology. Today, most loops longer than about *three miles* are served via digital loop carrier systems, and until now, ADSL could not work directly over these systems. DSC's system integrates ADSL into its Litespan Digital Loop Carrier System, *eliminating the distance limitation*.

See <http://www.ba.com/nr/1997/May/199719001.html>. The point of the press release is that no ADSL line card for the Litespan 2000 was available *before* 1997, and that such a line card is available now.[6]

In the absence of verifiable data from the LECs supporting their extended range line card claims, the Commission should adopt the default HAI values. In light of the LECs' failure of proof on these matters, where the relevant information is peculiarly within the possession and control of the LECs, it would also be appropriate for the Commission to issue data requests for information sufficient to determine what line cards the LECs actually use (and at what prices), and to conduct site visits to verify responses.

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[6] USTA's claim that current "technical design rules" call for copper loops "with a maximum physical range of 12,000 feet or 75 ohms conductor loop resistance, whichever occurs first" (USTA Comments at 2) is nonsensical. A 75-ohm limit on conductor loop resistance would limit even a 24-gauge cable to a maximum serviceable length of only *1,445 feet* -- less than a tenth of its actual service limit. (24-gauge cable has a resistance of 51.9 ohms per foot. Lucent Technologies, *AT&T Outside Plant Handbook* 5-13 (August 1994).)

C. The HAI Model Appropriately Identifies "Households."

As AT&T and MCI explained in their initial comments, the appropriate universe of "households" that should be assumed for purposes of calculating the forward-looking cost of providing the supported services" is households with telephones, not total housing units or total households. AT&T/MCI at 6-10. The North Dakota Public Service Commission aptly demonstrates why this must be so. As the PSC notes, including unoccupied houses—including "ghost towns" in rural counties, where as many as *one third* of existing housing units are unoccupied—would "distort the results, especially in rural areas," thereby dramatically overstating the need for support. *See* ND PSC at 1-2 & Table 1. Indeed, even Ameritech agrees that "households" should be defined as households with telephones, noting that these figures can be verified with line counts by wire center from the LECs. Ameritech at 2.

Other LECs nonetheless continue to assert that "households" should be defined to include empty houses. These parties argue that incumbent LECs are obligated as carriers of last resort to serve any customer requesting service within a prescribed interval of time, and that omitting the costs of providing telephone lines for empty houses ignores the supposedly greater costs of installing telephone plant piecemeal "when a 'household' later moves in and subscribes to telephone service." Aliant at 3; GTE at 8-9; SBC 6-7; USTA at 3. These claims are without merit.

First, the issue here is not *whether* a LEC must hold itself out to serve all households that request service, but what is the *cost* of doing so. To make the false assumption that all houses in an area are occupied by households that request phone service is to overstate the cost of meeting

that regulatory obligation. AT&T/MCI comments at 9-10. Further, the incumbents are simply wrong in asserting that the HAI model has ignored the costs of later adding phone service to houses that are currently occupied. Although the HAI model is appropriately designed to estimate only the costs of serving households with phone service, the model builds a network that includes cable that passes very close to nearly all houses *without* phone service (other than empty houses in ghost towns and other areas where there are literally no occupied houses). And the HAI model's conservative utilization factor assumptions provide enough spare capacity to serve those houses when and if customers request service to them. Hence, the only additional facilities needed to serve those houses are terminal block and drop. Terminal block and drop generally can be installed within two weeks after it is requested.

Moreover, the LECs' analysis of the potential economic impact of requests for phone service at now-empty houses is flagrantly one-sided. Such requests, by definition, would generate additional revenues that will generally cover the additional cost. The LECs, however, would include in their subsidy analysis the full cost of serving every empty house, but *none* of the revenue that would result from such service requests. To make matters worse, the incumbent LECs' carrier-of-last-resort arguments ignore their tariff provisions that generally require the provision of immediate service only where facilities already exist, and expressly provide for extra charges, and slower installation, in remote areas.[7]

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[7] Several LECs object to providing data on the number of lines served in each wire center on the ground that public disclosure of such information would reveal incumbent LECs' "market share by location to potential competitors." Aliant 3. This claim is absurd. It is public knowledge that, in virtually all of the local exchange markets at issue here, the market share of the incumbent LEC is equal or close to 100 percent.

