0000096381

ORIGINAL

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Monica Luckritz
Manager-Policy and Law

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AZ CORP COMMISSION
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ride the light
Qwest

Lyn Farmer
Chief Arbitrator
Hearing Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Arizona Corporation Commission
DOCKETED
JUN 27 2001
DOCKETED BY

Dear Ms. Farmer:

RE: Docket No. T-00000A-00-0194

Pursuant to the Procedural Order dated February 15, 2001, enclosed please find one original and ten copies of Qwest's Rebuttal Testimony for the following witnesses:

Maureen Arnold
Renee Albersheim
Barbara Brohl
Larry Brotherson
Dick Buckley
Joe Craig
William Fitzsimmons
Gary Fleming
Marti Gude
Robert Kennedy
Teresa Million

Please let me know if you have any questions.

Sincerely,

Monica Luckritz

Arizona Corporation Commission
DOCKETED
JUN 27 2001
DOCKETED BY

Enclosures

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	DOCKET NO. T-00000A-00-0194
WHOLESALE PRICING REQUIREMENTS	)	PHASE II
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

REBUTTAL TESTIMONY OF

MAUREEN ARNOLD

ON BEHALF OF

QWEST CORPORATION

JUNE 27, 2001

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS AND POSITION WITH QWEST CORPORATION.

A. My name is Maureen Arnold. My business address is 3033 N 3rd St., Phoenix, Arizona. I am Director of Regulatory Affairs for Qwest Corporation ("Qwest") for the state of Arizona.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to file a revised Exhibit MA-1 to reflect the changes in the rates and elements being proposed in Ms. Teresa K. Million's rebuttal testimony.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	DOCKET NO. T-00000A-00-0194
WHOLESALE PRICING REQUIREMENTS	)	PHASE II
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

EXHIBIT OF

MAUREEN ARNOLD

JUNE 27, 2001

		Recurring	Non- Recurring	Witness
6.0 Resale				
6.1 Wholesale Discount Rates				
6.1.1 Basic Exchange Residence	4.19%			Gude
6.1.2 Basic Exchange Business	9.41%			Gude
6.1.3 Toll	23.96%			Gude
6.1.4 Listings, CO Features and Informational Services	41.51%			Gude
6.1.5 Private Line	6.44%			Gude
6.1.6 Packaged/Special Services	10.46%			Gude
6.1.7 Proposed Operator Services/DA	7.00%			Gude
6.2 Customer Transfer Charge (CTC)				
6.2.1 CTC for POTS Service, Mechanized				
First			$0.68	Brotherson
Each Additional			$0.14	Brotherson
6.2.2 CTC for POTS Service, Manual				
First			$16.28	Brotherson
Each Additional			$2.71	Brotherson
6.2.3 CTC for Private Line Transport Service				
First			$41.05	Brotherson
Each Additional			$41.05	Brotherson
6.2.4 CTC for Advanced Communications Services, per circuit			$51.57	Brotherson
7.0 Interconnection				
7.1 Entrance Facilities				
7.1.1 DS1		$86.70	$219.79	Kennedy
7.1.2 DS3		$458.43	$416.07	Kennedy
7.2 LIS EICT				
7.2.1 EICT				
Per DS1		$0.00	$0.00	Kennedy
Per DS3		$0.00	$0.00	Kennedy
	Recurring Fixed	**Recurring Per Mile**	**Nonrecurring**	
7.3 Direct Trunked Transport				
7.3.1 DS1 Over 0 to 8 Miles	$31.14	$1.45		Kennedy
DS1 Over 8 to 25 Miles	$31.40	$1.18		Kennedy
DS1 Over 25 to 50 Miles	$31.87	$2.14		Kennedy
DS1 Over 50 Miles	$31.83	$1.12		Kennedy
7.3.2 DS3 Over 0 to 8 Miles	$197.32	$61.17		Kennedy
DS3 Over 8 to 25 Miles	$200.35	$18.78		Kennedy
DS3 Over 25 to 50 Miles	$184.41	$23.73		Kennedy
DS3 Over 50 Miles	$194.79	$16.34		Kennedy
		Recurring	**Nonrecurring**	
7.4 Multiplexing				
7.4.1 DS3 to DS1		$232.15		Kennedy
DS3 to DS1, Per Subsequent Channel			$268.62	Kennedy
7.5 Trunk Nonrecurring Charges				
7.5.1 DS1 Interface, First Trunk			$355.22	Kennedy
7.5.2 DS1 Interface, Each Additional Trunk			$5.93	Kennedy
7.5.3 DS3 Interface, First Trunk			$362.03	Kennedy
7.5.4 DS3 Interface, Each Additional Trunk			$12.75	Kennedy
7.6 Local Traffic				
7.6.1 End office call termination, per minute of use		$0.002143		Kennedy
7.6.2 Tandem Switched Transport				
7.6.2.1 Tandem Switching, per Minute of Use		$0.001589		Kennedy
	Recurring Fixed	**Recurring Per Mile**	**Nonrecurring**	
7.6.2.2 Tandem Transmission, per Minute of Use, All Mileage Bands				
0 to 8 Miles	$0.000456	$0.0000428		
8 to 25 Miles	$0.000465	$0.0000212		

		Recurring	Non- Recurring	Witness
25 to 508 Miles	$0.000448	$0.0000109		
Over 50 Miles	$0.000433	$0.0000039		
		Recurring	**Nonrecurring**	
7.7 Miscellaneous Charges				
7.7.1 Cancellation Charge (LIS Trunks)	Qwest's Arizona Switched Access Tariff Section 5.2.3 + LIS NRC			Kennedy
7.7.2 Expedite Charge (LIS Trunks)	Qwest's Arizona Switched Access Tariff Section 5.2.2 + LIS NRC			Kennedy
7.7.3 Construction Charges		ICB	ICB	Kennedy
7.8 Transit Traffic				
7.8.1 Exchange Service (EAS/Local) Transit	See Tandem Switching and Tandem Transmission Rates Above			
	9	Miles		
7.8.2 IntraLATA Toll	Qwest's Arizona Switched Access Tariff			
	9	Miles		
7.8.3 Jointly Provided Switched Access	Qwest's Arizona Switched Access Tariff			
7.8.4 Category 11 Mechanized Record Charge, per Record		$0.001827		Kennedy
8.0 Collocation				
8.1 All Collocation				
8.1.1 Collocation Entrance Facility, per fiber pair				
Standard Shared per Fiber		$16.01	$627.99	Kennedy
Cross Connect per Fiber		$16.17	$735.39	Kennedy
Express per Cable		$276.84	$9,198.71	Kennedy
8.1.2 Cable Splicing				
Fiber - Per set-up			$476.82	Kennedy
Per fiber spliced			$38.12	Kennedy
8.1.3 -48 Volt DC Power Usage, per Ampere, per Month				
Power Plant		$10.94		Kennedy
Power Usage Less Than 60 Amps, per Amp		$3.70		Kennedy
Power Usage More Than 60 Amps, per Amp		$7.41		Kennedy
8.1.4 AC Power Feed (backup)				
8.1.4.1 AC Power Feed – per Amp, per Month				
120 V		$19.03		Kennedy
208 V, Single Phase		$32.98		Kennedy
208 V, Three Phase		$57.06		Kennedy
240 V, Single Phase		$38.06		Kennedy
240 V, Three Phase		$65.84		Kennedy
480 V, Three Phase		$131.68		Kennedy
8.1.4.2 AC Power Cable – per Foot				
20 Amp, Single Phase		$0.0117	$8.02	Kennedy
20 Amp, Three Phase		$0.0145	$9.94	Kennedy
30 Amp, Single Phase		$0.0126	$8.64	Kennedy
30 Amp, Three Phase		$0.0173	$11.87	Kennedy
40 Amp, Single Phase		$0.0149	$10.16	Kennedy
40 Amp, Three Phase		$0.0204	$13.99	Kennedy
50 Amp, Single Phase		$0.0176	$12.06	Kennedy
50 Amp, Three Phase		$0.0246	$16.84	Kennedy
60 Amp, Single Phase		$0.0199	$13.63	Kennedy
60 Amp, Three Phase		$0.0283	$19.38	Kennedy
100 Amp, Single Phase		$0.0247	$16.88	Kennedy
100 Amp, Three Phase		$0.0385	$26.36	Kennedy
8.1.5 Inspector Labor, per half hour				
Regular Hours Rate			$32.03	
After Hours Rate, minimum 3 hours			$41.25	
8.1.6 Collocation Terminations				
8.1.6.1 DS0				
Cable Placement per 100 pair Block		$0.48	$244.42	Kennedy
Cable Placement per Termination		$0.01	$4.59	Kennedy
Cable per 100 Pair Block		$0.62	$314.40	Kennedy

		Recurring	Non- Recurring	Witness
	Cable per Termination	$0.01	$4.31	Kennedy
	Blocks per 100 Pair Block	$1.08	$548.18	Kennedy
	Blocks per Termination	$0.01	$7.51	Kennedy
	Block Placement Per 100 Pair Block	$0.50	$253.50	Kennedy
	Block Placement per Termination	$0.01	$3.47	Kennedy
8.1.6.2	DS1			
	Cable Placement per 28 DS1s	$0.59	$406.52	Kennedy
	Cable Placement per Termination	$0.06	$43.71	Kennedy
	Cable per 28 DS1s	$0.53	$362.96	Kennedy
	Cable per Termination	$0.06	$39.03	Kennedy
	Panel per 28 DS1s	$0.61	$414.16	Kennedy
	Panel per Termination	$0.07	$50.00	Kennedy
	Panel Placement per 28 DS1s	$0.13	$86.74	Kennedy
	Panel Placement per Termination	$0.01	$9.33	Kennedy
8.1.6.3	DS3			
	Cable Placement per Termination	$0.24	$165.51	Kennedy
	Cable per Termination	$0.34	$234.38	Kennedy
	Connector per Termination	$0.35	$241.50	Kennedy
	Connector Placement per Termination	$0.04	$24.92	Kennedy
8.1.7	Security			
	Access Card per Employee	$0.86		Kennedy
	Card Access per employee, per Office	$7.90		Kennedy
	Central Office Security Infrastructure	ICB	ICB	Kennedy
8.1.8	Central Office Clock Synchronization			
	Synchronization – Composite Clock, per Port	$7.42		Kennedy
8.1.9	Space Availability Report, Per Office		$335.01	Kennedy
8.2 Virtual Collocation				
8.2.1	Quote Preparation Fee		$4,399.84	Kennedy
8.2.2	Maintenance Labor, per half hour			
	Regular Hours Rate		$28.10	Kennedy
	After Hours Rate		$37.60	Kennedy
8.2.3	Training Labor, per half hour			
	Regular Hours Rate		$28.10	Kennedy
8.2.4	Equipment Bay -recurring, per shelf	$3.61		Kennedy
8.2.5	Engineering Labor, per half hour			
	Regular Hours Rate		$32.03	Kennedy
	After Hours Rate		$41.25	Kennedy
8.2.6	Installation Labor, per Half Hour			
	Regular Hours Rate		$30.31	Kennedy
	After Hours Rate		$39.13	Kennedy
8.2.7	Floor Space Lease, per Square Foot	$3.69		Kennedy
8.2.8	-48 Volt DC Power Cables			
	20A Power Feed, Per Feed	$8.11	$5,552.65	Kennedy
	30A Power Feed, Per Feed	$9.27	$6,343.97	Kennedy
	40A Power Feed, Per Feed	$11.31	$7,739.80	Kennedy
	60A Power Feed, Per Feed	$14.11	$9,655.97	Kennedy
8.3 Cageless Physical Collocation				
8.3.1	Quote Preaparation Fee		$4,399.84	Kennedy
8.3.2	Space Construction			
	Bays and 1 - 40A Power Feed - 90 Day	$43.77	$29,953.55	Kennedy
	Adjustment for 20A Initial Power Feed	($3.20)	($2,187.15)	Kennedy
	Adjustment for 30A Initial Power Feed	($2.04)	($1,395.83)	Kennedy
	Adjustment for 60A Initial Power Feed	$2.80	$1,916.17	Kennedy

