AT&T

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EX PARTE OR LATE FILED

May 26, 1998

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M. St., NW, Room 222
Washington, D.C. 20554

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MAY 26 1998

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

RE: Ex Parte Presentation – Proxy Cost Models
CC Docket No. 96-45

Dear Ms. Salas:

On May 22, 1998, AT&T and MCI (the HAI Model Sponsors or "HMS") met with Craig Brown, Bryan Clopton, Chuck Keller, Mark Kennet, Bob Loube, Jeff Prisbrey, Bill Sharkey, Holly Smith, Richard Smith, Donald Stockdale, Natalie Wales and Brad Wimmer of the Common Carrier Bureau. The HMS were represented by Richard Clarke and Mike Lieberman of AT&T and Chris Frentrup of MCI.

The purpose of this meeting was to provide a preliminary evaluation of the usefulness of certain analyses that were entered into the record of this proceeding. As the attached discussion materials demonstrate, the HMS found these analyses not to reflect typical distribution plant engineering situations that are addressed by the HAI Model. Instead, by examining only maximally-sized square distribution areas, and populating them with randomly generated customer locations, these analyses appear to focus on "worst case" situations. Furthermore, the dispersion comparisons offered by these analyses do not reflect the effects on cluster size that result from the HAI Model's use of surrogate geocode points to form partially its clusters, and the HAI Model's use of drop cable to complete distribution connections to customers' homes. When these analyses are rerun using actual customer geocode points (as supplied by the HMS in their ex parte submission of May 14, 1998), results are markedly different.

The HMS intend to file additional empirical evaluations of these analyses as they become available.

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Two copies of this Notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(2) of the Commission's rules. The materials presented at this meeting are attached.

Sincerely,

Richard N. Clarke/ha

Richard N. Clarke

Attachments

cc: Craig Brown
Chuck Keller
Bob Loube
Bill Sharkey
Richard Smith
Natalie Wales
Lisa Gelb
Brian Clopton
Mark Kennet
Jeff Prisbrey
Holly Smith
Don Stockdale
Brad Wimmer
Sheryl Todd

HAI Model v 5.0a

Preliminary Report on its Distribution Plant Engineering

AT&T and MCI

May 22, 1998

Overview

- Several analyses have suggested that the HAI Model 5.0a (HM) may not engineer lengths of distribution plant sufficient to reach all customers because:
  - PNR cluster configurations do not match sufficiently closely the distribution area engineered by the HM
  - HM distribution cable lengths are inadequate to reach to the edges of the PNR clusters
- These analyses are inaccurate because they fail to:
  - account for how PNR customer geocode points are developed
  - compare HM distribution plant lengths against a correct standard for measuring "sufficient" plant
  - use a comprehensive sample of actual customer locations as the basis for making plant length comparisons

Proffered Analysis

- Lays out a set of "customer" points
  - In an 18x18 kft distribution area
  - In an area that is square
  - Generated in random (Monte Carlo) fashion
  - Without multiple customers at individual locations
- Compares this layout to a simplified view of how the HM might assume customer locations to be situated
- Bases its comparisons on two dispersion measures
  - Star network
  - Minimum spanning tree

Evaluation

- Each of the analysis' assumptions appears to have the effect of overestimating any difference that might exist between customer dispersion and HM dispersion
  - 18x18 kft distribution area
  - Square areas
  - Random points
  - Multiple customers at individual locations
  - Simplified view of how HM engineers distribution plant
  - Actual character of PNR clusters due to surrogates
  - Character of minimum spanning tree
  - Particular location of geocode lat/long points

Evaluation

- HAI sponsors' analyses suggest that the HAI Model engineers distribution plant very accurately
- Only an empirical analyses using actual customer locations can resolve remaining issues
  - HAI Model sponsors have provided actual customer location data
  - ILECs need to provide actual loop length or distribution cable data
- Only models that use geocode points are even capable to being perfected to this accuracy level
  - Grid-based models do not even intend to engineer to actual customer locations