D. The HAI Model Uses Forward-Looking Depreciation Lives.

As AT&T and MCI explained in their initial comments, the HAI default depreciation values are the weighted average depreciation lives and net salvage percentages from 76 study areas, which include all of the BOCs, SNET, Cincinnati Bell, and several GTE and United companies. These lives and salvage values are determined in a triennial review, conducted with input from the incumbent LEC, the FCC, and the relevant state commission. These values represent the best forward-looking estimates of depreciation lives and net salvage percentages—a conclusion recently confirmed by many state commissions in establishing forward-looking cost-based unbundled network element charges. AT&T/MCI Comments at 10-15.

Most of the LECs simply reassert their perennial claim that increased competition requires shorter depreciation lives than currently prescribed by the Commission. Aliant at 3-4; Ameritech at 3-5; BellSouth at 2-3; GTE at 16-18; SBC at 8-13. The LECs' arguments are the same ones that that they have raised repeatedly in the FCC's exhaustive depreciation proceedings in recent years. The FCC has accepted such arguments when shown to be truthful, and rejected them when unsupported by reasonable evidence. Because the ILECs have adduced no substantial new evidence in support of truncating the Commission-approved depreciation lives, it would be arbitrary and irrational to revisit the issue in this proceeding, in which depreciation issues have not been addressed at length.

Even if the radically shortened lives proposed by the LECs were a proper subject for reconsideration in this proceeding, those, as in the past, continue to be largely undocumented and unscrutinized. The ILECs rely heavily on work by Technology Futures, Inc., a consulting firm that has carved out a niche in advocating short depreciation lives on behalf of incumbent LECs in

state and federal proceedings. *See, e.g.*, SBC at 16; U S WEST at 5 & Attachment 3. The TFI documenation exemplifies the ILECs' "trust us" approach. The TFI "studies" are devoid of any reliable quantitative or empirical support for the lives recommended therein. Moreover, TFI relies heavily on proprietary publications prepared by TFI on behalf of its clients in the local exchange industry, historical data in TFI's files, and "confidential" data obtained from incumbents that have retained TFI. The West Virginia PSC noted this problem in rejecting the efforts of Bell Atlantic to gain approval of the shortened TFI lives:

> [T]he chief flaw in [TFI witness] Dr. Vanston's study and conclusions is the fact that there is no quantitative or empirical support for the depreciation lives recommended by Dr. Vanston. As AT&T noted, Dr. Vanston referred to publications outside the record prepared on behalf of his company's clientele, confidential data received from such clients, historical data in his company's files and his own judgment. Moreover, Dr. Vanston conceded that third parties wishing to replicate his work would have significant difficulties.

Bell Atlantic-West Virginia, Inc. Petition to Establish a Proceeding to Review the Statement of Generally Available Terms and Conditions Offered by Bell Atlantic in Accordance with Sections 251, 252 and 271 of the Telecommunications Act of 1996, Case No. 96-1516-T-PC (W. Va. PSC, Apr. 21, 1997) at 43.

The lack of empirical support for TFI's recommendations is compounded by the inherent methodological flaw in the substitution analysis used to develop its proposed asset lives. Substitution analysis is predicated on the assumption that the technological obsolescence of telecommunications equipment necessarily will track that of other technologies. However, intervening factors often confound future predictions of substitution analysis, as witnessed by the disappointing performance of nuclear power, pay cable television and picture phones.

Moreover, TFI's substitution analysis is entirely one-sided, for it assumes (contrary to reality) that market and technological forces invariable *shorten* asset lives. In fact, competitive market forces and technological advances may also *lengthen* asset lives. One highly pertinent example of that phenomenon is occurring in the local exchange industry: the use of ADSL will markedly lengthen the service life of copper pair cable for loop distribution. Thus, while TFI makes ambitious predictions regarding the substitution of fiber optic cable for copper wire, LEC's such as Pacific Telesis and Bell Atlantic have put the brakes on ventures that purportedly required the use of fiber optic technology, and instead have announced substantial investment in ADSL technology, which does not need fiber optics. TFI itself has conceded that a

> A true consensus has yet to emerge on a single FITL architecture. Continuing changes in technology, costs, regulation, business relationships, market forecasts, and market share assumptions probably mean consensus will be arrived at only gradually.