		Recurring	Non- Recurring	Witness
Adjustment for Each Additional Bay		$4.44	$3,038.06	Kennedy
Each Additional 20A Power Feed		$8.11	$5,552.65	Kennedy
Each Additional 30A Power Feed		$9.27	$6,343.97	Kennedy
Each Additional 40A Power Feed		$11.31	$7,739.80	Kennedy
Each Additional 60A Power Feed		$14.11	$9,655.97	Kennedy
8.3.3 Floor Space Lease, per Square Foot		$3.69		Kennedy
8.4 Caged Physical Collocation				
8.4.1 Quote Preparation Fee			$4,783.90	Kennedy
8.4.2 Space Construction				
Cage- Up to 100 Sq. Ft and 1 - 60A Power Feed		$75.84	$51,901.16	Kennedy
Cage - 101- 200 Sq. Ft and 1 - 60A Power Feed		$78.70	$53,858.34	Kennedy
Cage- 201- 300 Sq. Ft. and 1 - 60A Power Feed		$80.92	$55,380.28	Kennedy
Cage- 301- 400 Sq. Ft. and 1- 60A Power Feed		$83.71	$57,287.56	Kennedy
Adjustment for 20A Initial Power Feed		($12.39)	($8,481.43)	Kennedy
Adjustment for 30A Initial Power Feed		($11.28)	($7,721.61)	Kennedy
Adjustment for 40A Initial Power Feed		($8.96)	($6,133.10)	Kennedy
Adjustment for 100A Initial Power Feed		$13.72	$9,389.08	Kennedy
Adjustment for 200A Initial Power Feed		$43.80	$29,974.50	Kennedy
Adjustment for 300A Initial Power Feed		$80.36	$54,995.90	Kennedy
Adjustment for 400A Initial Power Feed		$123.60	$84,587.92	Kennedy
Each Additional 20A Power Feed		$10.24	$7,004.36	Kennedy
Each Additional 30A Power Feed		$11.35	$7,764.18	Kennedy
Each Additional 40A Power Feed		$13.67	$9,352.68	Kennedy
Each Additional 60A Power Feed		$22.63	$15,485.78	Kennedy
Each Additional 100A Power Feed		$36.35	$24,874.87	Kennedy
Each Additional 200A Power Feed		$66.43	$45,460.29	Kennedy
Each Additional 300A Power Feed		$102.99	$70,481.68	Kennedy
Each Additional 400A Power Feed		$146.23	$100,073.71	Kennedy
8.4.3 Floor Space Lease, per Square Foot		$3.69		Kennedy
8.4.4 Grounding				
2/0 AWG - per foot		$0.02	$12.65	Kennedy
1/0 AWG - per foot		$0.03	$21.05	Kennedy
4/0 AWG - per foot		$0.03	$23.92	Kennedy
350 kcmil - per foot		$0.05	$33.18	Kennedy
500 kcmil - per foot		$0.05	$36.97	Kennedy
750 kcmil – per foot		$0.08	$56.65	Kennedy
8.5 CLEC to CLEC				
8.5.1 Flat Charge (Design Engineering & Installation – No			$791.63	Kennedy
8.5.2 Cable Racking, Per Foot				
DS0		$0.17261		Kennedy
DS1		$0.18290		Kennedy
DS3		$0.15906		Kennedy
8.5.3 Virtual Connections (Connections only No cables)				
DS0 (Per 100 Connections)			$224.01	Kennedy
DS1 (Per 28 Connections)			$102.17	Kennedy
DS3 (Per 1 Connection)			$8.84	Kennedy
8.5.4 Cable Hole (if Applicable)			$442.49	Kennedy
8.5.5 CLEC to CLEC Cross Connection			$256.37	Kennedy
8.6 ICDF Collocation			ICB	Kennedy
8.7 Adjacent and Adjacent Remote Collocation			ICB	Kennedy
8.8 Remote Collocation		Under Development		Kennedy
8.9 Space Optioning		Under Development		Kennedy

		Recurring	Non- Recurring	Witness
9.0 Unbundled Network Elements (UNEs)				
9.1 Interconnection Tie Pairs (ITP) – Per Termination				
DS0		$0.48		Kennedy
DS1		$1.52		Kennedy
DS3		$15.33		Kennedy
9.2 Unbundled Loops				
9.2.1 Analog Loops				
9.2.1.1 2-Wire Voice Grade	See Installation options, Section 9.2.4			
Zone 1		$16.89		Kennedy
Zone 2		$22.57		Kennedy
Zone 3		$34.34		Kennedy
9.2.1.1.1 Unbundled Loop Grooming (2-wire)		$1.59		Kennedy
9.2.1.2 4-Wire Voice Grade	See Installation options, Section 9.2.4			
Zone 1		$33.76		Kennedy
Zone 2		$45.12		Kennedy
Zone 3		$68.66		Kennedy
9.2.1.2.1 Unbundled Loop Grooming (4-wire)		$3.64		Kennedy
9.2.2 Non-loaded Loops				
9.2.2.1 2-wire Non-loaded Loop	See Installation options, Sections 9.2.4 and See also Section 9.2.2.3			
Zone 1		$16.89		Kennedy
Zone 2		$22.57		Kennedy
Zone 3		$34.34		Kennedy
9.2.2.2 4-wire Non-loaded Loop	See Installation options, Sections 9.2.4 and See also Section 9.2.2.3			
Zone 1		$33.76		Kennedy
Zone 2		$45.12		Kennedy
Zone 3		$68.66		Kennedy
9.2.2.3 Cable Unloading/Bridge Tap Removal			$652.83	Kennedy
9.2.3 Digital Capable Loops				
9.2.3.1 Basic Rate ISDN / xDSL -I Capable / ADSL Compatible Loops	See Installation options, Sections 9.2.4 and See also Section 9.2.2.3			
Zone 1		$16.89		Kennedy
Zone 2		$22.57		Kennedy
Zone 3		$34.34		Kennedy
9.2.3.2 DS1 Capable Loop	See Installation options, Sections 9.2.5			
Zone 1		$84.48		Kennedy
Zone 2		$84.57		Kennedy
Zone 3		$91.39		Kennedy
9.2.3.3 DS3 Capable Loop	See Installation options, Sections 9.2.6			
Zone 1		$897.72		Kennedy
Zone 2		$899.73		Kennedy
Zone 3		$1,053.66		Kennedy
9.2.3.4 2-Wire Extension Technology		$4.13		Kennedy
9.2.3.4.1 Unbundled Loop Grooming- 2-wire Extension Technology		$1.60		Kennedy
9.2.4 Loop Installation Charges for 2 and 4 wire analog, 2 and 4 wire non-loaded, ADSL Compatible, ISDN BRI Capable and xDSL - I Capable Loops where conditioning is not required.	See related monthly recurring charges in Sections 9.2.1 – 9.2.3 above. (If conditioning is required, charges may apply as specified in Section 9.2.2.3 above).			
9.2.4.1 Basic Installation				
First			$88.29	Kennedy
Each Additional			$76.07	Kennedy

		Recurring	Non- Recurring	Witness
9.2.4.2 Basic Installation with Performance Testing				
First Loop			$192.29	Kennedy
Each Additional			$137.97	Kennedy
9.2.4.3 Coordinated Installation with Cooperative Testing				
First Loop			$232.25	Kennedy
Each Additional			$137.97	Kennedy
9.2.4.4 Coordinated Installation without Cooperative Testing				
First Loop			$95.38	Kennedy
Each Additional			$83.16	Kennedy
9.2.4.5 Basic Install with Cooperative Testing				
First Loop			$192.29	Kennedy
Each Additional			$137.97	Kennedy
9.2.5 DS1 Loop Installation Charges	See related monthly recurring charges in Sections 9.2.1 – 9.2.3 above.			
9.2.5.1 Basic Installation				
First Loop			$144.15	Kennedy
Each Additional			$110.79	Kennedy
9.2.5.2 Basic Installation with Performance Testing				
First Loop			$278.18	Kennedy
Each Additional			$203.72	Kennedy
9.2.5.3 Coordinated Installation with Cooperative				
First Loop			$318.14	Kennedy
Each Additional			$203.72	Kennedy
9.2.5.4 Coordinated Installation without Cooperative Testing				
First Loop			$153.26	Kennedy
Each Additional			$119.90	Kennedy
9.2.5.5 Basic Install With Cooperative Testing				
First Loop			$278.18	Kennedy
Each Additional			$203.72	Kennedy
9.2.6 DS3 Loop Installation Charges	See related monthly recurring charges in Sections 9.2.1 – 9.2.3 above.			
9.2.6.1 Basic Installation				
First Loop			$144.15	Kennedy
Each Additional			$110.79	Kennedy
9.2.6.2 Basic Installation with Performance Testing				
First Loop			$278.18	Kennedy
Each Additional			$203.72	Kennedy
9.2.6.3 Coordinated Installation with Cooperative				
First Loop			$318.14	Kennedy
Each Additional			$203.72	Kennedy
9.2.6.4 Coordinated Installation without Cooperative Testing				
First Loop			$153.26	Kennedy
Each Additional			$119.90	Kennedy
9.2.6.5 Basic Install With Cooperative Testing				
First Loop			$278.18	Kennedy
Each Additional			$203.72	Kennedy
9.3 Subloop				
9.3.1 2-Wire Analog & Non Loaded Distribution Loop			$121.43	Kennedy
Zone 1		$12.12		Kennedy

		Recurring	Non- Recurring	Witness
Zone 2		$17.33		Kennedy
Zone 3		$29.72		Kennedy
				Kennedy
9.3.2 Each Addl 2 -Wire Analog & Non Loaded Distribution Loop			$55.50	Kennedy
9.3.3 Intrabuilding Cable Loop, Per Pair		$1.19		Kennedy
9.3.4 DS1 Capable Feeder Loop				
First Loop			$293.36	Kennedy
Each Additional			$219.50	Kennedy
Zone 1		$72.62		Kennedy
Zone 2		$72.71		Kennedy
Zone 3		$79.53		Kennedy
9.3.5 Field Connection Point				
Feasibility Fee/Quote Preparation Fee			$1,638.81	Kennedy
Construction Fee			ICB	Kennedy
9.4 Line Sharing				
9.4.1 Shared Loop, per Loop		$5.00	$37.71	Brohl
9.4.2 OSS - Per Line - Per Month		$2.68		Albersheim
9.4.3 Reclassification Charge			ICB	Brohl
9.4.4 Splitter Shelf Charge		$4.77	$537.89	Brohl
9.4.5 Splitter TIE Cable Connections				
Splitter in the Common Area--Data to 410 block		$5.82	$3,189.86	Brohl
Splitter in the Common Area—Data direct to CLEC		$6.11	$3,347.79	Brohl
Splitter on the IDF—Data to 410 block		$1.85	$1,015.26	Brohl
Splitter on the IDF—Data direct to CLEC		$3.47	$1,900.90	Brohl
Splitter on the MDF—Data to 410 block		$1.91	$1,044.37	Brohl
Splitter on the MDF—Data direct to CLEC		$4.09	$2,242.86	Brohl
9.4.6 Engineering			$1,280.21	Brohl
9.5 Network Interface Device (NID)		$1.39	$68.79	Kennedy
	Recurring Fixed	**Recurring Per Mile**	**Nonrecurring**	
9.6 Unbundled Dedicated Interoffice Transport (UDIT)				
9.6.1 DS0 UDIT			$307.95	Kennedy
DS0 Over 0 to 8 Miles	$19.27	$0.13		Kennedy
DS0 Over 8 to 25 Miles	$19.29	$0.12		Kennedy
DS0 Over 25 to 50 Miles	$19.33	$0.12		Kennedy
DS0 Over 50 Miles	$19.28	$0.06		Kennedy
9.6.2 DS1 UDIT			$352.92	Kennedy
DS1 Over 0 to 8 Miles	$31.14	$1.45		Kennedy
DS1 Over 8 to 25 Miles	$31.40	$1.18		Kennedy
DS1 Over 25 to 50 Miles	$31.87	$2.14		Kennedy
DS1 Over 50 Miles	$31.83	$1.12		Kennedy
9.6.3 DS3 UDIT			$352.92	Kennedy
DS3 Over 0 to 8 Miles	$197.32	$61.17		Kennedy
DS3 Over 8 to 25 Miles	$200.35	$18.78		Kennedy
DS3 Over 25 to 50 Miles	$184.41	$23.73		Kennedy
DS3 Over 50 Miles	$194.79	$16.34		Kennedy
9.6.4 OC-3 UDIT			$352.92	Kennedy
OC-3 Over 0 to 8 Miles	$655.37	$205.64		Kennedy
OC-3 Over 8 to 25 Miles	$660.44	$66.12		Kennedy
OC-3 Over 25 to 50 Miles	$633.02	$86.07		Kennedy
OC-3 Over 50 Miles	$650.60	$60.95		Kennedy
9.6.5 OC-12 UDIT			$352.92	Kennedy
OC-12 Over 0 to 8 Miles	$1,837.87	$97.75		Kennedy
OC-12 Over 8 to 25 Miles	$1,837.87	$94.58		Kennedy
OC-12 Over 25 to 50 Miles	$1,837.87	$106.76		Kennedy
OC-12 Over 50 Miles	$1,837.87	$122.10		Kennedy

