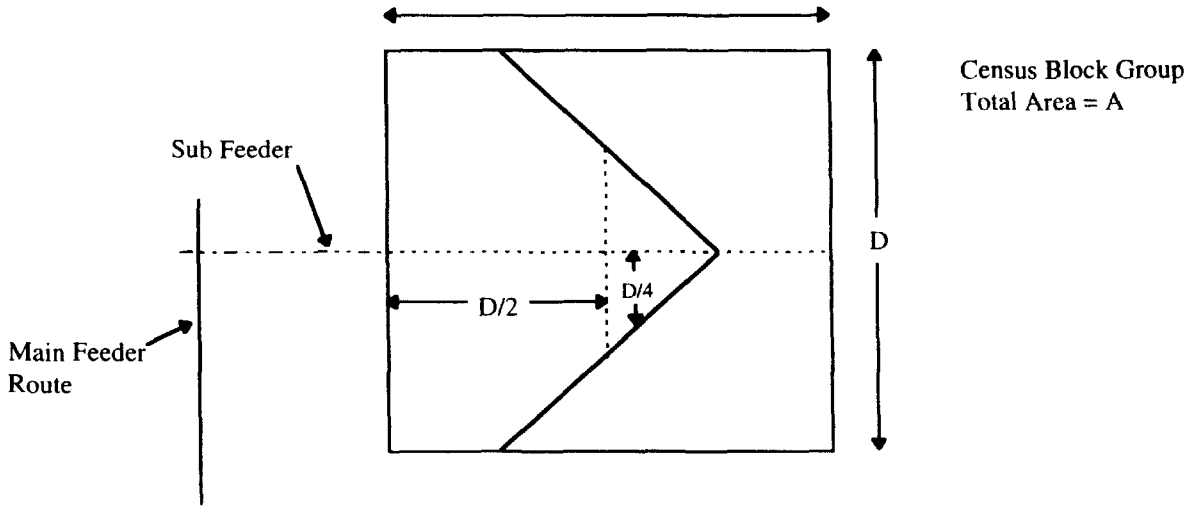
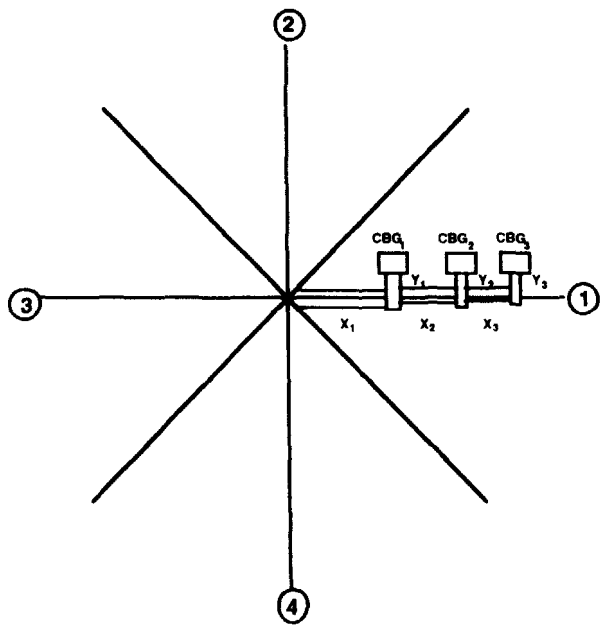
BENCHMARK COST MODEL

DISTRIBUTION PLANT DISTANCE



BENCHMARK COST MODEL

SEGMENT CABLE SIZE



BENCHMARK COST MODEL

CABLE CAPACITY FOR SHARED FEEDER PLANT

- Copper
  - Sum of HH's Riding Feeder Segment/Segment Fill Factor
- Fiber For SLC (Min 4 Fibers Per CBG)
  - 4 Fibers For Capacity Up to 672 VG Paths Per CBG
  - 4 Additional Fibers For Each Increment of 672 VG Path
- Fiber For AFC (4 Fibers Until Capacity)
  - 4 Fibers For Capacity Up to 672 VG Paths
  - 4 Additional Fibers For Each Increment of 672 VG Paths

BENCHMARK COST MODEL

FEEDER & DISTRIBUTION CABLE SIZE

- Each Feeder Segment Cable Size Determined From Segment Capacity

- If Max Size Cable < Capacity, Then # of Max Size Cables Plus Next Cable Size to Meet or Exceed Capacity