L. K. Vanston & R. L. Hodges, *Depreciation Lives for Telecommunications Equipment: Review & Update* 19 (1995) (reproduced in Attachment 3 to Comments of U S WEST). TFI's expression of similar doubts about the details and timing of other technologies—including advanced switching, SONET, and wireless technology casts fatal uncertainty on its recommendations.

Finally, the LECs' arguments concerning the effects of competition and technological change have even less force here, in the context of universal service. The services covered by universal service funding are basic services for which demand is highly inelastic, and payments to cover the costs of these services are essentially guaranteed by the universal service fund. If anything, its relevant depreciation lives should be *longer*, not shorter, than the Commission-approved lives that apply to the LECs' complete portfolio of telecommunications plant.

E. The HAI Model Uses Appropriate Outside Plant Installation Cost Inputs.

The Commission's notice sought comment on two specific outside plant issues: (1) Dr. David Gabel's proposed defaults based on Rural Utilities Service data, and (2) whether cost models should employ national, regional or company-specific data. AT&T and MCI explained in their initial comments that the Dr. Gabel's analysis of cable installation costs, although directly instructive only for determining non-rural carriers' costs of providing service in *rural* areas, validates the HAI model's cost estimates for those areas. In most instances the HAI model rural cost estimates are within a few percent of the Gabel estimates. Indeed, the Gabel results generally track the HAI model estimates even when extrapolated to larger cable sizes and other conditions appropriate to non-rural areas. *See* AT&T/MCI Comments at 15.[8]

AT&T and MCI also explained in their initial comments why nationwide composite cost data are generally more appropriate than region-specific or company-specific data. *See* AT&T/MCI Comments at 15-16. The HAI model employs national defaults where regional differences are unlikely to be significant and area-specific data for such regional-variant inputs as soil and rock type. As they have in state arbitrations, several incumbents contend that all inputs should be regional or even company specific. *See, e.g.*, BellSouth at 4 & Attachment 2. These

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[8] Aliant and other incumbents attack a number of Dr. Gabel's assumptions. AT&T and MCI will not attempt to address all of the challenged assumptions here; rather, AT&T and MCI urge the Commission to adopt the HAI defaults. However, even a cursory analysis suggests that Aliant's concerns are unfounded. For example, Aliant suggests that Dr. Gabel's model understates the costs of installing outside plant in areas with a density of 5-100 lines per square mile because telephone plant "must be placed by trenching and backhoeing in such areas, not plowing, so as not to cut into" water, sewer and other utility systems. Aliant at 4. Aliant provides no support for this claim, which is implausible on its face. An area with a density of 5-100 lines per square mile consists of properties averaging six to 100 acres in size. Properties this large are not in dense subdivisions. There is no reason not to plow.

proposed input values are greatly inflated not because of legitimate regional cost differences, but because they reflect embedded or inefficiently high costs, or costs that are caused by outputs other than basic telephone service.

Several incumbents also address additional outside plant issues that are not specifically enumerated in the Commission's notice. AT&T and MCI respond here only to some of the most blatantly erroneous of the incumbents' claims.

1. Conduit costs. SBC contends that the cost of conduit investment is $0.83 per foot, not the $0.60 value assumed by the HAI model. SBC Comments at 20. In fact, the lower value is amply supported by actual market quotations: the HAI Model engineering experts obtained quotations for conduit from actual vendors at prices of 51.5 cents, 58.5 cents, and 64.8 cents per foot. *See* Attachment B at 3 (price quotations for "duct material"). In any event, the choice between the two values has a *de minimis* effect on the cost of supporting universal service.[9]

2. SAI Indoor Investments. SBC asserts that the HAI values for SAI indoor investments are "substantially understated in comparison with SBC actual broad-gauge estimates and BCPM default inputs." SBC at 20. In fact, recent quotations and transaction prices confirm the HAI values are, if anything, conservative. Material for a 4200-pair SAI, for example, costs less than $1,000.[10]

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[9] The difference between a conduit cost of $0.60 and $0.83 per foot is 1/5 of one percent, or three cents per month in loop costs, or $44,000 in the federal share of the Universal Service fund.