		Recurring	Non- Recurring	Witness
		Recurring	Nonrecurring	
9.6.6 DS0 UDIT Low Side Performance		$11.52		Kennedy
9.6.7 Multiplexing				
DS3 to DS1		$232.15	$2,569.47	Kennedy
DS1 to DS0, High Side		$210.68	$273.68	Kennedy
DS1 to DS0, Low Side		$7.35	$239.83	Kennedy
9.6.8 Extended Unbundled Dedicated Interoffice Transport				
DS1 E-UDIT		$55.78	$411.42	Kennedy
DS3 E-UDIT		$317.26	$411.42	Kennedy
OC-3 E-UDIT		$692.68	$411.42	Kennedy
OC-12 E-UDIT		$1,301.75	$411.42	Kennedy
9.6.9 UDIT Rearrangement				
DS0 Single Office			$219.07	Kennedy
DS0 Dual Office			$176.26	Kennedy
High Capacity Single Office			$266.02	Kennedy
High Capacity Dual Office			$238.39	Kennedy
9.7 Unbundled Dark Fiber (UDF)				
9.7.1 Single Strand Increments		Under Development		
9.7.2 Initial Records Inquiry (IRI)				
Simple			$159.49	Kennedy
Complex			$203.37	Kennedy
9.7.3 Field Verification and Quote Preparation (FVQP)			$1,485.33	
				Kennedy
9.7.4 Field Verification		Under Development		Kennedy
9.7.5 UDF-IOF Charges				
Order Charge per 1st Pair or Strand/Route/Order			$563.63	Kennedy
Order Charge ea. Addl. Pair or Strand /Same Route			$271.89	Kennedy
Termination, Fixed Per Pair./Office		$6.77		Kennedy
Fiber Transport, per Mile / Pair		$83.07		Kennedy
Fiber Cross-Connect Per Pair		$4.03	$21.56	Kennedy
9.7.6 UDF-Loop Charges				
Order Charge per 1st Pair or Strand /Route/Order			$563.63	Kennedy
Order Charge each. Addl. Pair or Strand/Same Route			$271.89	Kennedy
Termination, Fixed Per Pair/Office		$7.01		Kennedy
Termination, Fixed Per Pair/Prem		$6.42		Kennedy
Fiber Loop, per Route/Per Pair		$110.86		Kennedy
Fiber Cross-Connect Per Pair		$4.03	$21.56	Kennedy
9.7.7 Extended Unbundled Dark Fiber (E-UDF)				
Order Charge per 1st Pair or Strand /Route/Order			$563.63	Kennedy
Order Charge each. Addl. Pair or Strand/Same Route			$271.89	Kennedy
Termination, Fixed Per Pair/Office		$7.01		Kennedy
Termination, Fixed Per Pair/Prem		$6.42		Kennedy
Fiber Transport, per Route/Per Pair		$110.86		Kennedy
Fiber Cross-Connect Per Pair		$4.03	$21.56	Kennedy
9.8 Shared Transport, per minute of use		$0.0015190		Brohl
9.9 Unbundled Customer Controlled Rearrangement Element (UCCRE)				
9.9.1 DS1 Port		ICB	ICB	Brohl
9.9.2 DS3 Port		ICB	ICB	Brohl
9.9.3 Dial Up Access		ICB		Brohl
9.9.4 Attendant Access		ICB		Brohl
9.9.5 Virtual Ports			ICB	Brohl
9.10 Local Tandem Switching				
9.10.1 DS1 Local Message Trunk Port - Per Order		$56.98	$220.95	Brohl
9.10.2 DS1 Trunk Group – First Trunk - Per Order			$211.06	Brohl

		Recurring	Non- Recurring	Witness
9.10.3 DS1 Trunk Group – Each Additional Trunk - Per Order			$24.29	Brohl
9.10.4 Per Minute of Use		$0.002376		Brohl
9.11 Local Switching				
9.11.1 Analog Line Side Port, First Port		$1.28	$145.57	Brohl
9.11.2 Analog Line Side Port, Each Additional		$1.28	$95.75	Brohl
9.11.3 Local Usage, Per Minute of Use		$0.002599		Brohl
9.11.4 Vertical Features				
10XXX Direct Dialed Blocking		$0.08		Brohl
Account Codes - per system		$7.27	$80.01	Brohl
Attendant Access Line - per station line		$0.08	$1.16	Brohl
Audible Message Waiting		$0.13	$1.01	Brohl
Authorization Codes - per system		$3.13	$239.29	Brohl
Auto Callback		$0.08		Brohl
Automatic Line		$0.07	$0.34	Brohl
Automatic Route Selection - Common Equip. per system		$2.12	$2,099.56	Brohl
Blocking of pay per call services		$0.10		Brohl
Bridging		$0.08		Brohl
Call Drop		$0.07	$0.34	Brohl
Call Exclusion - Automatic		$0.07	$1.01	Brohl
Call Exclusion - Manual		$0.07	$0.67	Brohl
Call Forward Don't Answer - All Calls		$0.13		Brohl
Call Forwarding Incoming Only		$0.08		Brohl
Call Forwarding Intra Group Only		$0.08		Brohl
Call Forwarding Variable Remote		$0.11		Brohl
Call Forwarding: Busy Line (Expanded)		$0.09		Brohl
Call Forwarding: Busy Line (External)		$0.09		Brohl
Call Forwarding: Busy Line (External) Don't Answer		$0.15		Brohl
Call Forwarding: Busy Line (Overflow)		$0.09		Brohl
Call Forwarding: Busy Line (Overflow) Don't Answer		$0.15		Brohl
Call Forwarding: Busy Line (Programmable)		$0.10		Brohl
Call Forwarding: Busy Line/Don't Answer Programmable Svc. Establishment			$15.66	Brohl
CF DON'T ANSWER/CF BUSY CUSTOMER PROGRAMMABLE - PER LINE			$1.01	Brohl
Call Forwarding: Busy Line/Don't Answer (Expanded)		$0.15	$37.92	Brohl
Call Forwarding: Don't Answer		$0.13	$37.92	Brohl
Call Forwarding: Don't Answer (Expanded)		$0.13		Brohl
Call Forwarding: Don't Answer (Programmable)		$0.13		Brohl
Call Forwarding: Variable		$0.10		Brohl
Call Forwarding: Variable - no call complete option		$0.10		Brohl
Call Hold		$0.08		Brohl
Call Hold/3-Way/Call Transfer		$0.32		Brohl
Call Park (Basic - Store & Retrieve)		$0.09		Brohl
Call Pickup		$0.08		Brohl
Call Transfer		$0.32		Brohl
Call Waiting Dial Originating		$0.08		Brohl
Call Waiting Indication - per timing state		$0.46	$1.01	Brohl
Call Waiting Originating		$0.09		Brohl
Call Waiting Terminating - All Calls		$0.11		Brohl
Call Waiting Terminating - Incoming Only		$0.11		Brohl
Call Waiting/ Cancel Call Waiting		$0.14		Brohl
CENTREX COMMON EQUIPMENT			$1,206.23	Brohl
Centrex Management System (CMS)		$0.60		Brohl
Centrex Plus DID numbers per number		$0.11		Brohl
Centrex Plus to Centrex Plus		$5.28		Brohl
Centrex Plus to IC Carrier		$5.28		Brohl
Centrex Plus to PBX/Key Blocked		$5.28		Brohl
Centrex Plus to PBX/Key Non-Blocked		$5.28		Brohl
CFBL - All Calls		$0.09		Brohl
CFBL - Incoming Only		$0.09	$37.92	Brohl
CFDA Incoming Only		$0.08	$37.92	Brohl
CLASS - Anonymous Call Rejection		$0.33		Brohl
CLASS - Call Trace		$2.39		Brohl

		Recurring	Non- Recurring	Witness
CLASS - Call Waiting ID		$0.10		Brohl
CLASS - Calling Name & Number		$0.41		Brohl
CLASS - Calling Number Delivery		$0.10		Brohl
CLASS - Calling Number Delivery - Blocking		$0.34		Brohl
CLASS - Continuous Redial		$0.23	$1.26	Brohl
CLASS - Last Call Return		$0.10	$1.27	Brohl
CLASS - Priority Calling		$0.19	$1.20	Brohl
CLASS - Selective Call Forwarding		$0.16	$1.26	Brohl
CLASS - Selective Call Rejection		$0.23	$1.20	Brohl
Common Equipment per 1.544 Mbps facility (DS1)		$58.01		Brohl
Conference Calling - Meet Me		$14.03	$42.47	Brohl
Conference Calling - Preset		$10.27	$42.47	Brohl
Custom Ringing First Line (Short/Long/Short)		$0.09		Brohl
Custom Ringing First Line (Short/Short)		$0.09		Brohl
Custom Ringing First Line (Short/Short/Long)		$0.09		Brohl
Custom Ringing Second Line (Short/Long/Short)		$0.09		Brohl
Custom Ringing Second Line (Short/Short)		$0.09		Brohl
Custom Ringing Second Line (Short/Short/Long)		$0.09		Brohl
Custom Ringing Third Line (Short/Long/Short)		$0.08		Brohl
Custom Ringing Third Line (Short/Short)		$0.08		Brohl
Custom Ringing Third Line (Short/Short/Long)		$0.08		Brohl
Data Call Protection (DMS 100)		$0.07		Brohl
Dir Sta Sel/Busy Lamp Fld per arrangement		$1.76	$0.34	Brohl
Directed Call Pickup with Barge-in		$0.18	$20.16	Brohl
Directed Call Pickup without Barge-in		$0.10	$20.16	Brohl
Distinctive Ring/Distinctive Call Waiting		$0.09	$40.31	Brohl
Distinctive Ringing		$0.09		Brohl
EBS - Set Interface - per station line		$1.39		Brohl
Executive Busy Override		$0.08		Brohl
Expensive Route Warning Tone- per system		$0.07	$71.91	Brohl
Facility Restriction Level - per system		$0.07	$44.24	Brohl
Feature Display		$0.08		Brohl
Group Intercom		$0.15	$0.46	Brohl
Hot Line - per line		$0.13	$1.01	Brohl
Hunting: Multiposition Circular Hunting		$0.26		Brohl
Hunting: Multiposition Hunt Queuing		$0.22	$38.59	Brohl
Hunting: Multiposition Series Hunting		$0.26		Brohl
Hunting: Multiposition with Announcement in Queue		$3.08	$38.59	Brohl
Hunting: Multiposition with Music in Queue		$1.10	$40.75	Brohl
Incoming Calls Barred		$0.08		Brohl
International Direct Dial Blocking		$0.08		Brohl
ISDN Short Hunt		$0.56	$1.70	Brohl
Line Side Answer Supervision		$0.09		Brohl
Loudspeaker Paging - per trunk group		$21.11	$176.53	Brohl
Make Busy Arrangements - per group		$0.35	$0.67	Brohl
Make Busy Arrangements - per line		$0.14	$0.67	Brohl
Message Center - per main station line		$0.07	$0.34	Brohl
Message Waiting Indication Audible/Visual		$0.13		Brohl
Message Waiting Visual		$0.13	$0.34	Brohl
Music On Hold - per system		$21.99	$23.13	Brohl
Network Speed Call		$0.08		Brohl
Night Service Arrangement		$0.08		Brohl
Outgoing Calls Barred		$0.08		Brohl
Outgoing Trunk Queuing		$0.13		Brohl
Privacy Release		$0.08	$0.47	Brohl
Query Time		$0.24	$0.34	Brohl
Speed Calling 1 Digit Controller		$0.08		Brohl
Speed Calling 1 Digit User		$0.08		Brohl
Speed Calling 1# List Individual		$0.08		Brohl
Speed Calling 2 Digit Controller		$0.08		Brohl
Speed Calling 2 Digit User		$0.08		Brohl
Speed Calling 2# List Individual		$0.08		Brohl
Speed Calling 30 Number		$0.08		Brohl
Speed Calling 8 Number		$0.08		Brohl
Station Camp-On Service - per main station		$8.18	$0.34	Brohl
Station Dial Conferencing (6 Way)		$1.64		Brohl
Station Message Detail Recording (SMDR)		$0.18		Brohl
Three Way Calling		$0.32		Brohl