BENCHMARK COST MODEL

FEEDER & DISTRIBUTION CABLE SIZE

- Fiber Cable Table (# Strands)
  - 12, 18, 24, 36, 48, 60, 72, 96, 144

- Copper Cable Table (# Pairs)
  - 50 (Dist. Only), 100, 200, 400, 600, 900, 1200, 1800, 2400, 3000, 3600, 4200 (Feeder Only)

BENCHMARK COST MODEL

FEEDER SEGMENT AND DISTRIBUTION CABLE COSTS

- Feeder Segment Cost = Segment Distance * Cable Cost per foot

- Distribution Cable Cost = Avg. Distribution Plant Distance * Distribution Leg Cost Per Foot * 4 Distribution Legs

BENCHMARK COST MODEL

STRUCTURE COST

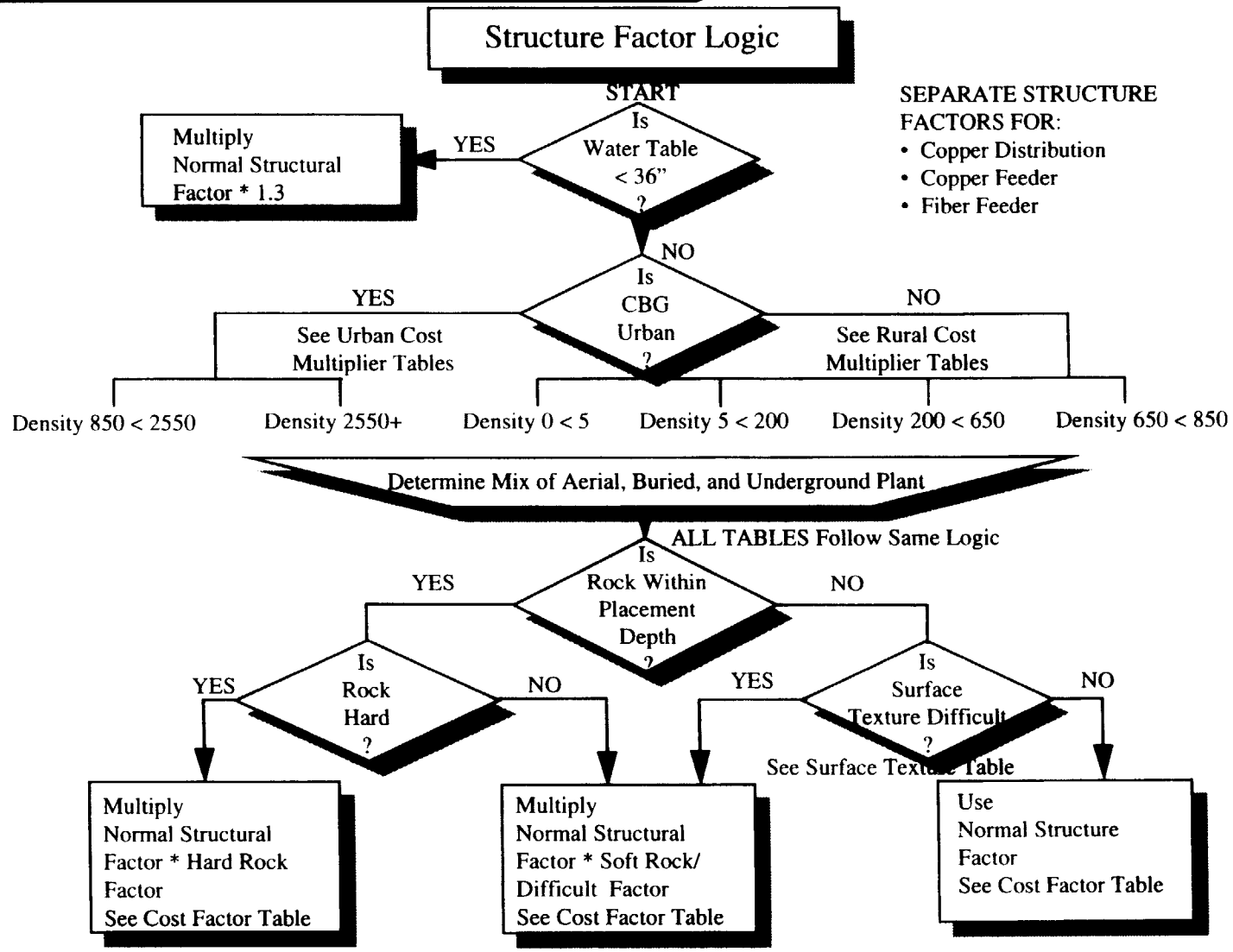
- Structure Cost =

  Total Cable Cost * CBG/Segment Specific Weighted Structure Cost Factor

  Where Weighted Structure Cost Factor =

  (Urban/Rural Terrain Specific Structure Multiplier For Buried Cable * % Buried Cable) + (Urban/Rural Terrain Specific Structure Multiplier For Aerial Cable* % Aerial Cable)

