EX PARTE OR LATE FILED

AT&T

Michael R. Lieberman
District Manager

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ORIGINAL

October 4, 2000

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

RE: Ex Parte Presentation
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 October 3, 2000 Mike Lieberman and Rich Clarke of AT&T and Chris Frentrup of WorldCom met with Bryan Clopton, Katie King, Bob Loube, Jeff Prisbrey (by phone), Bill Sharkey, Katherine Schroder, Bill Scher, and Sharon Webber of the FCC to discuss FCC Synthesis Model implementation issues. Analyses were provided that dealt with route distance, location counts, missing WCs and USF procedural issues.

Two copies of this Notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's rules.

Sincerely,

Michael R. Lieberman/ha

Michael R. Lieberman

cc:- Letter only: Bryan Clopton, Katie King, Bob Loube, Jeff Prisbrey, Bill Sharkey, Katherine Schroder, Bill Scher, and Sharon Webber

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List A B C D E

Model Implementation Issues

- Should reflect at least year 1999 Line Counts
  - Ideally, mid-point of implementation period
  - Timing mismatch, along with hold-harmless adds significant bias
- Support phase-out of hold-harmless
- SM Overstates Key Cost Drivers
  - Route Distance
  - Locations

Model Implementation Issues

- Need to reflect corrections from 2/16/00 ex-parte
  - Significant change in route distance
- Increase households with broader update
  - Locations are already biased upwards
- Address MDU/high rise issue
  - About 30% overstatement in residential locations

Model Implementation Issues

- Use corrected expense modules filed 10/14/99
- Inputs reconsideration issues
  - DLC cost
  - Use of real data
- Distribution/Feeder Sharing
- Revised DB

Comparison of Route Distance vs BSTLM

	Synthesis Model Default			Modified Synthesis			HAI50a			BSTLM			
Wire Center	Distribution	Feeder	Total Distance	Distribution	Feeder	Total Distance	Distribution	Feeder	Total Distance	Distribution	Feeder	Shared	Total Distance
Totals Below $31.00 Benchmark	66,911.65	5,925.20	72,836.86	52,366.22	5,940.89	58,307.11	39,603.37	7,943.89	47,547.26	29,980.06	1,248.39	4,083.96	35,312.42
% In Excess of BSTLM			106%			65%			35%				
Totals Above $31.00 Benchmark	14,748.81	2,214.04	16,962.85	12,287.39	2,223.00	14,510.39	7,953.45	2,417.70	10,371.16	7,068.08	752.42	1,718.94	9,539.44
% In Excess of BSTLM			78%			52%			9%				
All WCs	81,660.46	8,139.24	89,799.71	64,653.61	8,163.89	72,817.50	47,556.82	10,361.59	57,918.41	37,048.14	2,000.81	5,802.90	44,851.85
% In Excess of BSTLM			100%			62%			29%				

Location Overstatement

Households	92,554,606
Locations	92,554,606

Households	92,554,605	52,494,128	5,975,209	4,499,669	4,622,096	4,907,255	5,044,483	3,966,361	4,563,340	5,485,631	996,433
Locations	70,181,902	52,500,407	5,981,031	2,255,586	1,161,113	986,635	509,134	201,146	93,075	5,491,429	1,002,346

HCPM Process	92,554,606	92,554,606
Prior PNR Process	92,554,605	70,181,902
% diff	0%	32%