		Recurring	Non- Recurring	Witness
	Time and Date Display	$0.18		Brohl
	Time of Day Control for ARS - per system	$0.07	$125.82	Brohl
	Time of Day NCOS Update	$0.08	$0.54	Brohl
	Time of Day Routing - per line	$0.13	$0.52	Brohl
	Toll Restriction Service	$0.08		Brohl
	Trunk Answer Any Station	$0.08		Brohl
	Trunk Verification from Designated Station	$0.07	$0.39	Brohl
	UCD in hunt group - per line	$7.92	$0.67	Brohl
	UCD with Music After Delay	$5.24		Brohl
	CMS - SYSTEM ESTABLISHMENT - INITIAL INSTALLATION		$971.60	Brohl
	CMS - SYSTEM ESTABLISHMENT - SUBSEQUENT INSTALLATION		$485.80	Brohl
	CMS - PACKET CONTROL CAPABILITY, PER SYSTEM		$485.80	Brohl
	SMDR-P - SERVICE ESTABLISHMENT CHARGE, INITIAL INSTALLATION		$339.30	Brohl
	SMDR-P - ARCHIVED DATA		$177.29	Brohl
9.11.5	Subsequent Order Charge		$13.57	Brohl
9.11.6	Digital Line Side Port (Supporting BRI ISDN)			
	First Port	$10.56	$219.37	Brohl
	Each Additional Port	$10.56	$219.37	Brohl
9.11.7	Digital Trunk Ports			
	DS1 Local Message Trunk Port	$56.98		Brohl
	Message Trunk Group, First Trunk		$209.14	Brohl
	Message Trunk Group, Each Additional		$50.84	Brohl
	DS1 PRI ISDN Trunk Port	$228.78	$648.55	Brohl
	DS1 / DID Trunk Port	$3.38	$212.74	Brohl
9.11.8	DS0 Analog Trunk Port			
	First Port	$15.78	$123.11	Brohl
	Each Additional	$15.78	$28.57	Brohl
9.12 Customized Routing				
9.12.1	Development of Custom Line Class Code – Directory Assistance or Operator Services Routing Only		ICB	Brohl
9.12.2	Installation Charge, per Switch Directory Assistance or Operator Service Routing Only		ICB	Brohl
9.12.3	All Other Custom Routing	ICB	ICB	Brohl
9.13 Common Channel Signaling/SS7				
9.13.1	CCSAC STP Port	$249.69	$440.28	Brohl
9.13.2	CCSAC Options Activation Charge			
	9.13.2.1 Basic Translations			
	First Activation, per Order		$115.34	Brohl
	Each Additional Activation, per Order		$9.58	Brohl
	9.13.2.2 CCSAC Options Database Translations			
	First Activation per Order		$134.49	Brohl
	Each additional Activation per Order		$57.45	Brohl
9.13.3	Signal Formulation, ISUP, Per Call Set-Up Request	$0.0020272		Brohl
9.13.4	Signal Transport, ISUP, Per Call Set-Up Request	$0.0013148		Brohl
9.13.5	Signal Transport, TCAP, per Data Request	$0.0002914		Brohl
9.13.6	Signal Switching, ISUP, Per Call Set-Up Request	$0.0009192		Brohl
9.13.7	Signal Switching, TCAP, Per Data Request	$0.0005754		Brohl
9.14 Advanced Intelligent Network (AIN)				
9.14.1	AIN Customized Services (ACS)		ICB	Brohl
9.14.2	AIN Platform Access (APA)	ICB	ICB	Brohl
9.14.3	AIN Query Processing, per Query	ICB		Brohl
9.15 Line Information Database (LIDB)				
9.15.1	LIDB Storage		No Charge	Brohl
9.15.2	Line Validation Administration System Access (LVAS)		ICB	Brohl

		Recurring	Non- Recurring	Witness
9.15.2.1 LIDB Line Record Initial Load				
9.15.2.1.1 Up to 20,000 Line Records			$2,601.00	Brohl
9.15.2.1.2 Over 20,000 Line Records			ICB	Brohl
9.15.2.2 Mechanized Service Account Update, per Addition or Update Processed			ICB	Brohl
9.15.2.3 Individual Line Record Audit			ICB	Brohl
9.15.2.4 Account Group Audit			ICB	Brohl
9.15.2.5 Expedited Request Charge for Manual Updates			ICB	Brohl
9.15.3 LIDB Query Service, per Query		$0.0009435	See 9.13.2.2	Brohl
9.15.4 Fraud Alert Notification, per Alert		No Charge		Brohl
9.16 8XX Database Query Service				
9.16.1 Basic Query, per Query		$0.02007675	See 9.13.2.2	Brohl
9.16.2 POTS Translation		$0.00000165		Brohl
9.16.3 Call Handling & Destination Feature		$0.00000055		Brohl
9.17 ICNAM, Per Query		$0.000836	See 9.13.2.2	Brohl
9.18 Construction Charges		ICB	ICB	Kennedy
9.19 Miscellaneous Charges				
*** Per 1/2 hour or fraction thereof**				
* Additional Engineering – Basic			$31.84	Kennedy
* Additional Engineering – Overtime			$39.38	Kennedy
* Additional Labor Installation – Overtime			$9.05	Kennedy
* Additional Labor Installation – Premium			$18.10	Kennedy
* Additional Labor Other – Basic			$27.75	Kennedy
* Additional Labor Other – Overtime			$37.06	Kennedy
* Additional Labor Other – Premium			$46.39	Kennedy
* Testing and Maintenance – Basic			$29.48	Kennedy
* Testing and Maintenance – Overtime			$39.38	Kennedy
* Testing and Maintenance – Premium			$49.28	Kennedy
* Maintenance of Service – Basic			$27.75	Kennedy
* Maintenance of Service – Overtime			$37.06	Kennedy
* Maintenance of Service – Premium			$46.39	Kennedy
* Additional COOP Acceptance Testing – Basic			$29.48	Kennedy
* Additional COOP Acceptance Testing – Overtime			$39.38	Kennedy
* Additional COOP Acceptance Testing – Premium			$49.28	Kennedy
* NonScheduled COOP Testing - Basic			$29.48	Kennedy
* NonScheduled COOP Testing – Overtime			$39.38	Kennedy
* NonScheduled COOP Testing – Premium			$49.28	Kennedy
* NonScheduled Manual Testing – Basic			$29.48	Kennedy
* NonScheduled Manual Testing – Overtime			$39.38	Kennedy
* NonScheduled Manual Testing – Premium			$49.28	Kennedy
* Cooperative Scheduled Testing - Loss			$0.08	Kennedy
* Cooperative Scheduled Testing - C Message Noise			$0.08	Kennedy
* Cooperative Scheduled Testing - Balance			$0.33	Kennedy
* Cooperative Scheduled Testing - Gain Slope			$0.08	Kennedy
* Cooperative Scheduled Testing - C Notched Noise			$0.08	Kennedy
* Manual Scheduled Testing - Loss			$0.17	Kennedy
* Manual Scheduled Testing -C- Message Noise			$0.17	Kennedy
* Manual Scheduled Testing - Balance			$0.67	Kennedy
* Manual Scheduled Testing - Gain Slope			$0.17	Kennedy
* Manual Scheduled Testing - C Notched Noise			$0.17	Kennedy
Additional Dispatch			$84.60	Kennedy
Date Change			$10.40	Kennedy
Design Change			$74.10	Kennedy
Expedite Charge			ICB	Kennedy
Cancellation Charge			ICB	Kennedy
9.20 Channel Regeneration				
DS1 Regeneration		$1.97	$480.53	Kennedy
DS3 Regeneration		$6.09	$1,817.89	Kennedy
9.21 Reserved for future use.				
9.22 Reserved for future use.				

		Recurring	Non- Recurring	Witness
9.23 UNE Combinations				
9.23.1 UNE-P Conversion Non-Recurring Charges				
9.23.1.1 UNE-P POTS, CENTREX, PAL, PBX,				
First			$0.68	Brohl
Each Additional			$0.14	Brohl
9.23.1.2 UNE-P POTS, CENTREX, PAL, PBX, Manual				
First			$16.28	Brohl
Each Additional			$2.71	Brohl
9.23.1.3 UNE-P PBX DID				
First			$20.70	Brohl
Each Additional			$3.13	Brohl
9.23.1.4 UNE-P ISDN BRI				
First			$15.15	Brohl
Each Additional			$3.13	Brohl
9.23.1.5 UNE-P ISDN PRI, DSS per DS1 Facility			$51.22	Brohl
9.23.1.6 UNE-P ISDN PRI, DSS Trunk				
First			$18.85	Brohl
Each Additional			$3.13	Brohl
9.23.2 UNE-P New Connection Non-Recurring Charges				
9.23.2.1 UNE-P POTS Mechanized				
First			$55.56	Brohl
Each Additional			$15.94	Brohl
9.23.2.2 UNE-P POTS Manual				
First			$82.49	Brohl
Each Additional			$18.52	Brohl
9.23.3 UNE-Combination Private Line				
DS0/DS1/DS3/OCN/Integrated T-1 Existing Service			$41.05	Kennedy
9.23.4 Enhanced Extended Loop (EEL)				
9.23.4.1 EEL Link				
DS0			$250.19	Kennedy
Zone 1		$18.96		Kennedy
Zone 2		$34.94		Kennedy
Zone 3		$56.53		Kennedy
Each Additional			$218.81	Kennedy
DS1			$308.19	Kennedy
Zone 1		$84.48		Kennedy
Zone 2		$84.57		Kennedy
Zone 3		$91.39		Kennedy
Each Additional			$262.31	Kennedy
DS3			$332.66	Kennedy
Zone 1		$897.72		Kennedy
Zone 2		$899.73		Kennedy
Zone 3		$1,053.66		Kennedy
Each Additional			$286.78	Kennedy
	Recurring Fixed	**Recurring Per Mile**	**Nonrecurring**	
9.23.4.2 EEL Transport				
DS0			$307.95	Kennedy
DS0 Over 0 to 8 Miles	$19.27	$0.13		Kennedy
DS0 Over 8 to 25 Miles	$19.29	$0.12		Kennedy
DS0 Over 25 to 50 Miles	$19.33	$0.12		Kennedy
DS0 Over 50 Miles	$19.28	$0.06		Kennedy
DS1			$352.92	Kennedy
DS1 Over 0 to 8 Miles	$31.14	$1.45		Kennedy