BENCHMARK COST MODEL



SEPARATE STRUCTURE FACTORS FOR:

- Copper Distribution
- Copper Feeder
- Fiber Feeder

MCI, SPRINT, NYNEX, U S WEST
November 12, 1995

BENCHMARK COST MODEL

SWITCHING COSTS

- CLLI Common Switching Costs Per Line =

  (Total CLLI Common Cost * Land & Building Factor * Basic Local Service Factor)/(Sum of Households * Ratio of Total Lines to Residence Lines)

Where:

» Total CLLI Common Cost = $647,526

» Land & Building Factor = 1.043

» Basic Local Service Factor = .79

» Ratio Of Total Lines to Res Lines = 1.75

BENCHMARK COST MODEL

SWITCHING COSTS

- Line Sensitive Switch Costs Per Household =
  Per Line Switch Cost * Land & Building Factor/ Switch Fill Factor

Where:

» Per Line Switch Cost = $238.87
» Land & Building Factor = 1.043
» Switch Fill Factor = 0.80

BENCHMARK COST MODEL

CIRCUIT EQUIPMENT COSTS

- SLC Electronics Cost Per Household =
  Electronics Invst Per Line/Equipment Fill Factor

  Where:
  Electronics Invst Per Line = $500.00
  Equipment Fill Factor = 0.80

- AFC Electronics Cost Per Household =
  Electronics Invst Per Line/Equipment Fill Factor

  Where:
  Electronics Invst Per Line = $550.00
  Equipment Fill Factor = 0.80

BENCHMARK COST MODEL

PURPOSE OF ANNUAL COST FACTORS

- The BCM Produces Investments in Plant Used to Provide Basic Local Service - No Direct Calculation of Expenses

- Annual Cost Factors are Applied to Investment Amounts to Determine the Recurring Cost of Service, Including Return, Depreciation, Taxes and Operating Expenses

BENCHMARK COST MODEL

TWO ANNUAL COST FACTORS USED

- Cost Factor #1 is Derived From Historical Accounting Data for Tier 1 LECs
- Cost Factor #2 is Based on the Hatfield Associates Study of the Cost of Basic Universal Service

BENCHMARK COST MODEL

COST FACTOR #1

- Factor is 31.6765%
- Derived from 1994 ARMIS Form 43-01 for Tier 1 LECs
- Represents Broad-Gauge Historical Relationship Between Investments and Expenses

BENCHMARK COST MODEL

COST FACTOR #2

- Factor is 22.97%
- Based on '94 Study by Hatfield Associates
- In General, Uses ARMIS Data for RBOCs
- Excludes Some Expense Categories as not Related to Basic Universal Service
- Uses Overhead Loading Factor of 10%
- Billing Expenses Based on Incremental Cost Data

Benchmark Model
User Inputs

USER INPUTS TO MODEL			
Variable	Value	Description	
NormalUGDepth	24	Normal Placement Depth for Buried/Underground Copper Cable	
NormalFiberDepth	36	Normal Placement Depth for Buried/Underground Fiber	
Greater2550Factor	1 28	Secondary Cost multiplier for block groups in density >2550 HH/SQ MI	
MaxFiberSize	144	Maximum Fiber Cable Size	
MaxFeederSize	4200	Maximum Copper Feeder Cable Size	
	3600	Maximum Copper Distribution Cable Size	
MaxDistrSize	500	SLC Cost per Access Line	
SlcFill	0 8	SLC Fill Factors for Electronics	
	550	AFC Cost per Access Line	
AfcFill	0 8	AFC Fill Factors for Electronics	
	20	Fiber Cable Discount % (Enter whole % in space below)	
	20	Copper Cable Discount % (Enter whole % in space below)	
	10	AFC Electronics Discount %	
	20	SLC Electronics Discount %	
Input Variables for switching and overheads1			
BusGrossUpFactor	1 75	Business Line Gross Up Factor	
SwitchFillFactor	0 8	Switch Fill Factor	
SwitchCost	238 87	Per line switch cost	
SwLandBldgFactor	1 043	Sw Land & Buliding Factor	
FixedCostPerSw	647526	Fixed Cost per switch	
NonTrfSen	0 7	% Non Traffic Sensitive (Enter as decimal)	
TrfSen	0 3	% of Traffic Sensitive that is local (Enter as decimal)	
ArmisCcFactor	0 316765	ARMIS Carrying Charge Factor	
DirectCcFactor	0 2297	Direct Carrying Charge Factor	
1. Switching costs are entered as a fixed cost per switch plus the per line additive.			
Both costs must be included to accurately reflect switching costs. The fixed cost			
will be converted to a per line cost and added to the per line additive to determine final			
switching cost per line.			
The % Non traffic sensitive is applied to the fixed cost portion of the switch.			