Location Overstatement By COSA

Company	NECA ID	Sum of Households	Sum of Total Locations	HH/ Locations
CONSOLIDATED TELEPHONE COMPANY-	371530	1,124	1,122	100%
CONTEL OF NORTH CAROLINA DBA GTE	230509	89,381	85,975	104%
CONTEL OF THE SOUTH DBA GTE SOUT	250281	84,189	80,206	105%
CONTEL OF TEXAS, INC. DBA GTE TE	442154	151,968	144,675	105%
CONTEL OF MISSOURI	421922	171,669	162,705	106%
CONTEL OF INDIANA, INC. DBA GTE	320779	121,627	113,117	108%
UNITED INTER-MOUNTAIN TEL. CO.-V	190567	70,707	65,262	108%
CONTEL OF MINNESOTA, INC. DBA GT	361140	86,994	80,169	109%
GTE + CONTEL OF ALABAMA	250293	106,733	97,772	109%
CENTRAL TEL. CO.-NC	230471	172,167	157,653	109%
CAROLINA TEL. & TEL. CO.	230470	741,517	672,765	110%
GTE NORTH, INC.-MI	310695	476,377	430,912	111%
P R T C - CENTRAL	633200	121,169	109,352	111%
CONTEL OF VIRGINIA, INC. DBA GTE	190233	335,446	302,272	111%
GTE NORTH INC.-WI	330886	342,573	306,610	112%
UNITED TEL. CO. OF OHIO	300661	393,901	351,744	112%
GTE OF ILLINOIS	341015	433,777	386,517	112%
GTE NORTH, INC.-OH	300615	573,254	508,956	113%
CONTEL OF ILLINOIS, INC. DBA GTE	341036	130,351	115,367	113%
CENTRAL TEL. CO. OF VA	190254	184,824	163,523	113%
CONTEL OF CALIFORNIA - CALIFORNI	542302	209,559	184,983	113%
C & P TEL. CO. OF W VA	205050	534,607	471,542	113%
SOUTH CENTRAL BELL-MISSISSIPPI	285184	825,466	725,256	114%
MOUNTAIN BELL-IDAHO	475103	325,264	285,399	114%
UNITED INTER-MOUNTAIN TEL. CO.-T	290567	157,450	138,126	114%
NORTH STATE TEL. CO.-NC	230491	71,315	61,721	116%
GTE SOUTHWEST, INC. - OKLAHOMA	432080	77,252	66,794	116%
PUERTO RICO TEL CO	633201	890,610	768,967	116%
SOUTHWESTERN BELL-ARKANSAS	405211	583,500	500,728	117%
CENTRAL TELEPHONE COMPANY OF TEX	442114	132,097	112,707	117%
SOUTHERN BELL-SC	245194	890,121	754,358	118%
GTE NORTH INC.-PA + Contel	170169	357,912	303,025	118%
SOUTH CENTRAL BELL-AL	255181	1,215,206	1,022,873	119%
GTE OF INDIANA	320772	456,948	383,281	119%
GTE SOUTH, INC. - SOUTH CAROLINA	240479	111,098	93,164	119%
SOUTHWESTERN BELL-OKLAHOMA	435215	1,000,573	834,096	120%
MOUNTAIN BELL-WYOMING	515108	144,686	120,551	120%
MOUNTAIN BELL-NEW MEXICO	495105	486,818	405,576	120%
GTE SOUTH, INC. - KENTUCKY	260407	271,812	224,964	121%
SOUTH CENTRAL BELL-LA	275183	1,412,978	1,168,747	121%
SOUTH CENTRAL BELL-KY	265182	757,481	626,381	121%
MOUNTAIN BELL-MONTANA	485104	227,463	187,945	121%
DIAMOND STATE TEL. CO.	565010	294,900	241,959	122%
GTE SOUTHWEST, INC. - TEXAS	442080	936,960	768,459	122%
ROSEVILLE TELEPHONE COMPANY	542334	61,420	50,348	122%
SOUTHERN BELL-NC	235193	1,348,615	1,104,271	122%
GTE OF THE NORTHWEST	532416	286,402	233,446	123%
UNITED TEL. CO. OF FLORIDA	210341	976,303	795,677	123%
SOUTH CENTRAL BELL-TN	295185	1,676,399	1,362,279	123%

Location Overstatement By COSA

Company	NECA ID	Sum of Households	Sum of Total Locations	HH/ Locations
MICHIGAN BELL TEL. CO.	315090	2,985,245	2,424,287	123%
LINCOLN TEL. & TELE. CO.	371568	170,826	138,662	123%
CENTRAL TEL. CO. OF FLORIDA	210340	218,300	177,184	123%
SOUTHWESTERN BELL-KANSAS	415214	789,064	638,355	124%
MOUNTAIN BELL-UTAH	505107	650,178	523,593	124%
NORTHWESTERN BELL-IA	355141	670,068	538,176	125%
INDIANA BELL TEL. CO.	325080	1,192,104	956,929	125%
BELL OF PENNSYLVANIA	175000	3,636,689	2,913,609	125%
NORTHWESTERN BELL-SOUTH DAKOTA	395145	167,626	133,860	125%
PACIFIC NORTHWEST BELL-OREGON	535163	814,654	648,984	126%
NEW ENGLAND TEL.-VT	145115	200,950	159,663	126%
CINCINNATI BELL-KY	265061	126,318	100,239	126%
SOUTHWESTERN BELL-MISSOURI	425213	1,611,208	1,277,853	126%
NORTHWESTERN BELL-NEBRASKA	375143	344,369	272,854	126%
SOUTHERN BELL-GA	225192	2,197,653	1,740,805	126%
GTE NORTH, INC. - MISSOURI	421186	85,214	67,455	126%
NEW ENGLAND TEL.-MAINE	105111	429,523	338,861	127%
MOUNTAIN BELL-ARIZONA	455101	1,603,437	1,251,621	128%
GTE NORTHWEST, INC. - WASHINGTON	522416	466,533	364,101	128%
GTE FLORIDA,INC.	210328	1,410,485	1,098,011	128%
C & P TEL. CO. OF MD	185030	1,926,799	1,493,466	129%
ROCHESTER TELEPHONE CORP.	150121	319,026	246,280	130%
C & P TEL. CO. OF VA	195040	1,805,354	1,391,748	130%
OHIO BELL TEL. CO.	305150	2,377,889	1,825,658	130%
NEVADA BELL	555173	177,675	135,726	131%
NEW ENGLAND TEL.-NH	125113	463,396	350,845	132%
MOUNTAIN BELL-COLORADO	465102	1,519,477	1,148,278	132%
SOUTHWESTERN BELL-TEXAS	445216	5,056,866	3,812,439	133%
GTE SOUTH, INC. - NORTH CAROLINA	230479	106,311	80,064	133%
GTE OF CALIFORNIA	542319	2,210,091	1,663,714	133%
PACIFIC NORTHWEST BELL-WASHINGTO	525161	1,491,426	1,121,710	133%
NORTHWESTERN BELL-MINNESOTA	365142	1,305,592	958,836	136%
SOUTHERN NEW ENGLAND TEL.	135200	1,281,910	939,231	136%
WISCONSIN BELL	335220	1,306,902	956,660	137%
NEW JERSEY BELL	165120	3,042,090	2,206,928	138%
CINCINNATI BELL-OHIO	305062	481,401	346,341	139%
NORTHWESTERN BELL-NORTH DAKOTA	385144	160,384	115,278	139%
PACIFIC BELL	545170	8,514,875	6,072,392	140%
NEW ENGLAND TEL.-RI	585114	399,612	282,329	142%
CENTRAL TELEPHONE COMPANY - NEVA	552348	443,785	313,217	142%
SOUTHERN BELL-FL	215191	3,753,346	2,594,241	145%
ILLINOIS BELL TEL. CO.	345070	3,462,138	2,365,001	146%
GTE Hawaiian Telephone Co Inc	623100	423,965	289,426	146%
NEW ENGLAND TEL.-MA	115112	2,421,017	1,626,048	149%
ANCHORAGE TEL UTIL	613000	84,080	55,442	152%
NEW YORK TEL.	155130	6,467,532	3,564,112	181%
C & P TELEPHONE COMPANY OF WA D.	575020	270,263	127,093	213%
Grand Total		92,554,606	70,181,902	132%