		Recurring	Non- Recurring	Witness
DS1 Over 8 to 25 Miles	$31.40	$1.18		Kennedy
DS1 Over 25 to 50 Miles	$31.87	$2.14		Kennedy
DS1 Over 50 Miles	$31.83	$1.12		Kennedy
DS3			$352.92	Kennedy
DS3 Over 0 to 8 Miles	$197.32	$61.17		Kennedy
DS3 Over 8 to 25 Miles	$200.35	$18.78		Kennedy
DS3 Over 25 to 50 Miles	$184.41	$23.73		Kennedy
DS3 Over 50 Miles	$194.79	$16.34		Kennedy
		Recurring	Nonrecurring	
9.23.4.3 Multiplexing				
DS3 to DS1		$232.15	$268.62	Kennedy
DS1 to DS0		$210.68	$268.62	Kennedy
9.23.4.4 DS0 Channel Performance				
DS0 Low Side Channelization		$11.52		Kennedy
DS1/DS0 MUX, Low Side Channelization		$7.35	$239.83	Kennedy
9.23.4.5 Concentration Capability		ICB		Kennedy
9.24 Unbundled Packet Switching				
9.24.1 Unbundled Packet Switch Customer Channel		$23.45		Kennedy
DSLAM		$20.29		Kennedy
9.24.2 Customer Channel and Shared Distribution Loop			$60.14	Kennedy
Customer Channel and Unbundled Distribution Subloop			$127.17	Kennedy
Customer Channel and CLEC Provided Loop			60.14	Kennedy
9.24.3 Unbundled Packet Switch Port				
DS1 Interface		$208.02	$227.50	Kennedy
DS3 Interface		$135.05	$227.50	Kennedy
10.0 Ancillary Services				Brotherson
10.1 Local Number Portability	See FCC Tariff #1 Section 20.3.1 & 20.3.3			
10.1.1 LNP Queries				
10.1.2 LNP Managed Cuts			$27.31	6
Standard Managed Cuts per person per 1/2 Hr.			$35.43	6
Overtime Managed Cuts per person per 1/2 Hr.			$43.49	6
Premium Managed Cuts per person per 1/2 Hr.				
10.2 911/E911		No Charge		2
10.3 White Pages Directory Listings, Facility Based Providers				
10.3.1 Primary Listing		No Charge		2
10.3.2 Premium/Privacy Listings		General Exchange Tariff Rate, less wholesale discount		
10.4 Directory Assistance, Facility Based Providers				
10.4.1 Local Directory Assistance, Per Call		$0.34		2
10.4.2 National Directory Assistance, per Call		$0.385		2
10.4.3 Call Branding, Set- Up and Recording			$10,500.00	2
10.4.4 Loading Brand /Per Switch			$175.00	2
10.4.5 Call Completion Link, per call		$0.085		
10.5 Directory Assistance List Information				
10.5.1 Initial Database Load, per Listing		$0.025		2
10.5.2 Reload of Database, per Listing		$0.02		2
10.5.3 Daily Updates, per Listing		$0.025		2
10.5.4 One-time Set-Up Fee, per Hour			$82.22	2
10.5.5 Media Charges for File Delivery				
10.5.5.1 Electronic Transmission		$0.001		2

		Recurring	Non- Recurring	Witness
10.5.5.2 Tapes (charges only apply if this is selected as		$30.00		
10.5.5.3 Shipping Charges (for tape delivery)			ICB	3
10.6 Toll and Assistance Operator Services, Facility Based Providers,				
10.6.1 **Option A** – Per Message				
Operator Handled Calling Card		$1.45		2
Machine Handled Calling Card		$0.60		2
Station Call		$1.50		2
Person Call		$3.50		2
Connect to Directory Assistance		$0.75		2
Busy Line Verify, per Call		$0.72		
Busy Line Interrupt		$0.87		
Operator Assistance, per Call		$0.87		2
10.6.2 **Option B** – Per Operator Work Second and Computer Handled Calls				
Operator Handled, per Operator Work Second		$0.181		2
Machine Handled, per Call		$0.25		2
10.6.3 Call Branding, Set-Up & Recording			$10,500.00	2
10.6.4 Loading Brand/Per Switch			$175.00	2
10.7 Access to Poles, Ducts, Conduits and Rights of Way				
10.7.1 Pole Inquiry Fee, per Mile			$322.99	Kennedy
10.7.2 Innerduct Inquiry Fee, per Mile			$388.25	Kennedy
10.7.3 ROW Inquiry Fee			$143.49	Kennedy
10.7.4 ROW Doc Prep Fee			$143.49	Kennedy
10.7.5 Field Verification Fee, per Pole			$35.87	Kennedy
10.7.6 Field Verification Fee, per Manhole			$466.34	Kennedy
10.7.7 Planner Verification, Per Manhole			$16.00	Kennedy
10.7.8 Manhole Verification Inspector Per Manhole			$286.98	Kennedy
10.7.9 Manhole Make-Ready Inspector, per Manhole			$430.47	Kennedy
10.7.10 Pole Attachment Fee, per Foot, per Year		$4.28		Kennedy
10.7.11 Innerduct Occupancy Fee, per Foot, per Year		$0.36		Kennedy
10.7.12 Access Agreement Consideration			$10.00	Kennedy
12.0 Operational Support Systems				
12.1 Daily Usage Record File, per Record		$0.000746		Brohl
12.2 Trouble Isolation Charge			Section 13, Qwest's Arizona Exchange and Network Services Catalog	
17.0 Bona Fide Request Process				
17.1 Processing Fee			$2,410.58	Kennedy

NOTES:
[1] Reserved for future use
[2] Market-based rates not proposed in Arizona Cost Docket (Consolidated Arbitration).
[3] ICB, Individual Case Basis pricing.
[4] Reserved for future use

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194**

REBUTTAL TESTIMONY OF

RENÉE ALBERSHEIM

QWEST CORPORATION

JUNE 27, 2001

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Renée Albersheim. I am employed by Qwest Corporation (Qwest) as a Staff Advocate for Policy and Law in the Information Technologies Wholesale Organization. My business address is 1999 Broadway, 10th Floor, Denver, Colorado 80202.

Q. HAVE YOU FILED TESTIMONY IN THIS DOCKET BEFORE?

A. Yes. I filed direct testimony in this docket on March 15, 2001.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to statements made by Mr. Roy Lathrop in his direct testimony.[1] I am also responding to the testimony of Mr. William Dunkel,[2] and Mr. Thomas H. Weiss.[3]

III. DATABASE CLEANUP

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[1] *See Direct Testimony of Roy Lathrop on Behalf of WorldCom, Inc., AT&T of the Mountain States, Inc., and XO Arizona, Inc., In The Matter of Investigation Into Qwest Corporation's Compliance with Certain Wholesale Pricing Requirements For Unbundled Network Elements and Resale Discounts, Docket No. T-00000A-00-0194*, Filed May 16, 2001, "Lathrop Direct."

[2] *See Direct Testimony of William Dunkel on Behalf of the Staff of the Arizona Corporation Commission, In The Matter of Investigation Into Qwest Corporation's Compliance with Certain Wholesale Pricing Requirements For Unbundled Network Elements and Resale Discounts, Docket No. T-00000A-00-0194*, Filed June 13, 2001, "Dunkel Direct."

[3] *See Direct Testimony of Thomas H. Weiss on Behalf of the Joint Case of AT&T of the Mountain States, Inc., WorldCom, Inc., and XO Arizona, Inc., In The Matter of Investigation Into Qwest Corporation's Compliance with Certain Wholesale Pricing Requirements For Unbundled Network Elements and Resale Discounts, Docket No. T-00000A-00-0194*, Filed May 16, 2001, "Weiss Direct."

1 **Q. MR. LATHROP STATES THAT CLECS SHOULD NOT BE REQUIRED TO**
2 **PAY FOR THE CLEANUP OF ILEC DATABASES.[4] IS HE CORRECT?**
3 A. Yes. If Qwest "cleans up" a database, both Qwest and the CLECs that use
4 the same database benefit from more accurate data.

5 **Q. HAS QWEST ENDEAVORED TO IMPROVE THE ACCURACY OF ITS**
6 **DATABASES?**
7 A. Yes. Qwest continuously works to improve the accuracy and completeness
8 of the data in its databases.

9 **Q. DOES QWEST ASK CLECS TO PAY THE COSTS OF IMPROVING THE**
10 **ACCURACY OF ITS DATABASES?**
11 A. No. Qwest is well aware that it would be inappropriate to ask CLECs to pay
12 the costs of OSS enhancements that are of benefit to Qwest in addition to the
13 CLECs. Qwest has not and does not intend to seek recovery of such costs
14 from CLECs.

15 **Q. HAS QWEST INCLUDED THE COST OF "DATABASE CLEANUP" IN THE**
16 **OSS COSTS FOR LINE SHARING THAT WERE FILED IN THIS DOCKET?**
17 A. No. By discussing "database cleanup" Mr. Lathrop implies that such costs
18 were included in the OSS cost filings in this docket. They were not. The only
19 costs Qwest included were those necessary to provide pre-ordering, ordering,
20 provisioning, billing and maintenance OSS functions for line sharing. As I
21 stated in my direct testimony, but for the requirement to provide line sharing,

[4] *See* Lathrop Direct at Page 11, Lines 7 through 21.

Qwest would not have incurred these costs. While Qwest has made improvements to its databases, for the benefit of CLECs as well as for its own business, Qwest has not included database cleanup costs in this docket.

IV. COST OF LINE SHARING

Q. MR. DUNKEL SUGGESTS THAT THERE IS NO BASIS FOR QWEST'S CLAIM THAT 85% OF THE COST OF THE TELCORDIA LINE SHARING SOFTWARE IS EXCLUSIVELY FOR LINE SHARING.[5] IS THIS ACCURATE?

A. No. In response to a formal request from Qwest, Telcordia Technologies, Inc. (Telcordia) provided written confirmation that 85% of the software cost applies exclusively to line sharing. Qwest provided, as a confidential attachment to an AT&T data request, a redacted copy of the letter received from Telcordia.[6] Qwest believes it is appropriate to reduce the cost associated with the Telcordia line sharing solution by the 15% identified by Telcordia.

Q. MR. DUNKEL OBSERVES THAT THE PERMANENT LINE SHARING SOLUTION DOESN'T ENABLE ANY ADDITIONAL LINE SHARING SERVICES.[7] IS HE CORRECT?

A. Yes.

Q. DID QWEST PURCHASE THE PERMANENT LINE SHARING SOLUTION IN ORDER TO ADD LINE SHARING SERVICES?

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[5] *See* Dunkel Direct at Page 32, footnote 43.

[6] *See Response to AT&T Data Request* 002-060.

A. No. The permanent solution does not make any changes to the product 'per se', as Mr. Dunkel suggested in his discovery request to Qwest.[8] But that was never the intent of the permanent solution.[9] Qwest put the interim line sharing solution in place very quickly, in order to make it possible for CLECs to order line sharing. The interim solution required manual intervention, and was always intended as a temporary process.

All line sharing orders submitted through the interim process were forced to "fall out" of the system for manual handling. Those line sharing orders did not flow through Qwest's OSS. The permanent solution was necessary to improve flow through for line sharing orders.

It should also be noted that the permanent line sharing solution makes it possible for Qwest to implement OSS changes required for other shared products such as shared distribution loops.

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[7] See Dunkel Direct at page 34.

[8] *See* Dunkel Direct at page 34 and *Staff Data Request WD 4-94(e).*

[9] Qwest made this point clear when responding to Mr. Dunkel's data request. Mr. Dunkel asked:

> Please explain what line sharing service cannot be provided as part of the "interim" solution, but would be provided as part of the "long term" solution.

The **full** response to the data request stated:

> See Exhibit RA-2 Gap Analysis for a comparison of the Interim Solution to the long-term solution. The primary purpose of the long-term solution was to establish automated processes for ordering, billing, provisioning, and repair of line sharing. There is no difference in 'what line sharing service' could or could not be provided. The difference between the interim and long-term solutions is a difference in the automation of line sharing processes via Qwest OSS.

Q. MR. DUNKEL CRITICIZES THE CUSTOMIZED NATURE OF THE LINE SHARING SOLUTION THAT QWEST PURCHASED FROM TELCORDIA.[10] IS THIS CRITICISM FAIR?

A. No. While it is true that all ILECs were ordered by the FCC to provide line sharing, Qwest was in a unique situation. When Qwest was ordered by the Minnesota Public Utilities Commission to implement line sharing,[11] Qwest became the first ILEC to have this obligation. This obligation made it necessary for Qwest to respond quickly in order to implement line sharing prior to the other ILECs. As I stated in my direct testimony, many of the systems that had to be changed to accommodate line sharing are owned by Telcordia. Qwest does not own the source code to these systems and therefore does not have the right to modify the code. Legally, Qwest could not modify these systems itself or hire other companies besides Telcordia to modify them. Only Telcordia could access the source code to carry out the modifications needed to support line sharing for those systems.

Q. MR. DUNKEL SUGGESTS THAT QWEST SHOULD HAVE NEGOTIATED WITH OTHER ILECS TO SHARE THE COSTS FOR TELCORDIA SOFTWARE.[12] WAS THAT FEASIBLE OR EVEN POSSIBLE?

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[10] *See* Dunkel Direct at page 35.

[11] *See In the Matter of a Commission Initiated Investigation into the Practices of Incumbent Local Exchange Companies Regarding Shared Line Access, Minnesota Public Utilities Commission, Docket No. P-999/CI-99-678, at 6* (Issued October 8, 1999).