[10] A 4200-pair indoor SAI consists of a 4 ft. x 8 ft. sheet of ¾ inch plywood attached to an interior wall, with 84 punch-down blocks (each of 50-pair 66-type) attached. John Donovan, one of the HAI outside plant experts, has a receipted purchase of one 66-type block, bracket and (continued . . .)

3. **Structure sharing.** The HAI Model assumes that market forces will induce efficient firms to share the costs of outside plant structure with other telephone companies and other utilities—power, gas, water and CATV—to a far greater extent than engaged in by monopoly local exchange carriers in the past. Hatfield Model Release 5.0 Inputs Portfolio at 15-16. SBC asks the Commission to reject these forward-looking values in factor of its embedded sharing fractions: "any input that deviates from actuals is unreasonable." SBC at 20. The Commission, however, has properly made clear that the relevant costs are the forward-looking costs of efficient operations, not embedded costs.

The Washington Utilities and Transportation Commission ("Washington UTC") has determined that another RBOC, U S WEST, in fact engages in extensive sharing of both aerial and underground structures, both in and out of downtown areas:

> 57. The deposition of U S WEST's field engineer is not supportive of the Company's argument [that little structure sharing occurs]. Cervarich testified that outside of the downtown core area, the placement cost of underground conduit is shared with other utilities. Furthermore, when a total rebuild occurs in a developed area, the likelihood of joint undertaking with another utility increases significantly. Cervarich testified that city officials encourage utilities to coordinate their work in developed areas.
>
> 58. U S West's position that it will bear 100% of the placement costs for underground work is also contradicted by the deposition of MCI employee Mark Wingate. Wingate is the manager for MCI's outside plant engineering and construction in Washington State. . . . Mr. Wingate's testimony illustrated that when a new network is constructed, there is extensive sharing with other service providers. This sharing has occurred in developed areas an it involves the sharing of both aerial and underground structures. Among other providers, MCI has shared facilities with U S WEST. Mr. Wingate's testimony provides strong

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(. . . continued)
cover for $8.00 (quantity of one each). Cross connection wire can be purchased for less than $15 per 1,000 feet. Total cost equals $25 (the cost of the plywood) plus 84 x $8, plus $15, or $712.

support for the proposition that in urban areas the structural cost of laying conduit would be shared by various service providers.

In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale, Docket No. UT-960369, Eighth Supplemental Order at 18 (Washington UTC, Apr. 16, 1998) (citations omitted).

SBC likewise assails the structure sharing percentages for buried drop assumed in the HAI model on the ground that "SWBT does not share drop placement costs with other service providers," and "does not expect to in the future." SBC Comments at 19. SBC's position is at odds with efficient forward-looking practices. It has become common for developers to dig a common service trench to each house at no cost to the utilities. Moreover, candidates for sharing the cost of buried drop trenching include electric, gas, water and CATV companies as well as telephone companies. All of these firms have an economic incentive to share the cost of the trench. If SBC is unwilling to respond to these incentives, its costs and operating practices are not those of an efficient firm.

4. Miscellaneous GTE criticisms of HAI data. GTE's comments offer a parade of unfounded criticisms of the data underlying the HAI Model. GTE has offered the same criticisms in virtually every other recent cost proceeding. As AT&T and MCI have explained repeatedly in response, these criticisms rest on flagrant mischaracterizations of the documentation and testimony supporting the HAI Model. GTE's latest attempt to resuscitate these arguments merits only a brief response.

For example, GTE contends that the HAI Model developers have ignored source data showing costs and prices higher than the values used in the Model (GTE at 22-23). The data cited by GTE were omitted from the HAI documentation cited by GTE because the former were

collected *after* the latter was published. The current version of the HAI Model Inputs Portfolio shows *all* of the relevant data points. They support the default values adopted by the model developers.