Analysis of Missing WCs

NECA	USFCLLI	DRCLLI	PNRCLLI	company name	Database WC	Overlap Condition	Missing WC	On 1996 LERG Target List	Unidentified
115112	BSTNMABE	BSTNMABE		Bell Atlantic Mass	BSTNMABL	BSTNMABE			
115112	LEEEMAHI	LEEEMAHI		Bell Atlantic Mass				LEEEMAHI	
115112	WLHMMAWE	WLHMMAWE		Bell Atlantic Mass	WLHMMAJF	WLHMMAWE			
125113	WSTWNHWA	WSTWNHWA		Bell Atlantic NH					WSTWNHWA
135200	NWHNCT05			SNET					NWHNCT05
155130	COTNNY56			New York Tel	PTSDNYPS	COTNNY56			
155130	LKKTNYLK	LKKTNYLK		New York Tel	KGTNNYKG	LKKTNYLK			
155130	NYCQNYWS	NYCQNYWS		New York Tel					NYCQNYWS
155130	PWNGNYSS	PWNGNYSS		New York Tel	PWNGNYAR	PWNGNYSS			
155130	SCLKNYQX	SCLKNYQX		New York Tel					SCLKNYQX
165120	NBWKNJ17			New Jersey			NBWKNJ17		
165120	WRRNNJ02			New Jersey	MGTNNJMI	WRRNNJ02			
170169	HANLPAAB			GTE PA					HANLPAAB
175000	PHLAPAPO	PHLAPAPO		Bell PA	PHLAPAFG	PHLAPAPO			
175000	PITBPAOK	PITBPAOK		Bell PA	PITBPAOY	PITBPAOK			
185030	BLTMMDWL	BLTMMDWL		C&P MD	BLTMMDDN	BLTMMDWL			
185030	CLMAMDSR	CLMAMDSR		C&P MD	CLMAMDOB	CLMAMDSR			
190233	FKLNVABK			contel of va					FKLNVABK
210328	TAMPFLXA			gte fl	TAMPFLXX	TAMPFLXA			
210328	ZPHYFLXA			gte fl			ZPHYFLXA		
210341	MTLDFLLP			sprint fl					MTLDFLLP
210341	MTLDFLXA	MTLDFLXA		sprint fl	MTLDFLAP	MTLDFLXA			
240479	ABVLSCXA			gte sc	WAVLSCXA	ABVLSCXA			
305062	MAFROHMF			cinn bell oh					MAFROHMF
305062	NVWLOHNE			cinn bell oh					NVWLOHNE
315090	DTRTMIBH			michigan bell	DTRTMIDO	DTRTMIBH			
315090	GDRPMIES	GDRPMIES		michigan bell	GDRQMIBO	GDRPMIES			
315150	GLFROH65	GLFROH65		michigan bell					GLFROH65
315150	MYCYOH76	MYCYOH76		michigan bell					MYCYOH76
341015	LWPNILXD			gte il					LWPNILXD
341015	STLVILXE			gte il					STLVILXE
345070	BNSVILBV	BNSVILBV		Illinois bell	BNSVILDG	BNSVILBV			
345070	CHCGILWB	CHCGILWB		Illinois bell	CHCGILTO	CHCGILWB			
345070	KSKSIL01	KSKSIL01		Illinois bell					KSKSIL01
345070	MCCRIL02	MCCRIL02		Illinois bell					MCCRIL02
365142	DLTHMNAF	DLTHMNAF		Northwestern bell MN				DLTHMNAF	
365142	DLTHMNCB	DLTHMNCB		Northwestern bell MN				DLTHMNCB	
365142	DLTHMNCS			Northwestern bell MN	DLTHMNME	DLTHMNCS			
365142	GLVYMNOR	GLVYMNOR		Northwestern bell MN	GLVYMNOR	GLVYMNOR			
371568	WACONEXL	WACONEXL		Alliant	UTICNEXL	WACONEXL			
405211	ELDOARMA	ELDOARMA		swb arkansas			ELDOARMA		
415214	ATSNKSSF	ATSNKSSF		swb Kansas			ATSNKSSF		
415214	WCHTKSFM			swb Kansas					WCHTKSFM
425213	KSCYMO04	KSCYMO04		swb missouri	KSCYMO02	KSCYMO04			
435215	JNKSOKAA			swb ok					JNKSOKAA
442080	COVLTXXA			gte tx					COVLTXXA
445216	PYTETXPA	PYTETXPA		swb tx				PYTETXPA	
445216	RONKTXRP			swb tx					RONKTXRP
445216	TMPLTX95			swb tx					TMPLTX95
525161	STTLWAEL	STTLWAEL		pacific northwest wa	STTLWAWB	STTLWAEL			
542302	BSHPCAXG			contet of ca			BSHPCAXG		
542302	EARPCAXC			contet of ca				EARPCAXC	
542319	SNBRCAXN			gte of ca	CHNOCAXF	SNBRCAXN			
542319	TMCLCAXH			gte of ca					TMCLCAXH
545170	CHICCA01	CHICCA01		pac bell	CHICCA10	CHICCA01			
545170	LSANCA01			pac bell				LSANCA01	
545170	LSANCA09	LSANCA09		pac bell	LSANCATH	LSANCA09			
545170	PCBHCA11	PCBHCA11		pac bell	PCBHCA01	PCBHCA11			
545170	SNFCCA21	SNFCCA21		pac bell	SNFCCAMK	SNFCCA21			
552348	LSVGNVYJ			central nev					LSVGNVYJ
555173	PHRMNV12	PHRMNV12		nevada bell					PHRMNV12
575020	WASHDCDN	WASHDCDN		ba -dc	WASHDCMO (Metro?)	WASHDCDN			
575020	WASHDCFI			ba -dc	ADD TO METRO LIINE COUNT			WASHDCFI	
575020	WASHDCWH			ba -dc					WASHDCWH
613000	ANCRAKXO	ANCRAKXO		anchorage					ANCRAKXO
613000	ANCRAKXS	ANCRAKXS		anchorage	ANCRAKXW	ANCRAKXS			
613000	ELMNAKAR			anchorage					ELMNAKAR
633201	PJBYPRCO	PJBYPRCO		prtc					PJBYPRCO
633201	RPDRPRCO	RPDRPRCO		prtc					RPDRPRCO
633201	SBSCPRCO	SBSCPRCO		prtc					SBSCPRCO

