MCI Telecommunications
Corporation

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FEDERAL COMMUNICATIONS COMMISSION
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February 3, 1998

Magalie Roman Salas, Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Ex Parte Submission
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

Dear Ms. Salas:

On Friday, January 30, 1998, Rich Clarke of AT&T and I met with Mike Riordan, Don Stockdale, Pat DeGraba, Stag Newman, Brad Wimmer, and Gary Biglaiser to discuss the FCC staff's Hybrid Cost Proxy Model (HCPM) filed in the above captioned docket. We outlined our concerns with the approach to customer location and modeling of the local network taken in the HCPM, as outlined in the attached document that served as the basis of our discussion.

We also provided the attached data, by density zone within each state, on the success rates for the geocode data used in the HAI model. The data indicate that the greatest success in geocoding customer locations was in the middle density zones (between 200 and 2550 customer locations per square mile), with lower success rates at the higher and lower density zones. Under the HAI model, using the FCC's common inputs assumptions, 31.7 percent of the total national universal service subsidy goes to customers in the lowest density zone (less than 5 customer locations per square mile) and 67.7 percent of the total national universal service subsidy goes to customers in the next least dense zone (greater than 5 but 100 or fewer customer locations per square mile).

Respectfully submitted,

Chris Frentrup

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CC: Mike Riordan, Don Stockdale, Pat DeGraba, Stag Newman, Brad Wimmer, Gary Biglaiser, Chuck Keller, Bob Loube, Sheryl Todd

HM 5.0 vs. HCPM

Scorecard on Customer Location and Network Modeling Issues

Counting Locations - residential

- HCPM uses 1990 census data by CB
- HM uses 1997 Metromail customer location data at CB level, reconciled to 1996 Claritas estimates at CBG level
- Scorecard: HCPM data are stale, and information is now highly inaccurate at the CB level

Counting Lines - residential

- HCPM uses a study area-wide lines per household multiplier to estimate CB-specific line counts
- HM adjusts for first and second line penetration by considering CBG-specific customer demographics (age & income)
- Scorecard: HM approach is more accurate

Counting Locations - business

- No business location counts appear to be used in the HCPM
- HM uses Dun & Bradstreet business location counts by CB
- Scorecard: HM approach is more accurate

Counting Lines - business

- HCPM uses data gleaned from other models
- HM uses PNR National Access Line Model to estimate business lines by CB based on D&B employee and SIC data
- Scorecard: HM approach is more accurate

Locating Customers within CBs

- HCPM assumes that all customers in a CB are located in the grid cell that happens to contain the CB's "interior point"

- HM determines customer location by geocoding actual latitude and longitude of over 70% of all customer locations in US – without regard to artificial grid constructs. Locations that cannot be geocoded to sufficient accuracy are assumed to be located on CB boundaries
- Scorecard: HCPM does not locate customers appropriately across the CB in which they are found – and where it does place them is not particularly plausible. HM locates most customers where they are found, and the remaining ones are placed in plausible locations.

Assigning CBs to Wire Centers

- HCPM uses On-Target Exchange Info – a database that BCPM has rejected as inaccurate in favor of BLR
- HM uses BLR
- Scorecard: HM uses superior data to HCPM.

Creating Clusters

- HCPM bases its creation of clusters on a grid that is sized to approximate average CB sizes
- HM uses actual customer geocodes as the basis for its cluster creation. Artificial boundaries such as CBs or grids are not used to restrict potential cluster formation
- Scorecard: HM's methodology is superior to HCPM's more restrictive constructs.

Clustering Customers

- HCPM uses an arbitrarily placed "grid" overlay to determine the limits of its "clusters" of customer locations – which may ignore the natural clustering of customer locations
- HM uses a dynamic clustering algorithm that determines natural groupings of customers based only on telephone plant engineering criteria -- without respect to artificial boundaries
- Scorecard: HCPM's restrictions on cluster formation ensure that suboptimal plant configurations will be modeled.

Locating Distribution Area within Clusters

- HCPM defines its distribution area to be the square "microgrid" in which the CB interior point is located
- HM places its distribution area rectangles to overlay and match in area the actual customer clusters
- Scorecard: HCPM's distribution areas need not overlay or match in size actual customer locations, HM is superior.

Distribution Network Structure

- HCPM lays all of its cable in backbone and branch configuration
- HM uses "road cable" configurations to serve small outlier clusters, backbone and branch elsewhere
- Scorecard: HM more flexibly represents likely configurations

Lot Configurations

- HCPM assumes close to square lots
- HM assumes 2:1 lot configuration in main clusters
- Scorecard: Because property developers determine lot configurations, and determine them to reduce road, sidewalk, driveway and utilities costs, and to appeal to customers' desire for large backyards, HM 2:1 configuration is more reasonable.

Structure Choice

- HCPM has fixed structure type percents by density zone
- HM allows structure type percents to vary off of defaults based on relative local life-cycle costs
- Scorecard: HM allows more realistic sensitivity of structure type to local cost characteristics

Feeder Routing

- HCPM feeder routes run NSEW with subfeeder optimization
- HM feeder routes may run NSEW or be steered to optimize on structure costs
- Scorecard: Both models have appealing optimization features

Feeder Technology

- HCPM uses either analog copper, digital copper T1 or digital fiber based on fixed distance thresholds and relative first cost
- HM chooses between analog copper and digital fiber based on distance thresholds and relative total life cycle costs of each technology
- HM technology choices are more forward-looking, and are based on complete economic criteria.