Benchmark Model
User Inputs

TABLES												
Surface Type									Distribution Cable Size Table		DISTRIBUTION CABLE COST	
RockH	=Hard rock above plowing depth - requires dynamite or rock saw to place								CableDistrCost	Cable Size	Cost UG	Cost Aerial
RockS	=Soft rock above plowing depth - requires more costly trenching, backhoeing, etc.									3600	22 2	21 9
Normal	=Straight plowing with minimal surface impact									3000	18 8	18 5
										2400	14 3	14 1
										1800	12 44	12 235
Urban Copper Cable Table				Urban Fiber Table						1200	10 68	9 99569
Cost Multiplier				Cost Multiplier						900	7 82	7 5122
Structure	UG $	Aerial $		Structure	UG $	Aerial $				600	7 1326	7 0505
RockH	1 53	0 69		RockH	9 02	3 5				400	4 564	4 61668
RockS	1 22	0 48		RockS	7 22	2 5				200	2 363	2 334
Normal	1 11	0 48		Normal	6 56	2 5				100	1 262	1 266
										50	0 675	0 572
Rural Copper Cable Table				Rural Fiber Table								
Cost Multiplier				Cost Multiplier					Feeder Cable Size Table		COPPER FEEDER COST	
Structure	UG $	Aerial $		Structure	UG $	Aerial $			FeederCableCost	Cable Size	Cost UG	Cost Aerial
RockH	0 66	0 8		RockH	3	4 25				4200	25 7	25 4
RockS	0 35	0 54		RockS	1 45	2 9				3600	22 2	21 9
Normal	0 21	0 44		Normal	1 02	2 3				3000	18 8	18 5
										2400	14 3	14 1
Distribution UG/Aerial Mix Table				Copper Feeder UG/Aerial Mix Table						1800	12 44	12 24
Density	UG%	Aerial%		Density	UG%	Aerial%				1200	10 68	10
0-5	90	10		0-5	60	40				900	7 82	7 51
5-200	80	20		5-200	65	35				600	7 13	7 05
200-650	70	30		200-650	70	30				400	4 56	4 62
650-850	65	35		650-850	80	20				200	2 36	2 33
850-2550	60	40		850-2550	90	10				100	1 262	1 266
>2550	50	50		>2550	100	0						
									Fiber Cable Cost Table		FIBER CABLE COST	
Fiber Feeder UG/Aerial Mix Table				Density/Fill Table					FiberCableCost	Cable Size	Cost UG	Cost Aerial
Density	UG%	Aerial%		Density	Feeder	Distribution				144	5 56	5 24
0-5	60	40		0	0 65	0 25	4			96	3 8	3 53
5-200	65	35		5	0 75	0 35	5			72	2 84	2 65
200-650	70	30		200	0 8	0 45	6			60	2 41	2 23
650-850	80	20		650	0 8	0 55	7			48	1 98	1 84
850-2550	90	10		850	0 8	0 65	8			36	1 6	1 46
>2550	100	0		2550	0 8	0 75	9			24	1 18	1 05
										18	0 98	0 85
										12	0 79	0 66

The Honorable Reed E. Hundt, Chairman
Federal Communications Comission
1919 M Street N.W., Room 814
Washington, D.C. 20554

The Honorable Andrew C. Barrett, Commissione
Federal Communications Commission
1919 M. Street N.W., Room 826
Washington, D.C 20554