REBUTTAL TESTIMONY OF MR. JAMES W. STEGEMAN
ON BEHALF OF BELLSOUTH TELECOMMUNICATIONS, INC.
BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION
DOCKET NO. 5825-U
September 8, 2000

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.

A. My name is James W. Stegeman. I am the President of CostQuest Associates, Inc. I am testifying on behalf of BellSouth Telecommunications ("BST", "BellSouth", or the "Company").

Q. ARE YOU THE SAME JAMES W. STEGEMAN WHO FILED DIRECT TESTIMONY IN THE PROCEEDING ON AUGUST 1, 2000?

A. Yes. In that testimony I described my relevant training, experience, and education.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to address the HCPM modifications proposed as part of the direct testimony of Mr. John C. Donovan and Mr. Brian F. Pitkin (testifying on behalf of AT&T and WorldCom). Daonne Caldwell will address the specific values for the input changes recommended by Mr.Donovan and Mr. Pitkin. For convenience, I will sometimes refer to Mr. Donovan and Mr. Pitkin as "D&P".

Q. D&P SPEND A GREAT DEAL OF TIME DISCUSSING "CORRECTIONS" TO THE SYNTHESIS MODEL. ARE YOU SURPRISED BY THE NUMBER AND IMPACT OF THE CHANGES

A. Yes. It is difficult to believe that the FCC's HCPM model overstates the subsidy requirements of Georgia by over 50% as suggested by D&P. This is a national model being used by many states and by the FCC for determining the required level of universal service funding. [redacted]

In my direct testimony of August 1, I discussed five key limitations of the SM. My discussion was designed in part to suggest that in the future, certain changes should be considered to the SM. My discussion of these limitations was also intended to stress caution in making changes to inputs or changes to source code that could lead to inconsistencies with other parts of the model. I also suggested that a benefit of the model is that it could be a standard platform that could allow parties to focus attention to setting inputs correctly rather than arguing the methods of the model. Under my approach, only inputs were modified to address limitations. D&P has taken a different approach and testified that the code of the model should be modified now. First, this leads to questions such as, who will implement, test and verify the code changes? Once the code is modified, who will maintain the Georgia model?

More importantly, their proposal represents a fundamentally different approach to the model. I have proposed to generally accept the model (for now, at least) without code changes. I did address some model issues with input changes, but I otherwise accepted the FCC's version of the model as a starting point. I still believe that this is an appropriate approach. However, if the Commission is inclined to consider modifying the model code more drastically, as advocated by D&P, then it is extremely important to be certain that ***all*** appropriate modifications are made. While D&P have offered some modifications that I will discuss below, there are several important modifications which they have failed to mention. I will discuss these below, as well.

Q. CAN YOU EXPAND ON YOUR CONCERN ABOUT CODE MODIFICATIONS?

A. The short span of time allowed for studying the D&P modifications hardly allows enough time for unit testing let alone understanding the implications of the code change at a statewide level.

For example, a code change may appear logically correct within the confines of a particular unit or module. However, within the scope of our testing, we have little certainty that any particular "small" change will have an impact limited only to this one area. D&P propose a change to the node attachment algorithm. Within the set of input values modified for this proceeding, the code modifications might appear to operate correctly. If a new set of input values is later tested, it is quite conceivable that the model, with this modified attachment algorithm, may not work or may calculate incorrectly. One of the most significant disadvantages to any code modification, at this point, is that it will create a model unique to this one proceeding and set of inputs. The benefit of the Synthesis Model's stability and public scrutiny is therefore eliminated.