[12] *See* Dunkel Direct at Page 35 and 36.

A. Not really. First, while a joint negotiation might have been possible in theory, recall that Qwest was required to implement line sharing in Minnesota prior to other ILECs being required to implement in any of the states in their regions. A lengthy negotiation process with the other ILECs would have slowed the process dramatically and, seeing as how at the time, the other ILECs were not yet required to implement line sharing, it is doubtful any of the other ILECs would have agreed to collaborate with Qwest.

All contracts such as this line sharing package are negotiated with Telcordia, and Qwest negotiated for the best deal it could get at the time.

Second, Telcordia is in the business of selling telecommunications software and services. Each ILEC is a separate customer of Telcordia, and Telcordia deals with each company individually. In the past, the ILECs shared ownership in Telcordia's predecessor company, Bellcore. But the ILECs divested their ownership in Bellcore a long time ago, and today Telcordia is a completely independent entity. Therefore, each ILEC has an independent business relationship with Telcordia.

Third, even if collaboration with the other ILECs was possible or feasible, Qwest did not know if the other ILECs' software was sufficiently similar to Qwest's to allow for quick development of a common solution. Though it is true that the ILECs all use certain core software applications that they have leased from Telcordia, the software is not necessarily identical. Each ILEC requires changes to the software they lease from Telcordia in order to

integrate that software into their unique OSS. Such changes can involve work on ILEC owned software, but it can also require changes to the Telcordia software as well. For example, Qwest has three licenses for Telcordia's LFACS software. Each license serves a different region. These regions are known internally to Qwest as Eastern (formerly Northwestern Bell), Central (formerly Mountain Bell), and Western (formerly Pacific Northwest Bell). Some of the OSS in each region are still uniquely different. If Qwest's own internal systems have differences, then certainly there will be differences between Qwest's OSS and the OSS of other ILECs.

Finally, I will reiterate that when Qwest was ordered to provide line sharing, Telcordia had not yet created releases of its software to allow for line sharing. In effect, Telcordia and Qwest learned the technical software requirements of line sharing at the same time.

V. CLEC TECHNICAL ASSUMPTIONS

Q. PLEASE COMMENT ON EXHIBIT THW-13 SUBMITTED WITH THE DIRECT TESTIMONY OF MR. THOMAS H. WEISS.

A. The exhibit is titled NRCM Technical Assumptions Binder. As Mr. Weiss states in his testimony, this exhibit contains purported support for the AT&T/WorldCom Non-Recurring Cost Model.[13] Mr. Weiss states that he is responsible for explaining this exhibit,[14] but no explanation is provided in his

[13] *See* Weiss Direct at Page 89.
[14] *Id.*

testimony. It is appropriate that the title contains the word "assumptions." The document contains a high-level data flow diagram purported to show an efficient telecommunications OSS. There is no support explaining why this set of applications and this particular data flow is the correct, or ideal, or standard data flow for a telecommunications OSS.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.	]	DOCKET NO. T-00000A-00-0194 PHASE II

REBUTTAL TESTIMONY OF

BARBARA J. BROHL

ON BEHALF OF

QWEST CORPORATION

JUNE 27, 2001

REBUTTAL TESTIMONY OF BARBARA J. BROHL

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I. IDENTIFICATION OF WITNESS

Q. ARE YOU THE SAME BARBARA J. BROHL THAT HAS PREVIOUSLY FILED TESTIMONY IN THIS COST DOCKET?

A. Yes. I am the same Barbara J. Brohl who filed Direct and Supplemental Direct Testimony in this cost docket.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the testimony submitted by both Mr. Chandler and Mr. Ed Caputo.

Q. WHAT ISSUES WILL YOU ADDRESS IN MR. CHANDLER'S TESTIMONY?

A. I will address the limited circumstances in which Qwest is obligated to unbundle packet switching. Mr. James C. Overton will address the technical aspects and Ms.Terri Million will address any cost issues.

Q. WHAT ISSUES WILL YOU ADDRESS IN MR. ED CAPUTO'S TESTIMONY?

A. I will address the issues of the Qwest process for Custom Routing and the rationale of Individual Case Based prices for custom routing. Additionally I will address the Qwest obligation for unbundled access to its ICNAM information. Mr. James C. Overton will address the technical aspects and Ms. Terri Million will address any cost issues.

II. REBUTTAL TO MR. CHANDLER

Q. DOES MR. CHANDLER'S TESTIMONY ACKNOWLEDGE THAT THE FCC HAS RULED THAT PACKET SWITCHING IS TO BE UNBUNDLED ONLY IN A LIMITED CIRCUMSTANCE?

A. No. Mr. Chandler does not acknowledge the limited circumstance of unbundling packet switching pursuant to the FCC.

Q. DID THE FCC DECLINE TO ORDER THE UNBUNDLING OF SPECIFIC PACKET TECHNOLOGIES.

A. Yes. Paragraphs 304 and 311, FCC 99-238 (Third Report and Order), acknowledge the FCC did not intend to unbundle specific packet technologies.

Q. WHAT DOES THE FCC CONCLUDE IN ITS UNBUNDLING ANALYSIS FOR PACKET SWITCHING?

A. The FCC declined to unbundle packet switching functionality except in limited circumstances at paragraph 306, FCC 99-238.

Q. PLEASE RESTATE THE QWEST OBLIGATION TO OFFER UNBUNDLED PACKET SWITCHING?

A. As stated in my direct testimony Qwest is obligated to only unbundle its packet switching in a limited circumstance.

Q. PLEASE RESTATE THE LIMITED CIRCUMSTANCE IN WHICH QWEST HAS AN OBLIGATION TO OFFER UNBUNDLED PACKET SWITCHING.

A. Qwest is obligated to offer unbundled packet switching when the following four conditions exist:

- Qwest has deployed digital loop carrier systems (DLC);
- There are no spare copper loops available capable of supporting xDSL services;
- Qwest has placed a DSLAM for its own use in a remote Qwest premises but has not permitted CLEC to collocate its own DSLAM at the same remote Qwest premises; and
- Qwest has deployed packet switching capability for its own use

Q. WHAT AUTHORITY DOES QWEST RELY UPON IN ITS ASSERTION THAT ACCESS TO UNBUNDLED PACKET SWITCHING IS REQUIRED ONLY IN A VERY LIMITED CIRCUMSTANCE?

A. In its UNE Remand Order, the FCC found "one limited exception to [its] decision to decline to unbundle packet switching." [1] The FCC then laid out its criteria: where the ILEC has deployed digital loop carrier (DLC) systems, no spare copper facilities are available, and the incumbent has placed its DSLAM in a remote terminal. The FCC went on to find that the ILEC will not be required to offer access to unbundled packet switching "if it permits a requesting carrier to collocate its DSLAM in the incumbent's remote terminal, on the same terms and conditions that apply to its own DSLAM."[2]

Q. WILL QWEST ALLOW A CLEC TO COLLOCATE ITS DSLAM IN ITS REMOTE TERMINAL?

A. Yes. Qwest will allow collocation of CLEC DSLAMs in its remote terminals at a mounting unit level where space is available.

Q. ARE CLECS PRESENTLY PROVIDING ADVANCED SERVICES TO THE MARKET ?

A. Yes.

III. REBUTTAL TO MR. ED CAPUTO

Q. PLEASE DEFINE CUSTOM ROUTING.

A. Customized Routing permits CLEC to designate a particular outgoing trunk that will carry certain classes of traffic originating from CLEC's end-users. Customized routing enables CLEC to direct particular classes of calls to particular outgoing trunks which will permit CLEC to self-provide or select among other providers of interoffice facilities, operator services and directory assistance. Customized routing is a software function of a switch. Customized Routing may be ordered as an application with Resale or Unbundled Local Switching.

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1 UNE Remand Order ¶313.

2 Id.

Q. DOES QWEST HAVE A PROCESS FOR A CLEC TO SUBMIT A REQUEST FOR CUSTOM PRICING?

A. Yes.

Q. PLEASE SUMMARIZE THE QWEST CUSTOM ROUTING REQUEST PROCESS FOR A CLEC.

A. A CLEC will make its request for Custom Routing to its Service Manager, information regarding the end offices, facilities, and routing will be needed from the CLEC. A meeting will be held with the appropriate Qwest and CLEC team members to review and discuss the CLECs request. Upon both parties agreement of the request, Qwest will have the proposed request costed at TELRIC and propose timelines. The CLEC will need to agree to the prices and the timelines by submitting a 50% payment prior to implementation.

Q. PLEASE EXPLAIN WHY CUSTOM ROUTING IS PRICED ON INDIVIDUAL CASE BASIS.

A. Each CLEC will have a unique design based on its specific requirements. The establishment of custom routing in itself is a custom design not a standard design and lends itself to the individual case based pricing of the specifics of the given design. Some examples are: what is to be routed, how many end offices will be routed, are routes in presently in place, etc…

Q. IF A CLEC DISPUTES THE TELRIC PRICE IS THERE A PROCESS TO MANAGE THE DISPUTE?

A. Dispute Resolution may be used to resolve any concerns regarding the TELRIC price.

Q. PLEASE DESCRIBE ICNAM.

A. InterNetwork Calling Name (ICNAM) is a Qwest service that allows CLEC to query Qwest's ICNAM database and secure the listed name information for the requested telephone number (calling number), in order to deliver that information to CLEC's end users.

Q. DOES QWEST HAVE AN OBLIGATION TO PROVIDE UNBUNDLED ACCESS TO ICNAM?

A. Pursuant to the FCC UNE Remand, paragraph 400, Qwest has an obligation to provide unbundled access to its ICNAM database for the purpose of switch query and database responses through the SS7 network.

Q. DOES QWEST FOLLOW THE INDUSTRY STANDARDS FOR THE TCAP QUERY PROCESS USED FOR ICNAM ?

A. Yes. The Qwest TCAP query process follows the industry guidelines. Thus, the timing issue Mr. Caputo addresses in his testimony is based on the industry standard.

Q. DOES QWEST REQUIRE THAT IT USE THE SAME TCAP QUERY PROCESS FOR ITSELF IN ACCESSING ICNAM INFORMATION AS IT REQUIRES OF CLECS?

A. Yes. Qwest uses the same TCAP query process that it requests of CLECs.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes. I have concluded my rebuttal testimony.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S,	)	DOCKET NO. T-00000A-00-0194
COMPLIANCE WITH CERTAIN	)	PHASE II
WHOLESALE PRICING REQUIREMENTS	)	
FOR UNBUNDLED NETWORK	)	
ELEMENTS AND RESALE DISCOUNTS	)	

REBUTTAL TESTIMONY OF

LARRY B. BROTHERSON

QWEST CORPORATION

JUNE 27, 2001

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1. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Larry B. Brotherson. I am employed by Qwest Corporation ("Qwest"), as a Director in the Wholesale Markets Organization. My business address is 1801 California Street, Room 2350, Denver, Colorado 80202.

Q. ARE YOU THE SAME LARRY B. BROTHERSON WHO FILED DIRECT TESTIMONY IN THIS DOCKET?

A. Yes.

II. PURPOSE

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to rebut the direct testimonies of Messers. Caputo and Gillan with regard to Directory Assistance and Operator Services. I also address the direct testimony of Mr. William Dunkel with regard to reciprocal compensation.

III. DIRECTORY ASSISTANCE AND OPERATOR SERVICES

Q. DOES THE FCC REQUIRE QWEST TO UNBUNDLE DIRECTORY ASSISTANCE AND OPERATOR SERVICES?

A. No. The FCC's UNE Remand Order establishes that an ILEC is not required to unbundle Directory Assistance and Operator Services except in the limited circumstances where the ILEC does not provide customized routing to allow a requesting provider to route traffic to alternative providers.[1]

Q. DO YOU AGREE WITH MR. GILLIAN'S ASSERTION THAT QWEST DOES NOT PROVIDE EFFICIENT CUSTOMIZED ROUTING SO THAT UNE-P ENTRANTS CAN DIRECT THEIR OPERATOR AND DIRECTORY TRAFFIC TO AN ALTERNATIVE PROVIDER?

A. No. In fact, the rebuttal testimony of Ms. Barbara Brohl describes Qwest's custom routing process.

Q. MR. CAPUTO CLAIMS THAT QWEST'S MARKET-BASED PRICING FOR DIRECTORY ASSISTANCE AND OPERATOR SERVICES IS DISCRIMINATORY. DO YOU AGREE?