PRISBREY'S ALGORITHM:
RUNS USING MORE REASONABLE CLUSTER CONFIGURATIONS

Cluster Configuration	Nodes / Step	Total Trials	STARDIST1	STARDIST2	TREEDIST1	TREEDIST2	Weighted Average		Unweighted Average	
							StarRatio	TreeRatio	StarRatio	TreeRatio
Monte Carlo Points										
18x18 kft	5-200 / 5	200	140,744,093	131,023,156	23,196,604	16,338,706	0.93	0.70	0.88	0.68
12x12 kft	5-200 / 5	200	93,829,396	87,408,760	15,464,403	11,810,861	0.93	0.76	0.88	0.73
9x9 kft	5-200 / 5	200	70,372,047	65,586,590	11,598,302	9,549,503	0.93	0.82	0.88	0.79
9x18 kft	5-200 / 5	200	108,707,009	102,705,706	16,452,973	12,903,930	0.94	0.78	0.90	0.76
4.5x18 kft	5-200 / 5	200	96,964,567	90,353,222	11,813,842	10,450,607	0.93	0.88	0.89	0.85
10x18 kft	5-200 / 5	200	111,814,888	105,584,354	17,323,086	13,340,045	0.94	0.77	0.90	0.74
8x14.5 kft	5-200 / 5	200	89,896,679	84,881,180	13,907,334	11,255,339	0.94	0.81	0.90	0.78
Actual Geocode Points										
Actual1DeDup	5-196	112	40,008,596	40,155,465	7,202,185	5,914,378	1.00	0.82	0.87	0.80
Actual1DeDup	5-1524	217	200,269,555	234,779,669	14,112,516	17,847,686	1.17	1.26	1.02	1.28
Actual2DeDup	5-199	559	164,244,496	163,276,577	31,795,767	25,706,758	0.99	0.81	0.84	0.77
Actual2DeDup	5-803	771	409,773,468	465,734,878	46,365,182	48,515,904	1.14	1.05	0.96	1.01
Actual2Dup	5-199	501	150,182,396	147,772,430	28,411,861	23,424,537	0.98	0.82	0.84	0.78
Actual2Dup	5-238	525	175,828,644	176,539,118	30,792,729	26,144,052	1.00	0.85	0.86	0.81