Q. HAVE YOU BEEN ABLE TO VERIFY WHETHER D&P'S SUGGESTED CODE CHANGES ARE INDEED CORRECT?

A. Given that my team has had only a few weeks to open up the HCPM code and investigate the proposed modifications, it has been difficult to verify each and every change and the interaction of the changes with other portions of the model. [redacted] And, I am concerned that, while D&P may be fixing piece parts of a model that abstracts the customer locations and the rectilinear routes needed to connect these customers, the modified model may be getting no closer to the real cost of providing service to actual customer locations following routes constrained by rights-of-way. Even if one assumes that modifications are indeed valid, the changes need to be addressed in concert with all other noted model shortcomings and in the context of real locations and routing. I noted some of these shortcomings in my direct testimony.

Q. CAN YOU PROVIDE COMMENTS ON YOUR REVIEW OF THE HCPM AND D&P'S SUGGESTED CHANGES?

A. Yes. In the paragraphs to follow, I will review each of D&P suggested changes. I will also expand on some of my previously noted shortcomings of the HCPM and on other deficiencies of the model that were discovered in our limited code review. Finally, I will review the appropriate road multiplier factor that is intended to provide a result closer to reality.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 1: DROP TERMINAL DISPERSION.

A. While the suggested fix appears correct in regard to this section of the HCPM, the code provided by D&P would not compile. We had to modify line 533. We assumed that the extra special characters were clerical errors rather than a term missing from the statement.

D&P Code

```
y^[n]:=GR^.LowerLeftY + (row-1)*GR^.MicroGridNS+j*()*GR^.MicroGridNS /NS)lots);
```

Modified Code

```
y^[n]:=GR^.LowerLeftY + (row-1)*GR^.MicroGridNS+j*(GR^.MicroGridNS /NS)lots);
```

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 2: DROP TERMINAL ORIENTATION.

A. While the suggested fix appears correct in regard to this section of the HCPM, it is not clear whether the fix for this issue should also incorporate Item 1 (Item 1 and 2 affect the same section of code). In D&P's proposed code, Item 2 does

not include the fixes listed in Item 1. In other words, as the change is implemented it would seem to re-create the problem addressed in Item 1.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 3: LOT SIZE / CONFIGURATION.

A. The suggested fix appears correct in regard to this section of the HCPM. However, we could not replicate the level of change. When we implemented the code provided by D&P, the distribution route distance increases over 1.5%, not the 0.4% noted by D&P.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 4: INPUT VARIABLES.

A. The suggested fixes to the Globals.pas and Structur.pas appear correct in regard to this section of the HCPM. However, I do not believe the suggested code fixes for Terminal.pas and Tech.pas are complete. Tech.pas does not size the FDI for the correct Distribution and Feeder cable sizes. Similar to the problem noted by D&P in line 146, the lookup for the correct cables sizes should increment in the same manner. As the code stands now, cable sizes used to size the FDI are insufficient for the actual demand. I have attached the suggested code change in Exhibit JWS-1. The Terminal.pas code would be correct if the Drop terminal input table were constructed correctly. The lookup value from the HCPM is the number of distribution pairs. The Drop terminal inputs for sizes 25 and under refer to the number of distribution pairs that can be connected. However, the Drop terminal sizes above 25 refer to the distribution and feeder pairs that are connected (commonly referred to as the "in" and "out" pairs). While it would be possible to correct the Input table, I am concerned that the user will be confused as to which size cable a price should be associated with. Instead, we instituted a code change that recognizes both the "in" and "out" pairs for Drop terminals above a 25 pair terminal size. The modified code is provided in Exhibit JWS-2.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 5: RESIDUAL LINE ALLOCATION.

A. While the suggested fix appears to address the residual line problem, there is no attempt to preserve data points. If the line correction value in the HCPM is negative, then it is possible that microgrids with single lines will be removed using D&P's code. If these data points actually represent customers, then they should not be discarded. Typically, these single customer microgrids are the "long haul" customers that incur higher costs. We have modified the code so that, if possible, no microgrids are discarded. The modified code is provided in Exhibit JWS-3.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 6: NODE SELECTION CRITERIA.

A. While I agree that D&P's minimization of distance seems to create a lower cost network (based on current inputs), I am concerned that implementing this change, without recognizing the routing that must occur in the network, may lead to a result no closer to the correct costs. I will address the issue of the need for a route adjustment factor later in this testimony.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 7: OVERLAPPING MICROGRIDS.

A. The suggested fix appears correct in regard to this section of the HCPM.

Q. PLEASE REVIEW YOUR FINDINGS ON D&P'S ITEM 8: DISTRIBUTION / FEEDER SHARING.

A. I do not agree with the arguments made by D&P in regards to feeder and distribution structure sharing. I also disagree with the suggested adjustment to the road multiplier factor.

Q. AT PAGE 21, D&P DISCUSS THE POTENTIAL FOR FEEDER AND DISTRIBUTION CABLE TO SHARE THE SAME STRUCTURE. BASED ON YOUR KNOWLEDGE, DO FEEDER AND DISTRIBUTION CABLE ALWAYS SHARE THE SAME STRUCTURE IF THEY SHARE THE SAME ROUTE?