A. No. The Act's requirement of cost-based rates applies to network elements that ILECs are required to unbundle. As the FCC stated, "obligations that do not fall within a BOC's obligations to provide unbundled network elements are not subject to the requirements of Sections 251 and 252, including the requirement that rates be based on forward-looking economic costs." [2]

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[1] UNE Remand Order at Paragraphs 441 and 442.

[2] In the Matter of Application by SBC Communications, Inc. Pursuant to Section 271 of the Telecommunications Act of 1996, FCC, CC Docket No. 00-65, Memorandum Opinion and Order ¶348 (June 30, 2000.

Q. WHAT DOES QWEST RECOMMEND REGARDING THE PRICING OF DIRECTORY ASSISTANCE AND OPERATOR SERVICES?

A. Because the FCC has excluded Directory Assistance and Operator Services from the UNEs that ILECs must unbundle, Qwest recommends the Commission adopt its proposed market-based rates.

IV. RECIPROCAL COMPENSATION

Q. DO YOU AGREE WITH MR. DUNKEL THAT THE ISSUE RELATED TO RECIPROCAL COMPENSATION THAT DEALS WITH END OFFICE VERSUS TANDEM RATES IS BEING DISCUSSED IN THE 271 WORKSHOPS?

A. Yes. In fact the issue disputed in the 271 workshops has been resolved. The Commission in its May 15, 2001, Report on Qwest's Compliance with Checklist Item No. 13, at paragraph 82 states:

> Staff agrees that the changes requested by both AT&T and Qwest are appropriate. The modifications requested by AT&T will ensure that a CLEC switch can and will be treated as a "tandem switch" where appropriate. The additional change requested by Qwest will allow the parties to charge for the switching and transport they actually perform for the other, thus preventing a windfall to either party. This will prevent charging both the "tandem switching rate" and "end office rate" for switching traffic twice in those instances where traffic is actually switched only once.

Q. IN LIGHT OF THE FCC'S RECENT ISP II ORDER, IS THE APPROPRIATE FORM OF COMPENSATION FOR ISP TRAFFIC STILL AT ISSUE IN THIS PROCEEDING?

1 A. No. In its ISP Order II, the FCC ruled that Internet Traffic is interstate in nature
2 and that, accordingly, the FCC has exclusive jurisdiction to decide the
3 appropriate form of intercarrier compensation for this traffic. In ruling that this
4 traffic is interstate and is not subject to the reciprocal compensation provisions of
5 Section 251(b)(5) of the Act, the FCC stated that "state commissions will no
6 longer have authority to address this issue."[3]

7 **Q. MR. DUNKEL SUGGESTS THAT FOR PURPOSES OF THIS PROCEEDING,**
8 **THE ACC SHOULD SET THE APPROPRIATE RATES FOR THE NON-ISP**
9 **BOUND LOCAL INTERCONNECTION TRAFFIC. DO YOU AGREE?**

10 A. No, I do not agree with Mr. Dunkel. Qwest's reciprocal compensation rate for
11 non-ISP bound local traffic was established in a previous docket and is not being
12 addressed in this proceeding. Furthermore, the FCC has made it clear that
13 ILECs are required to offer to exchange all Section 251 (b)(5) traffic at the rate
14 caps it established. When an ILEC does not offer to exchange all Section 251
15 (b)(5) traffic at the rate caps set by the FCC, the exchange of ISP bound traffic
16 will be governed by reciprocal compensation rates approved or arbitrated by state
17 commissions.[4]

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[3] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Intercarrier Compensation for ISP Bound Traffic, CC Docket Nos. 96-98 and 99-68, Order on Remand and Report and Order (Tel. April 27, 2001) (ISP Order II) at ¶65.

[4] Id. at ¶ 98.

Attached as Exhibit LBB-1 is a letter sent by Qwest on June 13, 2001, to all CLEC, Wireless and Commercial Radio Service providers outlining its intent to offer to exchange all Section 251 (b)(5) traffic at the rate caps set forth by the FCC in accordance with rules established in its ISP II order[5]. This letter further supports that the reciprocal compensation rate for non-ISP Bound local interconnection traffic is not an issue in this proceeding.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

[5] Id at ¶ 82.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S,	)	DOCKET NO. T-00000A-00-0194
COMPLIANCE WITH CERTAIN	)	PHASE II
WHOLESALE PRICING REQUIREMENTS	)	
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

EXHIBIT OF

LARRY B. BROTHERSON

QWEST CORPORATION

JUNE 27, 2001

Audrey Mckenney
Senior Vice-President
Wholesale Markets
303 896-5851

June 13, 2001

Dear Customer (CLEC, Wireless, CMRS):

As you may know, on April 18, 2001, the Federal Communications Commission ("FCC") adopted an order addressing the charges that carriers may bill to and collect from each other in connection with their exchange of dial-up Internet, or ISP-bound, traffic. See, *Order on Remand and Report and Order,* CC Docket Nos. 96-98, 99-68 (adopted April 18, 2001) (the "Order').

We, at Qwest, find the implications of this order to be complex and believe that in some instances the order may effect your operations significantly. And, in some cases, your interconnection agreement may need to be modified.

The attachment outlines the steps Qwest plans to take to implement the Order on June 14th, consistent with the FCC effective date. Because the order may affect your operations, please read the attachment carefully.

In case your interconnection agreement may need amending, a follow-up mailing will be coming soon and will include a generic contract amendment that can be signed and returned to Qwest. This second mailing will include Qwest's offer regarding 251(b)(5) traffic that is required per the Order. Upon receipt of the signed contract amendment, Qwest will implement the appropriate rates for ISP and 251(b)(5) traffic, with retroactive adjustments to the effective date of the Order, June 14, 2001.

We recognize that you may want to discuss the Order and our plans. Please feel free to call me at 303-896-5851 or Dan Hult, at 402-422-4198.

Very truly yours,

Audrey McKenney

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JAMES M. IRVIN
COMMISSIONER
MARC SPITZER
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IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194 PHASE II

REBUTTAL TESTIMONY OF

DICK BUCKLEY

ON BEHALF OF

QWEST CORPORATION

JUNE 27, 2001

TESTIMONY OF DICK BUCKLEY
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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dick Buckley. I am employed by Qwest Corporation as a Manager-Loop Cost Analysis. My business address is 1801 California St. #2040, Denver Colorado.

Q. HAVE YOU FILED TESTIMONY PREVIOUSLY IN THIS DOCKET?

A. Yes. I filed direct testimony on March 15th.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide rebuttal to the testimony provided by Thomas H. Weiss, Michael Hydock and Douglas Denney on behalf of AT&T Communications of the Mountain States, Inc., WORLDCOM Corporation, XO Arizona, Inc. I also respond to the testimony provided by William Dunkel on behalf on the Arizona Corporation Commission Staff and Dr. Frances Collins on behalf of Cox Arizona Telecom, L.L.C. In particular, I address Mr. Weiss' criticisms of the default inputs to Qwest's LoopMod module of the ICM and respond to the assertions made by Mr. Hydock concerning alleged embedded inputs. I also provide rebuttal to the testimony of Mr. Denney with regard to structure sharing opportunities. In addition, I address certain changes that were made to the inputs to LoopMod based on concerns raised by Staff and intervenor testimony.

II. REVISIONS TO QWEST COST STUDIES

A. Placement Activities

Q. ARE YOU PROPOSING ANY CHANGES TO THE LOOPMOD DEFAULT VALUES?

A. Yes. Various intervenor and Staff witnesses have recommended certain changes to the placement activity mix. In particular, witnesses criticized LoopMod for using boring and cut and restore type activities in the low density areas. Qwest has considered this testimony and, in response, has adjusted the activity mix for Density Group 5 and Rural Feeder to reflect more extensive use of plowing for placing facilities. The chart below shows the percentages of different placement activities that were originally used in LoopMod and the replacement percentages that are now being used in LoopMod, as reflected in the new ICM run filed by Ms. Million.

(DG 5 Distribution and Rural Feeder	Default %	Adjusted %
Trench & Backfill	0%	3%
Rocky Trench	0%	0%
Plow	60%	91%
Rocky Plow	5%	4%
Cut & Restore Concrete	5%	0%
Hand Dig Trench	5%	0%
2 Inch Bore Cable	3%	0%
4 Inch Bore Cable	2%	0%
Cut & Restore Asphalt	5%	2%
Hydro Mulch	15%	0%
Total	100%	100%

B. Grooming

Q. WHAT CHANGES ARE BEING MADE WITH REGARD TO THE GROOMING OR UNBUNDLING COSTS FOR IDLC LOOPS IN LOOPMOD?

A. The costs for the grooming equipment required to unbundle integrated digital loop carrier ("IDLC") loops have not been changed. Qwest still believes that these are appropriate costs for the provisioning of unbundled loops when dealing with Integrated Digital Loop Carrier systems. What Qwest has changed in the new ICM summary is the presentation of the grooming costs. The prior summary included those costs as part of the loop. In this summary, the grooming costs are held out as a separate item. This will assist in the calculation of the UNE-P rate, where the grooming charge will not apply. The stand-alone cost for 2-wire unbundled loop grooming is $1.59 per loop.

III. FEEDER AND DISTRIBUTION FILLS

Q. MR. WEISS CLAIMS THAT LOOPMOD V2.0 ADJUSTS THE STANDARD DISTRIBUTION DESIGNS TO INCLUDE ALLOWANCES FOR SPARE, DEFECTIVE AND DEDICATED CAPACITIES. IS THIS INTERPRETATION OF THE LOOPMOD CALCULATIONS CORRECT?

A. No. Mr. Weiss appears to be confusing the idle dedicated and additional line adjustments that are made to the distribution divisors with an adjustment to the distribution engineering designs. The LoopMod Engineering Standard designs use a pairs per site approach. Those designs are adjusted only if the user overrides them and uses new

designs with an adjusted number of pairs available at each location based on a "fill" input. The term fill is used here, and in other models such as HM5.2, when what is truly meant is cable-sizing factor. In LoopMod, the user can estimate a two pairs per site design by selecting 50% as the "fill" input. The program will then divide the number of locations at each pedestal or splice location by the "fill" percentage to determine the required number of pairs.

On page 10 of his May 18, 2001 direct testimony, Mr. Weiss discusses the idle dedicated and additional line percentages. These numbers are used to adjust the design locations quantity to develop a working pairs divisor to be used in conjunction with the distribution area total investment. For example, if a distribution area contains 100 homes, the divisor would be calculated by multiplying 100 by the net of the idle dedicated percentage (homes unoccupied with the primary left assigned) and the additional line percentage (homes taking more than one line). With idle dedicated at 4% and additional line at 14%, the net would be 10%. The resulting distribution divisor would be 110 (100 times (14% - 4%)). This has nothing to do with the number of pairs in the designs, as Mr. Weiss incorrectly implies. Instead, the calculation recognizes that additional line demand will spread the distribution investment over more working pairs.

Q. DR. COLLINS DESCRIBES THE USE OF CABLE SIZING FACTORS IN CONJUNCTION WITH THE LOOPMOD PAIRS PER SITE DISTRIBUTION DESIGNS. IS HIS DESCRIPTION ACCURATE?

A. No. The use of cable sizing factors for distribution design is different from LoopMod's approach of using pairs per site for distribution design. The two approaches are mutually exclusive. Designing distribution based on a cable sizing factor involves determining the demand at various points along a route and dividing that demand by a factor. For instance if 4 homes are served at a pedestal and the sizing factor was 80%, the calculation would yield a requirement of 5 pairs at that location. This along with the other locations on the route would determine the cable size. By contrast, designing distribution through a pairs per site approach involves dedicating a pre-designated number of pairs to each customer location. In the previous example, each of the 4 homes would be assigned 3 pairs and the requirement at the pedestal would be 12 pairs. Qwest advocates the use of a pairs per site approach because that approach most realistically reflects the way in which network architectures for distribution are typically designed. LoopMod includes a utility that allows the user to modify the designs to provide pairs to each pedestal on a cable sizing basis. For instance, a 50% sizing factor applied against a location (pedestal) serving 3 homes would result in a 6 pair requirement. This process is continued throughout the distribution area, accumulating pair requirements, to size the cabling in each leg of distribution plant. This approach is separate and different from the default engineering standard designs, which assume 2 pairs or 3 pairs for each home when calculating the cable sizes. Dr. Collins combines these two exclusive approaches and then claims that the model overstates the amount of required plant. Dr. Collins simply does not understand how the model works.