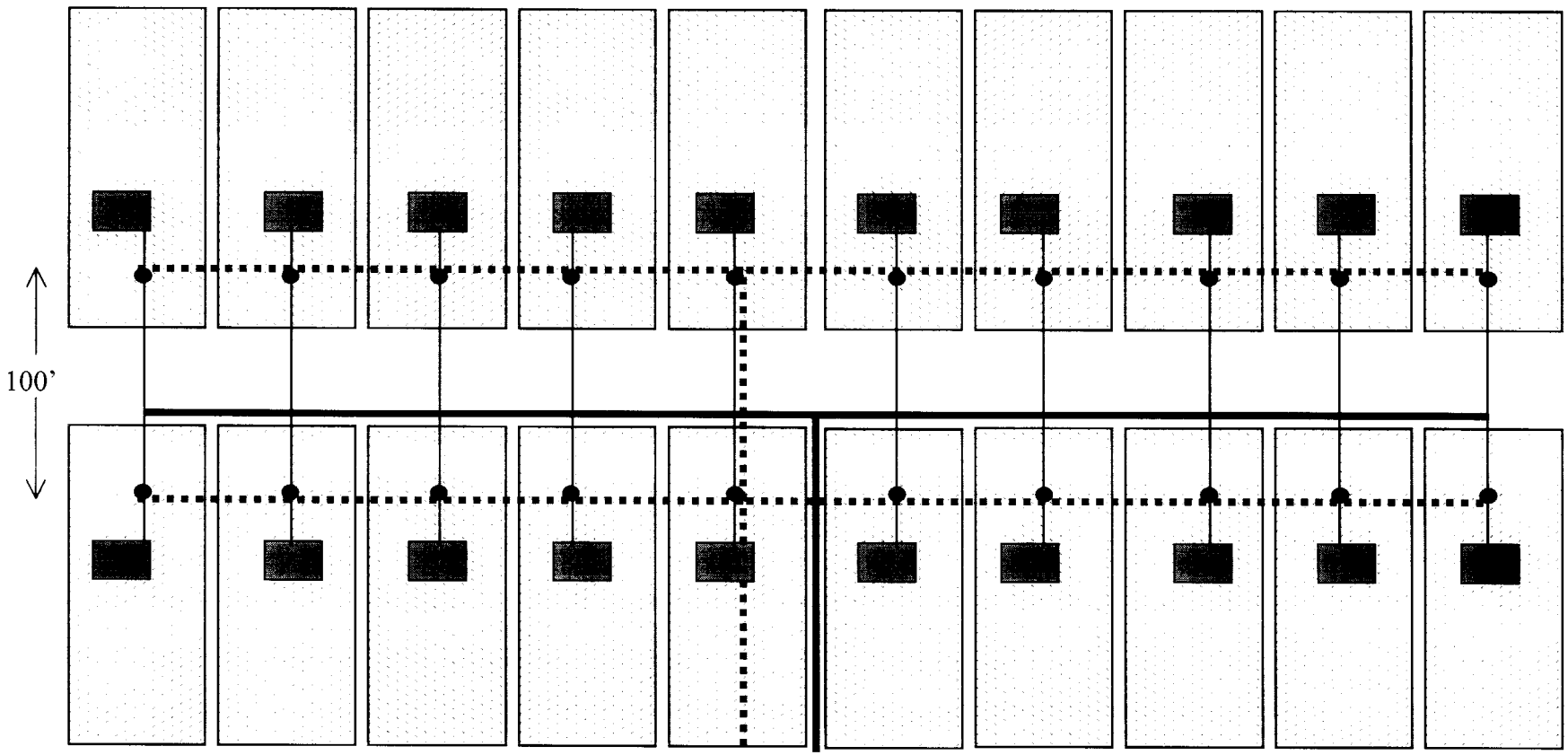
Florida and Kansas Study Areas	Distribution Route Distance									
Geocode Scenario	**0-5**	**5-100**	**100-200**	**200-650**	**650-850**	**850-2550**	**2550-5000**	**5000-10,000**	**10,000+**	**Weighted Average**
A. Actual geocodes and CB boundary surrogates	53,824,007	161,338,079	48,533,791	98,119,208	23,741,532	124,915,586	71,782,388	22,412,618	3,187,173	607,854,382
B. Actual geocodes and "road" surrogates	51,615,104	151,568,046	46,110,529	90,888,595	22,176,030	120,024,791	70,213,555	21,845,927	3,263,839	577,706,416
Impact of substituting "road" surrogates for CB boundary surrogates	-4.1%	-6.1%	-5.0%	-7.4%	-6.6%	-3.9%	-2.2%	-2.5%	2.4%	-5.0%
C. Further replace actual geocode points with "road" surrogates	54,222,098	165,744,188	54,813,715	102,477,636	25,436,376	139,760,851	84,332,905	24,808,541	3,697,052	655,293,362
Additional impact of substituting "road" surrogates for actual geocodes	5.1%	9.4%	18.9%	12.8%	14.7%	16.4%	20.1%	13.6%	13.3%	13.4%
D. Further substitute all "road" surrogates with CB boundary surrogates	55,070,421	167,900,711	54,092,184	99,820,588	26,473,709	133,104,586	74,601,985	21,594,030	3,324,015	635,982,227
Additional impact of substituting all "road" surrogates with CB boundary surrogates	1.6%	1.3%	-1.3%	-2.6%	4.1%	-4.8%	-11.5%	-13.0%	-10.1%	-2.9%

Florida NonRural Study Areas	Distribution Route Distance									
Geocode Scenario	0-5	5-100	100-200	200-650	650-850	850-2550	2550-5000	5000-10,000	10,000+	Weighted Average
A. Actual geocodes and CB boundary surrogates	21,929,200	129,395,972	41,715,467	87,502,716	21,744,913	110,752,733	62,669,774	20,445,438	2,831,048	498,987,260
B. Actual geocodes and "road" surrogates	20,731,218	121,777,937	39,757,014	80,799,954	20,481,720	105,633,200	61,226,875	19,821,746	2,938,116	473,167,780
Impact of substituting "road" surrogates for CB boundary surrogates	-5.5%	-5.9%	-4.7%	-7.7%	-5.8%	-4.6%	-2.3%	-3.1%	3.8%	-5.2%
C. Further replace actual geocode points with "road" surrogates	22,763,097	132,697,813	45,646,250	90,495,725	23,088,601	121,596,435	73,475,136	22,867,135	3,194,845	535,825,037
Additional impact of substituting "road" surrogates for actual geocodes	9.8%	9.0%	14.8%	12.0%	12.7%	15.1%	20.0%	15.4%	8.7%	13.2%
D. Further substitute all "road" surrogates with CB boundary surrogates	21,894,085	133,495,937	44,494,504	87,770,124	24,077,103	115,988,145	63,420,407	19,237,087	2,856,980	513,234,371
Additional impact of substituting all "road" surrogates with CB boundary surrogates	-3.8%	0.6%	-2.5%	-3.0%	4.3%	-4.6%	-13.7%	-15.9%	-10.6%	-4.2%