A. No. While it may be the case that feeder and distribution sometimes run along the same route, I do not believe that feeder and distribution cable typically share the same structure[1]. This lack of sharing results from a number of factors. First, feeder and distribution plant are typically installed at different times. This difference in timing generally precludes the sharing of trench structure. Second, as noted by D&P on page 26, "Copper distribution cable is predominately placed on aerial pole lines or is buried". This corresponds to my understanding that when underground feeder is placed there is typically aerial or buried distribution to service the customers. This design allows easy access to the distribution facilities and results in less expensive connections to the customers. Also keep in mind that conduit is generally only accessible at manholes and vaults. There would be no cost savings to running distribution cable in a conduit with feeder cable, only to run it back down the street from the manhole in a trench or on poles to serve individual customers. Nor would there be any cost advantage to significantly increasing the number of vaults or manholes along a feeder route, and incurring additional costs to run distribution cable across major thoroughfares, in order to allow distribution

[1] Although I am not an engineer, the engineers with whom I have consulted on this point, including Ms. Caldwell, uniformly agree with my belief.

cable to share the feeder structure. An exception to the use of underground distribution cable is in dense, urban environments where underground facilities are more convenient or are the only facilities allowed or practical. Even in urban areas, the portion of underground plant that is distribution is minimal as feeder often terminates in the basement of the building.

Third, in many instances where aerial distribution plant is placed, the spacing and size of the poles will typically not support the weight of the large copper feeder cables. If the cables are placed on the aerial facilities, larger poles are used that are placed closer together (a fact not recognized in any input change recommended by D&P.). Limitations on pole size and cable spacing are exacerbated if poles are shared with other providers (e.g., electric power).

Q. AT PAGE 22, D&P STATE THAT IN BELLSOUTH'S TELECOMMUNICATIONS COST MODEL PRESENTED IN FLORIDA "THE FEEDER AND DISTRIBTUION FACILITIES SHARE ABOUT 13% OF THE TOTAL ROUTE DISTANCE." HAVE D&P ACCURATELY CHARACTERIZED THE MODEL RESULTS THAT BST FILED IN FLORIDA?

A. No. BellSouth did <u>not</u> use the Florida filed loop model to develop structure costs. Instead, BST developed structure factors based on BST's actual books. These factors were then applied to the material dollars generated by the filed loop model to arrive at the structure cost in Florida. In addition, while the model may show that a percentage of the distribution and feeder routes are shared, it does not imply that BST filed results for which all structure is shared along any shared route. The use of the factor approach captures the reality of what is shared.

Q. RECOGNIZING THAT BST USED ITS BOOKS TO DEVELOP FACTORS FOR STRUCTURE COSTS RATHER THAN RELYING ON THE FLORIDA FILED LOOP MODEL, DO YOU HAVE ANY OTHER COMMENTS REGARDING D&P'S CLAIMS ABOUT STRUCTURE SHARING?

A. Yes, I have four comments. First, D&P calculated the sharing percentage outside of the filed loop model. Their calculation was based on a formula I provided that I now believe has an error. My original formula leads to the double counting of routes where feeder copper and feeder optical fiber are on the same path. This double counting will lead to an overstatement of the shared route miles.

Second, as I stated in the Florida model filing, structure costs were developed outside of the model, and therefore any peculiarities in the model for structure costs were not carefully examined. However, it now is obvious that the Florida model has the effect of sharing structure in any instance in which feeder and

distribution share the same route. This approach is wrong and is being modified in the BellSouth model to capture the sharing facts addressed above. The modifications will incorporate:

- As noted, very little of underground feeder is shared with distribution.
- Where aerial plant is placed adjustments need to be made to install larger poles closer together. Or alternatively, these large copper cables should be buried or placed underground
- A percentage sharing input will be created to allow the user to specify what portion of the shared feeder and distribution route should share structure. This will exclude the first two items above.

As discussed, this modeling error is not a problem for the BellSouth Florida filing due to the fact that structure costs were developed outside of the model, but it could lead to improper conclusions if one were to rely on the current Florida model to develop structure costs.

Q. WHAT ARE YOUR THIRD AND FOURTH COMMENTS REGARDING D&P'S STATEMENTS ON STRUCTURE SHARING?

A. Third, even if one were to apply the sharing percentage D&P developed from the Florida model, the application of the sharing percentage leads to a bias. D&P developed the sharing percentage using the following formula based upon output from the BellSouth Florida model.

- Sharing % = Shared Route / (Total Route accounting for Shared)

Or

- 12.94% = 5,835 / 45,082

D&P then imply that this could be applied against the route mileage from the HCPM. However, the HCPM total route mileage double counts the shared routes of Feeder and Distribution. By applying the "D&P" factor, the shared portion of the HCPM is being reduced twice, not once. A more mathematically correct approach would be to adjust the Florida BellSouth model percentage is as follows

- Sharing % = Shared Route / (Total Route + Shared Routed)

Or

- 11.4% = 5,835 / (45,082 + 5,835)

Fourth, while the existing (uncorrected version of the) BellSouth Florida model implies that route sharing takes place, it is inappropriate to use assumed values from it and apply them to other models without recognition of the fundamental differences in the models. The Florida model utilizes roads to create minimum spanning road trees. These trees represent the most accurate estimate of how routes will typically run. The HCPM, on the other hand, routes rectilinearly. This leads to a mis-statement of the routing that must be incurred on a going forward basis to reflect rights-of-way constraints. To utilize a factor from a Florida model on an already biased HCPM estimate could lead to either greater or lesser bias.

Q. CAN STRUCTURE SHARING OCCUR ON A ROUTE THAT HAS BOTH FEEDER AND DISTRIBUTION?

A. Certainly, however, I do not believe that sharing takes place to the extent recommended by D&P[2]. For underground and aerial structure, such sharing may occur when the type of structure coincides and the economics of placement dictate sharing. With buried structure, timing of placement also becomes a factor. As I mentioned previously, it is my understanding that: a) sharing will rarely occur with underground feeder, b) sharing will rarely occur on aerial structure for copper feeder without adjustments to the pole size and spacing, and c) sharing can only occur in buried plant when the feeder and distribution facilities are being placed at the same time. Recognizing these limitations and the fact that D&P's use of the BellSouth Florida sharing percentage is flawed, I believe D&P's unsupported 10% is a gross overstatement of the true value of shared structure.