OSP Engineering

- HCPM assumes numerous linearizations of more complex cost structures; e.g., cost of copper cable placements (26/24 ga. and for T1 use); cost of terminals; imprecise placement costs mixed with materials costs; T1 cable costs mixed with electronics costs, separation of DLCs from SAIs, etc.
- HM distribution and feeder modules model far more explicitly the complex cost structure of telephone networks – based forward-looking specifications and years of engineering knowledge
- Scorecard: HM more faithfully matches costs in all circumstances.

Switching, Transport, Signaling and Expenses

- HCPM does not model any of these items
- HM models in detail all of these items
- Scorecard: HM is superior.

Overall

- HCPM is a highly simplified and linearized model of local telephone network costs. While it may model adequately these costs in "average" situations, the FCC needs a universal service model that will model accurately costs in abnormal situations.
- The HM is a model that is sufficiently granular and precise at each level of granularity to provide the FCC with highly accurate assessments of universal service costs.

GEOCODE SUCCESS RATES

DENSITY ZONES	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA
0	7%	6%	18%	32%	46%			23%	34%	8%	19%	23%	24%	8%	12%	9%	21%	14%
5	41%	37%	61%	62%	62%	83%	100%	43%	62%	44%	41%	43%	53%	37%	38%	47%	41%	47%
100	70%	69%	70%	68%	74%	90%	100%	56%	80%	82%	59%	68%	65%	71%	69%	67%	69%	73%
200	80%	82%	80%	75%	83%	94%	100%	79%	85%	87%	58%	76%	76%	80%	80%	72%	81%	83%
650	89%	88%	87%	76%	84%	95%	88%	81%	84%	91%	53%	84%	72%	80%	80%	78%	88%	89%
850	89%	86%	85%	75%	86%	93%	91%	88%	78%	88%	67%	84%	80%	84%	83%	79%	89%	91%
2550	83%	81%	81%	71%	85%	91%	92%	84%	64%	84%	62%	84%	82%	82%	81%	75%	85%	92%
5000	77%	83%	76%	59%	81%	83%	80%	78%	46%	82%	64%	79%	74%	76%	75%	77%	80%	89%
10000	98%	77%	71%	45%	79%	74%	85%	68%	50%	78%	47%	81%	69%	70%	76%	87%	63%	79%
Avg	65%	60%	77%	65%	80%	90%	85%	73%	70%	75%	56%	66%	67%	73%	70%	65%	66%	76%

	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK
0	25%	38%	0%	31%	8%	3%	8%	18%	12%	5%	1%	4%	25%	9%	35%	9%	32%	1%
5	65%	62%	16%	73%	44%	26%	26%	53%	34%	31%	35%	26%	60%	46%	57%	35%	64%	23%
100	86%	78%	66%	77%	77%	59%	68%	56%	63%	63%	73%	67%	76%	58%	87%	63%	80%	57%
200	91%	83%	80%	81%	84%	75%	78%	75%	73%	83%	83%	76%	87%	73%	88%	81%	87%	73%
650	93%	87%	89%	84%	88%	81%	87%	86%	81%	99%	86%	85%	94%	80%	90%	89%	91%	77%
850	94%	89%	93%	85%	91%	84%	90%	78%	80%	96%	88%	86%	91%	85%	76%	92%	89%	73%
2550	90%	82%	90%	84%	92%	87%	84%	83%	77%	97%	84%	87%	89%	87%	75%	92%	89%	65%
5000	84%	77%	88%	80%	91%	83%	61%	70%	72%	90%	81%	88%	82%	81%	57%	87%	84%	76%
10000	80%	71%	86%	76%	87%	80%	83%	65%	78%	82%	74%	78%	69%	85%	43%	68%	78%	62%
Avg	87%	80%	49%	81%	76%	66%	56%	61%	62%	64%	65%	65%	84%	69%	68%	74%	83%	54%

	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY	National
0	31%	1%	100%	28%	5%	14%	7%	24%	10%	0%	29%	35%	1%	34%	15%
5	50%	26%	76%	53%	41%	46%	32%	54%	25%	8%	51%	54%	11%	48%	43%
100	45%	58%	91%	78%	69%	71%	63%	61%	64%	35%	54%	70%	40%	67%	69%
200	51%	76%	92%	83%	84%	83%	76%	71%	78%	53%	60%	78%	61%	86%	79%
650	50%	83%	92%	86%	100%	87%	84%	82%	85%	75%	61%	84%	79%	80%	84%
850	44%	85%	91%	82%	86%	89%	87%	82%	88%	82%	62%	87%	88%	84%	84%
2550	31%	84%	89%	81%	78%	90%	85%	82%	84%	88%	63%	87%	92%	77%	80%
5000	16%	82%	84%	77%	68%	82%	71%	78%	80%	78%	63%	87%	88%	65%	72%
10000	18%	87%	79%	83%	61%	79%	70%	83%	75%	83%	75%	84%	75%	95%	66%
Avg	40%	72%	88%	72%	54%	73%	73%	74%	68%	35%	60%	75%	43%	68%	71%