Southwestern Bell-Kansas	Distribution Route Distance									
Geocode Scenario	0-5	5-100	100-200	200-650	650-850	850-2550	2550-5000	5000-10,000	10,000+	Weighted Average
A. Actual geocodes and CB boundary surrogates	31,894,807	31,942,107	6,818,324	10,616,492	1,996,620	14,162,853	9,112,614	1,967,180	356,126	108,867,122
B. Actual geocodes and "road" surrogates	30,883,886	29,790,110	6,353,516	10,088,641	1,694,310	14,391,591	8,986,679	2,024,181	325,723	104,538,636
Impact of substituting "road" surrogates for CB boundary surrogates	-3.2%	-6.7%	-6.8%	-5.0%	-15.1%	1.6%	-1.4%	2.9%	-8.5%	-4.0%
C. Further replace actual geocode points with "road" surrogates	31,459,001	33,046,375	9,167,466	11,981,911	2,347,775	18,164,416	10,857,769	1,941,406	502,207	119,468,326
Additional impact of substituting "road" surrogates for actual geocodes	1.9%	10.9%	44.3%	18.8%	38.6%	26.2%	20.8%	-4.1%	54.2%	14.3%
D. Further substitute all "road" surrogates with CB boundary surrogates	33,176,337	34,404,773	9,597,680	12,050,464	2,396,606	17,116,440	11,181,578	2,356,943	467,035	122,747,856
Additional impact of substituting all "road" surrogates with CB boundary surrogates	5.5%	4.1%	4.7%	0.6%	2.1%	-5.8%	3.0%	21.4%	-7.0%	2.7%

Distribution Cable Lengths vs. Strand Distances

Next-Door House Geocodes Closer than Across-Street House Geocodes



House

● **Geocode Point** (offset 50' from street centerline)

Rectangular Lots (w wide, 2w deep, w<100')

Backbone or Branch Cable

Drop Cable

Strand Map

If w=75' (~¼ acre)

Mapped strand = 1550'
(but includes 1000' of drop)

Required Distribution
Cable length = 825'

Strand Map Distance Will Commonly Exceed the Required Amount of Distribution Route Distance Because it Includes Some Portion of the Drop

Next-door house geocodes closer than across-street house geocodes

Number of lots:	20	
Lot width:	w	w < 100'
Lot depth:	2w	

Strand Map Distance

Vertical:	2w - 50'	Horizontal:	9w
	100'		9w
Subtotal:	2w + 50'	Subtotal:	18w
Total SMD:	20w + 50'		
Amount of drop distance implicitly included in SMD:	20 * 50'		
	1000'		

Distribution Route Distance Required

Backbone:	2w
Branch:	9w
Required DRD:	11w

Compare Strand Map Distance to Required Distribution Route Distance

SMD		**DRD**
20w + 50'	>	11w

Thus, SMD generally will **exceed** the DRD required to connect customer locations.
Note that if the 1000' of drop distance implicitly included in the SMD is also added to the DRD, this augmented DRD will exceed the SMD because w < 100'

SMD	<	**DRD + allocated drop**
20w + 50'		11w + 1000'

Strand Map Distance Will Commonly Exceed the Required Amount of Distribution Route Distance Because it Includes Some Portion of the Drop

Insert Data

Number of lots:	20
Lot width:	75
Lot depth:	150

Strand Map Distance to Connect Customer Locations

Vertical:	100	Horizontal:	675
	100		675
Subtotal:	200	Subtotal:	1350
Total SMD:	1550		
Amount of drop distance implicitly included in SMD:	1000		