Q. D&P STATE, AT PAGE 22, IN SECTION III.8 ENTITLED "FEEDER/DISTRIBUTION SHARING", THAT THEY HAVE "REDUCED THE ROUTE MILES <u>AND</u> STRUCTURE COSTS BY 10%." (EMPHASIS ADDED). DO YOU HAVE ANY COMMENTS?

A. Yes. In addition to the fact that I believe the 10% is overstated, if the intent is to reflect a phenomenon of 10% of feeder structure being shared with distribution cable, then D&P have clearly over adjusted for at least two reasons. First, the reduction of route miles leads to more than a reduction in structure costs. Reducing <u>total</u> route distance by 10% will not only reduce structure distance (and structure cost), it will also reduce cable distance (and cable costs) and other related network costs.

Second, the reduction of <u>both</u> route miles <u>and</u> structure costs leads to a double reduction in structure costs (once indirectly through a reduction in route miles, then again through an explicit reduction in structure costs). As noted above, the total effect is more than double counting since cable costs and other network costs are also reduced.

Q. D&P REFERENCE A KANSAS ORDER AS SUPPORT FOR THE REDUCTION IN STRUCTURE COSTS. DO YOU HAVE ANY COMMENTS?

A. Yes. It is interesting that D&P state "the Kansas Corporation Commission reduced the distribution distance produced by the model by 15%." This would support a reduction (in Kansas) in distribution, <u>not</u> a reduction in distribution <u>and</u> feeder distance as recommended by D&P. Second, in reviewing Table 1 on page 12 of D&P's testimony, it appears that D&P have reduced the

[2] Again, I have confirmed this with a number of engineers, including Ms. Caldwell.

distribution distance by 28.5%, not 15%. D&P provide no specific justification in this proceeding for a reduction in the distribution distance of 28.5%. In particular, D&P provide no specific justification for such an adjustment in Georgia.

Q. ARE THERE ANY OBVIOUS SHORTCOMINGS OF THE HCPM THAT D&P FAILED TO MENTION?

A. Yes. I will cover three additional shortcomings. First, as I mentioned in my direct testimony, the HCPM's use of Special Access derived channel equivalents will lead to biased results. Second, the HCPM engineers all customer lots in the same manner. The lack of recognition for larger cables and terminal equipment at multiple line lots will lead to biased results. And third, the use of rectilinear routing may mis-state the required routing.

Q. IN REGARDS TO YOUR FIRST SHORTCOMING, YOUR DIRECT TESTIMONY NOTED A CONCERN IN THE SM'S USE OF DERIVED SPECIAL ACCESS CHANNELS. DID D&P SUGGEST A CHANGE TO CORRECT THIS PROBLEM?

A. No. I note in my direct testimony (beginning at page 16) that the use of derived channels creates two types of distortions that lead to an overestimate of special access lines of 696.4% and an understatement of BellSouth's universal service funding needs. With DS1 and higher levels of multiplexing, the SM "derives" a higher count of DS0s as if each of these channels were actually served on a dedicated copper pair. The HAI portion of the SM derives per loop cost by dividing the total investment columns by the total lines, <u>including derived channels</u>. In so doing, the SM is spreading the costs of a largely <u>copper-pair-POTS</u> network across a count of lines that includes electronically derived channels that are <u>not</u> used by POTS customers. In addition, by using the ARMIS value, services are being modeled that don't even use the public switched networked (e.g., some DS1s, DS3s, OC1s, etc.).

Without correcting for this problem, D&P have understated BellSouth's universal service costs and the resulting subsidy.

Q. CAN YOU EXPAND ON THE ISSUE OF DROP ENGINEERING?

A. The HCPM engineers all customer locations in the same manner (i.e., 1-2 pair NID and 2-5 pair drop cable) even though almost 5% of the PNR records (Customer Location Data) show lots with 5 or more lines. The model should install building terminals and larger copper cables at these multi-line locations. And in certain circumstances, the model should place intrabuilding cable. To implement a code fix to address this error would be impossible in the time available. However it is possible to implement input changes that minimize this problem. In Exhibit JWS-4, I have provided the changes to the drop cable

and NID inputs. The drop cable input was derived by weighting together the estimated cable cost at each lot. For NIDs, we looked at the cost differential between the BST filed input and the actual NID cost that would be incurred at each location. We excluded the lots with over 5 lines, assuming that a building terminal would be installed at the site. We could not, however, address the issue of intrabuilding cable and the need for building terminals on site in the current construction of the HCPM. This issue should be investigated further as time permits.

The results of my analysis indicate that the NID input should be increased by $3.98 per NID. For drop cable, the input should be changed from BST's input of $318/1000ft to $493/1000ft.

Q. CAN YOU EXPAND ON THE ISSUE OF USING RECTILINEAR DISTANCES?

A. D&P fail to address the biased introduced with the use of rectilinear distances. While D&P mention the sharing of routes and reductions to the distribution routing, they fail to recognize that the HCPM routing is biased due to the fact that it fails to address the routes the cable must follow (i.e., rights of way on or near roads). The result of their modifications is that they have attempted to adjust a biased number. It is unclear whether the adjustments accentuate or reduce the bias from the true forward-looking cable route requirements.