The Honorable James H. Quello, Commissioner
Federal Communications Commission
1919 M. Street N.W ., Room 802
Washington, D.C 20554

The Honorable Rachelle Chong, Commissioner
Federal Communications Commission
1919 M Street N.W., Room 832
Washington, D.C. 20554

The Honorable Susan Ness, Commissioner
Federal Communications Commission
1919 M Street N.W., Room 844
Washington, D.C. 20554

The Honorable Julia Johnson, Commissioner
Florida Public Service Commission
Capital Circle Office Center
2540 Shumard Oak Blvd
Tallahassee, FL. 32399-0850

The Honorable Kenneth McClure,
Vice Chairman
Missouri Public Service Commission
301 W. High Street, Suite 530
Jefferson City, MO. 65102

The Honorable Sharon L. Nelson, Chairman
Washington Utilities and Transportation
Commission
P.O. Box 47250
Olympia, WA 98504-7250

The Honorable Laska Schoenfelder,
Commissioner
South Dakota Public Utilities Commission
500 E. Capital Avenue
Pierre, SD 57501

Ms. Martha S Hogerty,
Public Counsel for the State of Missouri
P.O. Box 7800
Harry S. Truman Building Room 250
Jefferson City, MO 65102

Ms. Deborah Dupont, Federal Staff Chair
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Mr. Paul E. Pederson, State Staff Chair
Missouri Public Service Commission
P.O. Box 360
Truman State Office Building
Jefferson City, MO 65102

Ms. Eileen Benner
Idaho Public Utilities Commission
P.O. Box 83720
Boise, ID 83720-0074

Mr. Charles Bolle
South Dakota Public Utilities Commission
State Capital
500 E. Capital Avenue
Pierre, SD 57501-5070

Mr. William Howden
Federal Communications Commission
2000 L Street N.W., Suite 812
Washington, D.C. 20036

Ms. Lorraine Kenyon
Alaska Public Utilities Commission
1016 West Sixth Avenue Suite 400
Anchorage, AK 99501

Ms. Debra M. Kriete
Pennsylvania Public Utilites Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Ms. Clara Kuehn
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Mr. Mark Long
Florida Public Service Commission
2540 Shumard Oak Blvd.
Gerald Gunter Building
Tallahassee, FL 32399-0850

Mr. Samuel Loudenslager
Arkansas Public Service Commission
P.O. Box 400
Little Rock, AR 72203-0400

Ms. Sandra Makeeff
Iowa State Office Building
Lucas State Office Building
Des Moines, IA 50319

Mr. Philip F. McClelland
Pennsylvania Office of Consumer Advocate
1425 Strawberry Square
Harrisburg, PA 17120

Mr. Michael A. McRae
D.C. Office of the People's Counsel
1133 15th Street N.W., Suite 500
Washington, D.C. 20005

Mr. Rafi Mohammed
Federal Communications Commission
2000 L Street N.W., Suite 812
Washington, D.C. 20036

Terry Monroe
New York Public Service Commission
Three Empire Plaza
Albany, NY 12223

Mr. Andrew Mulitz
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Mr. Mark Nadel
Federal Communications Commission
1919 M Street N.W., Room 542
Washington, D.C. 20554

Mr. Gary Oddi
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Ms. Teresa Pitts
Washington Utilities and Transportation Commission
P.O. Box 47250
Olympia, WA 98504-7250

Ms. Jeanine Poltronieri
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Mr. James Bradford Ramsay
National Association of Regulatory Utility Commissioners
1201 Constitution Avenue N.W.,
Washington, D.C. 20423

Mr. Jonathan Reel
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20336

Mr. Brian Roberts
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94104-3298

Mr. Gary Seigel
Federal Communications Commission
2000 L Street N.W., Suite 812
Washington, D.C. 20036

Ms. Pamela Szymczak
Federal Communications Commission
2000 L Street N.W., Suite 257
Washington, D.C. 20036

Mr. Whiting Thayer
Federal Communications Commission
2000 L Street N.W., Suite 812
Washington, D.C. 20036

Ms. Deborah S. Waldbaum
Colorado Office of Comsumer Counsel
1580 Logan Street Suite 600
Denver, CO 80203

Mr. Alex Belinfante
Federal Communications Commission
2033 M Street N.W., Suite 502A
Washington, D.C. 20554

Mr. Larry Povich
Federal Communications Commission
2033 M Street, N.W., Suite 500
Washington, D.C. 20554