Distribution Route Distance Required to Connect Customer Locations

Backbone:	150
Branch:	675
Required DRD:	825

Compare Strand Map Distance to Required Distribution Route Distance

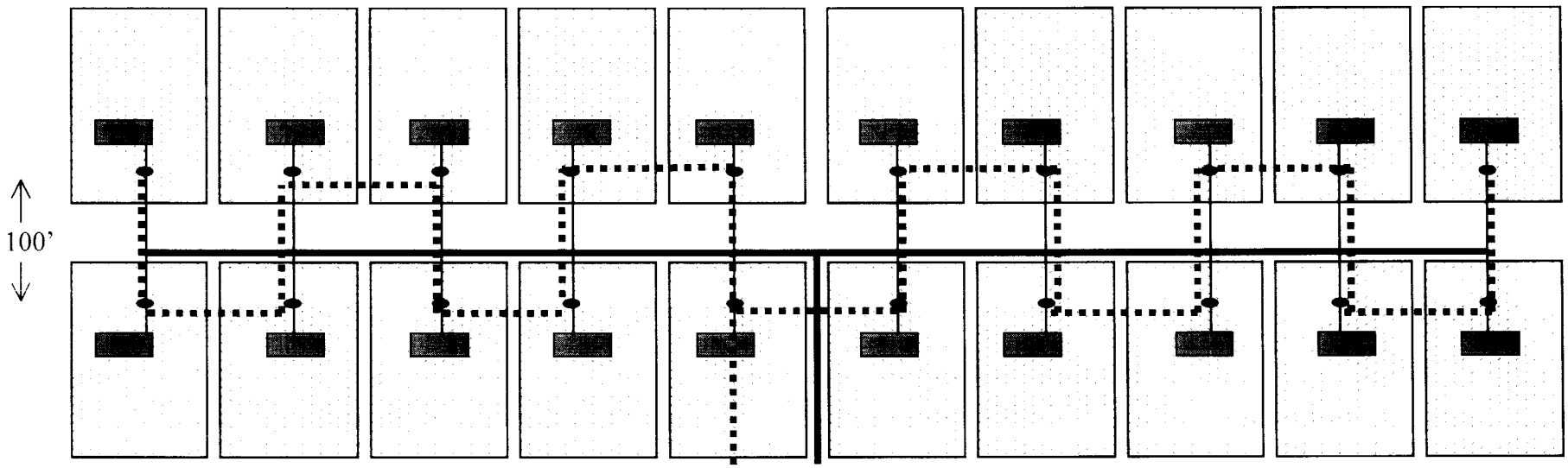
SMD		**DRD**
1550	>	825

Thus, SMD generally will **exceed** the DRD required to connect customer locations.
This occurs because the raw DRD does not include the amount of drop distance that is used for it to reach the equivalent geocode locations as reached by the strand distance.

SMD		**DRD + allocated drop**
1550	<	1825

Distribution Cable Lengths vs. Strand Distances

Across-Street House Geocodes Closer than Next-Door House Geocodes



House

● **Geocode Point** (offset 50' from street centerline)

Rectangular Lots (w wide, 2w deep, w>100')

Backbone or Branch Cable

Drop Cable

Strand Map

If w= 150' (~1 acre)

Mapped strand = 2600'
(but includes 1000' of drop)

Required Distribution
Cable length = 1650'

Strand Map Distance Will Commonly Exceed the Required Amount of Distribution Route Distance Because it Includes Some Portion of the Drop

Across-street house geocodes closer than next-door house geocodes

Number of lots:	20	
Lot width:	w	w > 100'
Lot depth:	2w	

Strand Map Distance

Vertical:	2w - 50'	Horizontal:	9w
	10 * 100'		
Subtotal:	2w + 950'	Subtotal:	9w

Total SMD:	11w + 950'
Amount of drop distance implicitly included in SMD:	20 * 50'
	1000'

Distribution Route Distance Required

Backbone:	2w
Branch:	9w
Required DRD:	11w

Compare Strand Map Distance to Required Distribution Route Distance

SMD		**DRD**
11w + 950'	>	11w

Thus, SMD generally will **exceed** the DRD required to connect customer locations.
Note that if the 1000' of drop distance implicitly included in the SMD is also added to the DRD, this augmented DRD will exceed the SMD because w > 100'

SMD	<	**DRD + allocated drop**
11w + 950'		11w + 1000'

Strand Map Distance Will Commonly Exceed the Required Amount of Distribution Route Distance Because it Includes Some Portion of the Drop

Insert Data

Number of lots:	20
Lot width:	150
Lot depth:	300

Strand Map Distance to Connect Customer Locations

Vertical:	250	Horizontal:	1350
	1000		0
Subtotal:	1250	Subtotal:	1350
Total SMD:	2600		
Amount of drop distance implicitly included in SMD:	1000		

Distribution Route Distance Required to Connect Customer Locations

Backbone:	300
Branch:	1350
Required DRD:	1650

Compare Strand Map Distance to Required Distribution Route Distance

SMD		**DRD**
2600	>	1650

Thus, SMD generally will **exceed** the DRD required to connect customer locations. This occurs because the raw DRD does not include the amount of drop distance that is used for it to reach the equivalent geocode locations as reached by the strand distance.

SMD		**DRD + allocated drop**
2600	<	2650