Before any of their adjustments can be considered, one must concurrently recognize the routing adjustment needed in the HCPM. The ideal approach would be to incorporate road routing in the HCPM. However, there is not enough time or data in this proceeding to accomplish this task. Instead, it is possible to develop a statewide route adjustment factor to recognize the adjustment needed to bring the HCPM route distances in line with the roads they must follow. As I stated in my direct testimony (footnote 8, page 21) "while I have not conducted a formal study for Georgia, based on my experience, I believe the average road multiplier is probably closer to 1.10 to 1.20 rather than the .95 to 1.05 that the FCC reports.

Q. HAVE YOU BEEN ABLE TO DETERMINE AND SUPPORT A VALUE THAT SHOULD BE USED FOR THE ROAD FACTORS IN THIS PROCEEDING?

A. Yes. We selected 10 Georgia wire centers at random. (Due to time constraints we were only able to analyze a limited selection of data in Georgia.) For these 10 wire centers, we obtained the resulting cluster data from a run of the HCPM. For the cluster data in each of the 10 wire centers, we compared the sum of the rectilinear distances from each Drop Terminal back to its corresponding SAI compared to the sum of the road distances from those same Drop Terminals back to their corresponding SAIs. This comparison provides

an estimate of the difference in using the road routing between points (i.e., attempting to better reflect rights-of-way constraints) rather than the rectilinear routes as used in the HCPM. The results of our analysis are provided in Exhibit JWS-5. Based on this analysis, a road adjustment factor of up to 1.45 could be supported. However, to be conservative, I selected a value of 1.1, as suggested in my direct testimony, as the adjustment factor to use in the HCPM.

Q. HOW SHOULD THIS VALUE BE APPLIED IN THE MODEL?

A. This value should be inserted into the model for the DistRoadFactor and FeederRoadFactor in the FeedDist tab of the input worksheet.

Q. CAN YOU SUMMARIZE YOUR FINDINGS:

A. Yes, the table below summarizes the changes that should be made to the model to better estimate the costs of universal service in Georgia. These changes incorporate the inputs filed by BellSouth in their August 1, 2000 filing, including the correction to the special access line problem noted in my direct testimony. I have also incorporated Items 1-7, recommended by D&P (with an assumption that they are valid), with corrections/modifications as noted in this testimony. Finally, I have also incorporated the drop/NID input changes and the inclusion of a road adjustment factor.

The runs made were as follows:

- Run 1:
  - FCC's posted version of the HCPM model
  - FCC inputs
  - FCC wire center line counts with ARMIS special access channel equivalents.
- Run 2:
  - FCC's posted version of the HCPM model
  - BST inputs as filed on August 1, 2000
  - FCC wire center line counts with ARMIS special access channel equivalents.
- Run 3: (This is the basis for BST's August 1, 2000 results)
  - FCC's posted version of the HCPM model
  - BST inputs as filed on August 1, 2000
  - BST wire center line counts with BST special access pair equivalents.
- Run 4:
  - Modified HCPM code incorporating D&P code changes with corrections/modifications as noted in this testimony.
  - BST inputs as filed on August 1, 2000
  - BST wire center line counts with BST special access pair equivalents.
- Run 5:
  - Modified HCPM code incorporating D&P code changes with corrections/modifications as noted in this testimony.

- BST inputs as filed on August 1, 2000
  - Drop cable and NID inputs modified based on the discussion in this testimony.
- BST wire center line counts with BST special access pair equivalents.

- Run 6:
  - Modified HCPM code incorporating D&P code changes with corrections/modifications as noted in this testimony.
  - BST inputs as filed on August 1, 2000
    - Drop cable and NID inputs modified based on discussion in this testimony.
    - Inclusion of a Road Adjustment factor as discussed in this testimony and my direct testimony.
  - BST wire center line counts with BST special access pair equivalents.

The results of these model runs were as follows:

Run Number	Description of Run	Basic Local Service Cost	Universal Service Fund[3]
1	FCC Version	$23.63	$44,706,077
2	BST Input Changes as filed August 1, 2000	$26.60	$68,883,769
3	BST Filing with Special Access Correction	$29.06	$100,559,606
4	AT&T HCPM Code Changes (Items 1-7), with corrections and modifications noted in this testimony	$27.12	$72,799,284
5	Drop cable and NID input changes	$27.35	$74,980,691
6	Application of 1.1 Road Adjustment Factor	$28.52	$92,114,858

Q. BASED ON THESE RESULTS, WHAT DO YOU CONCLUDE?

A. Prior to this proceeding, I was aware that some problems existed in the HCPM. However, given that AT&T /MCI WorldCom and BellSouth stipulated to the use of the HCPM, in my direct testimony I focused on inputs changes that would minimize errors in the HCPM. The results of my changes, incorporated into BellSouth's original filing could be used in determining areas of Georgia that are in need of universal service funding. With (or even without) the model code and input changes I proposed in my direct and in this rebuttal testimony,

[3] This will not match BST's filed universal service fund value. Instead, this uses the FCC's criteria. The FCC's approach was used in this table to allow for a consistent comparison to D&P's results.

the HCPM can help determine where funding is required. However, the changes I have recommended are critical to obtaining a more accurate estimate of the amount of required USF funding. While D&P have proposed some model changes, they have failed to address others that are needed to arrive at an accurate assessment of the required funding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.