Likewise, GTE continues to assert that the HAI Model developers have produced artificially low input cost values by selectively discarding relatively high price quotes (GTE at 23 & NECI p. 2). In fact, the HAI Model default values were not based on *any* price quotes; they were based on the judgment of a panel of outside plant experts with almost two hundred years of collective experience in the field. The vendor price quotes were considered only later, as a check on the judgment of the experts. In any event, it is entirely appropriate to disregard price quotations at the high end. Efficient firms in competitive markets do not buy inputs from the "average"-price vendor, let alone the high bidder; they buy inputs from the lowest-price bidder judged capable of providing the required quality of goods and services.[11]

Similarly, GTE asserts that its review of the material produced by Dean Fassett, one of the HAI Model outside plant experts, shows that "many of the default inputs and assumptions contained in the Hatfield (now referred to as HAI) Model as not supported by the source material that the engineering team allegedly 'relied' upon in establishing such inputs and assumptions. GTE Comments, NECI p. 2. But GTE is comparing charts in the Input Portfolio for release *3.1* of the Hatfield model (compiled in December 1996 and January 1997), with data not obtained

[11] For this reason, the HAI outside plant engineering also disregarded prices quotes that it regarded as unrealistically low. AT&T and MCI have noted this fact repeatedly in other proceedings. GTE characteristically fails to mention it.

until *May 1997. All* of these data are included in the Inputs Portfolio for Hatfield Model 4.0 and HAI Model 5.0.

GTE continues to reassert that another HAI Model outside plant expert, John Donovan, told the engineering team to "make up some default numbers," and that many of the HAI default inputs are in fact "made up." GTE Comments, NECI p. 3. As AT&T and MCI have repeatedly pointed out, the only "made up" default values proposed by Mr. Donovan, and adopted by the engineering team, were dummy or placeholder variables to capture the percentage of a CBG affected by difficult soil conditions. The engineering team ultimately decided that these percentages could not be determined reliably, and adopted a default value for all CBGs equal to 1.0 (i.e., an assumption that difficult soil conditions, if present in a CBG, affect the *entire* CBG). Any inaccuracy resulting from this default value is an *overstatement* of costs.

II. THE COMMISSION'S USE OF A REVENUE BENCHMARK IS APPROPRIATE.

No commenter disputes that universal service subsidies should be no more than the *minimum* amount necessary to encourage carriers to serve high cost areas while maintaining affordable basic rates. Because wireline connections to residences and businesses provide a delivery vehicle for multiple services -- many of which may not even be conceived at the time the facilities are placed -- the appropriate revenue benchmark is thus an affordability target that approximates the expected revenues generated by local telephone assets when basic service rates are maintained at affordable levels. *See* AT&T/MCI at 16-18. Anything more would be windfall. Accordingly, AT&T and MCI support the Commission's $31/$51 benchmarks, which use approximate current revenues as a proxy for expected revenues.

State regulators and at least one incumbent LEC also support the $31/$51 benchmarks. These parties accept the reality that a subsidy that reflects expected revenues from services provided over the local facilities modelled by the universal service cost model will provide adequate incentives for carriers to provide service to high cost customers at affordable rates. *See, e.g.*, TRA at 4; Ameritech at 6-7.

Other incumbents continue to ignore the economic realities and incentives and to insist upon a revenue or "affordability" benchmark that reflects only revenues from supported services. These incumbents contend that including additional revenues: (1) would create a mismatch between costs and revenues, and (2) perpetuate "implicit" subsidies in contravention of the 1996 Act. *See, e.g.*, Sprint Local Companies at 4-6; BellSouth at 11. The first argument is factually inaccurate -- at least with respect to the HAI model -- as AT&T and MCI demonstrated in their initial comments. *See* AT&T/MCI at 18. The second argument turns the statute on its head. Recognizing that unsupported services must bear some of the costs of facilities jointly used to provide supported and unsupported services does not produce implicit subsidies, it *prevents* them. *See* 47 U.S.C. § 254(k) ("The Commission, with respect to interstate services, and the States, with respect to intrastate services, shall establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services"). In particular, nothing in the Act requires the Commission to ignore that the realities that incumbent LECs will continue to use the local network facilities that the selected cost model will cost to supply exchange access services, that revenues from those services will continue to exceed associated costs for the forseeable future, and that even as access revenues do

eventually move towards costs those revenue reductions will almost certainly be offset by increased revenues from new services provided using the same facilities.

CONCLUSION

For the foregoing reasons, and those stated in the previous comments of AT&T and MCI, the Commission should adopt the HAI Model approach.

Respectfully submitted,

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