Q. DR. COLLINS ALSO SUGGESTS THAT THE QWEST STUDIES SHOULD USE A 90% UTILIZATION RATE. IS AN ASSUMPTION OF UTILIZATION AT THAT RATE APPROPRIATE?

A. No. The unreasonableness of his proposed utilization rate is demonstrated in the first instance by the fact that no other party in this proceeding advocates a utilization rate that is that high. If Dr. Collins' proposed fills were used in cost studies, Qwest would never recover the investment that must be made to provide service in a timely fashion. If Qwest actually built plant in such a way as to achieve that level of utilization in distribution plant, held-orders (and customer complaints) would rise dramatically. Dr. Collins fails to understand the dedicated nature of twisted pair distribution plant and the costs that will be incurred due to numerous rearrangements and reinforcements. Feeder plant is designed to be reinforced over time, distribution plant is not, because it is far less fungible. There is less accessibility to distribution and it becomes more and more dedicated to a particular geographic area, as it gets closer to the end-user. Attempting to achieve a high fill in distribution will result in technician visits to rearrange pairs when demand shifts from one home to another. If the demand pattern is such that a particular leg of cable in a distribution area (DA) runs out of pairs, the fact that there are spare pairs elsewhere in the DA will not solve the shortage. That particular section will require reinforcement at an added cost. Also, that reinforcement will not benefit other areas within the DA. If a similar situation occurs a few blocks away from the first reinforcement, the Company would have to make additional investments to provide relief at that location. It is more

economical to build plant properly at the onset, then it is to rearrange and reinforce plant at a later date.

Q. ARE THE DISTRIBUTION FILLS RECOMMENDED BY MR. WEISS REASONABLE?

A. No. First, if an engineer followed the design guidelines that AT&T advocated in 1982[1], at least two pairs per living unit would be the standard. However, demand characteristics have changed since then, and Qwest network architectures now recommend three pairs per site in single-family subdivisions. To achieve 0.6667 fill on distribution plant using the actual frequency of additional line take in Arizona would require a design that provides less than two pairs per site. This design approach would violate the engineering practice that AT&T followed as far back as 1982, without even taking into account the changes in demand that have occurred since then. Mr. Weiss claims that his adjustment to 0.6667 fill would still allow access to three pairs per site. With a three pair per site design and a 0.6667 fill, Mr. Weiss is assuming a second line take of over 100%. (For example, 100 homes with 300 pairs. 66.67% fill requires 200 working pairs. That would assume all primary lines are working and that 100 additional lines are working. Any idle dedicated primary lines would increase the additional requirement. As of October 1998, Qwest had a 17.12% second line take in Arizona. Mr. Weiss assumes that second line take will be seven times greater than it actually is.

[1] Outside Plant Engineering Handbook August 1982, page 3-3

Q. WON'T THE DEMAND FOR TEEN LINES, FAX LINES AND INTERNET CONNECTIONS DRIVE UP THE DEMAND FOR ADDITIONAL LINES.

A. Yes, and it did during the late 1990's. But that demand will also be met by new technologies that were not available at that time. DSL, Voice over DSL, Cable Modems, Broadband Wireless, and Direct Broadcast Satellite can all serve as substitutes for additional lines. While dial-up modem access will still be a major player in the near future, assuming a seven-fold increase in additional line take is unsupportable. Mr. Weiss's distribution fill recommendations make no sense in light of the current market.

Q. DO YOU HAVE ANY COMMENTS ABOUT MR. WEISS'S TESTIMONY ON FEEDER FILLS?

A. Yes. Mr. Weiss once again confuses fill with cable-sizing factors. A cable-sizing factor is used to determine what cable to select once the demand for a section has been established. For instance, if demand for a section of cable is 175 pairs and the cable-sizing factor is 80%, the result (219 pairs) is used by the LoopMod program to select the cable size required. The next available cable would be a 300-pair cable. Using an 85% "fill" would yield a 206-pair requirement, and the program would still select a 300-pair cable.

Q. DO YOU AGREE WITH MR. HYDOCK'S CLAIMS THAT LOOP COSTS ARE VERY SENSITIVE TO FILL FACTORS AND THAT QWEST FAILS TO USE FORWARD-LOOKING FACTORS?

A. No. I do not agree with Mr. Hydock. Mr. Weiss criticizes LoopMod because, in his opinion, it is not sensitive enough to changes in fill factors. Apparently, Mr. Hydock did not read Mr. Weiss' analysis of the impact of fill factors on distribution plant costs. In the Sensitivity Tests section below, I explain how Mr. Weiss has misinterpreted the application and impact of fills or cable sizing factors. Mr. Hydock is incorrect in his statement that Qwest failed to use appropriately forward-looking factors. In fact, LoopMod incorporates distribution designs that follow the current Qwest Network architectures. The utilization rates in the distribution network are caused by the design and the demand that is assumed. These are not input factors. The HAI approach allows fewer than 2 pairs per home, the AT&T standard in 1982. This can hardly be construed as a forward-looking factor. It is simply a cost-reducing factor.

IV. DROP LENGTHS

Q. MR. WEISS CLAIMED THAT QWEST HAS NOT OFFERED ANY EVIDENCE CONCERNING THE DROP LENGTHS IN ARIZONA AND THE DEFAULT VALUES IN LOOPMOD. IS THIS TRUE?

A. No. Qwest provided summaries of drop length studies conducted in several Qwest states, including states that are appropriate for comparison with Arizona. The results of these

studies are reasonably consistent, and they show that the default LoopMod drop length inputs are conservative. Mr. Weiss has offered no evidence to support his proposed drop lengths or to show that they are appropriate for Arizona. In fact, the proposed lengths are nothing more than the HAI defaults that have been used by the sponsors of HAI on a national basis since the introduction of the model. They are, in theory, based on a study that developed a 73-foot national average drop length. When Mr. Weiss's recommended inputs are used in LoopMod, the program produces an average drop length of 59 feet for Arizona. Mr. Weiss apparently believes that drop lengths in Arizona would be 20 percent shorter than the national average, which would include New York, Rhode Island, Connecticut and other high-density areas. It should be expected that a state like Arizona that has a significant amount of rural, low-density areas will have average drop lengths that are greater than the average lengths in states that are high-density. Qwest's multi-state drop studies confirm this reality, as they show average drop lengths of 153 feet for New Mexico, 201 feet for North Dakota, and 143 feet for Wyoming. Mr. Weiss's proposed changes are insupportable and should be disregarded.

V. PLACEMENT COSTS

Q. MR. WEISS STATES IN HIS TESTIMONY THAT HE PRESUMES THAT THE QWEST CONSTRUCTION CONTRACTS THAT ARE RELIED UPON FOR PLACEMENT COSTS USED IN LOOPMOD ARE BASED ON SMALL PROJECTS. IS THIS A VALID ASSUMPTION?

A. No. Mr. Weiss bases this assumption on his experience with GTE and a small independent telephone company in Vermont several years ago. His experience with construction contracts involving these companies apparently is not comparable to the practices that Qwest follows today for network construction. The extent to which Qwest contracts with outside vendors for the placement of outside plant has increased in recent years. Today, the vast majority of the placement of buried cable in Arizona is done by contracted construction firms. Qwest has spent over $1.4 billion in Arizona in 1999 and 2000 to upgrade and add to its network. As these amounts reflect, these upgrades have involved substantial projects, not the small projects that Mr. Weiss assumes. Mr. Weiss's claims about the size of Qwest's construction projects are based on pure conjecture. Qwest is actually building outside plant. The prices Qwest pays for construction activities in Arizona are the best estimate of the forward-looking cost to build a replacement network. Mr. Weiss offers no evidence that any other CLEC or ILEC is paying lower prices for the same type of work.

Q. IS MR. WEISS CORRECT THAT IN A TELRIC ANALYSIS THE ENTIRE PLANT WILL BE REPLACED?

A. Yes. And that is exactly what Qwest has assumed in its loop cost modeling. The studies reflect the economies that Qwest could achieve in building a network to serve the universe of current demand and the costs that Qwest currently incurs to place outside plant in Arizona. They do not include the hypothetical placement costs recommended by Mr. Weiss. His placement costs are based on the opinions of HAI subject matter experts

who have no apparent experience building a network in Arizona and are premised upon national averages. By contrast, the placement costs in the Qwest studies are based on what Qwest pays contractors in Arizona to build actual network facilities.

Q. DO YOU AGREE WITH MR. WEISS'S CONTENTION THAT DIRECTIONAL BORING IS A LAST RESORT FOR TELEPHONY OUTSIDE PLANT CONSTRUCTION?

A. Not at all. Depending on the construction site, it may be the first choice. As I stated in my direct testimony of March 15, the rebuild of the distribution plant in Omaha, Nebraska, quickly shifted from standard trenching methods to directional boring when it became obvious that boring would reduce customer complaints and restoration costs. Mr. Weiss is correct that crews must use care when operating boring equipment. I have attached an exhibit (RJB1) that contains photographs of AT&T Broadband crews in Colorado using boring equipment to upgrade and replace cable television plant. As this photograph shows, AT&T Broadband supports the use of boring techniques when it comes to actually building plant. When boring is employed by trained crews, using modern equipment, this method of placement can be both extremely accurate from an engineering perspective and very efficient from a cost perspective.

Q. IS MR. WEISS CORRECT WHEN HE CLAIMS THAT QWEST'S SUPPORT FOR THE MIX OF PLACING METHODS "IS LITTLE MORE THAN SPECULATION"?

A. No, he is absolutely incorrect. There is nothing speculative about the data that was derived from those distribution plant replacement projects. Rather than relying strictly on opinions, as is done with the HAI inputs, the LoopMod inputs reflect the experience that was gained from these projects. As I discuss in my direct testimony, the reality is that in replacing plant, Qwest and the cable company in North Dakota found that it made a great deal of engineering and cost sense to use directional boring extensively. Qwest used it for approximately 65% of the route distance in the Omaha rebuild, and the cable company used it for approximately 50% of the route distance in the Bismarck rebuild. These real-life percentages are in sharp contrast to the 3% and 4% HAI inputs for comparable density zones. The opinions that the HAI model relies upon are simply out of step with actual network experience.

Q. IS THE CURRENT MIX OF PLACEMENT METHODS USED IN GROWING THE ARIZONA NETWORK PERTINENT TO A FORWARD-LOOKING REPLACEMENT STUDY, AS MR. WEISS CLAIMED?

A. No, it is not. As Mr. Weiss stated on page 20 of his May 18th direct testimony, the TELRIC studies assume the replacement of the entire network. This allows the use of currently available technology and the economies of scale associated with sizing plant for the total demand (i.e. one large cable in a route as opposed to three smaller cables placed over the years as the network grew). But the TELRIC assumptions also require placing this plant so as to serve all customers, not just those in new developments. This means dealing with mature neighborhoods with fences, landscaping, streets and sidewalks. The

percentages of activities used in Arizona today reflect the requirements involved in growing the existing network. This primarily entails placing plant in new sub-divisions and office complexes and, occasionally, replacing sections of plant for maintenance reasons. The activities used to grow the network will differ dramatically from those used in the total plant replacement projects mentioned earlier, and they do not represent a TELRIC construct.

Q. IS QWEST "SIMPLY WRONG", AS MR. WEISS CLAIMS, IN ASSUMING REALISTIC PLANT PLACING METHODS IN THE SCORCHED NODE APPROACH?

A. No. Mr. Weiss is being inconsistent. He argues that plant should be placed as if the landscape looked as it did decades ago, but he wants to use the technology and demand that exists today. The TELRIC modeling reflects the cost savings associated with the latest technologies and the economies of sizing cabling for total demand. WorldCom, AT&T and XO are supporting a 50% forward-looking network operations factor based on all new network facilities. That assumption conflicts directly with Mr. Weiss' assumption that the plant was placed before the development of twenty-year old homes. Placing that cable requires recognition of the infrastructure that exists in the real world. I doubt that the budgeting for the AT&T Broadband upgrades assumed primarily plowing and simple trenching. If it did, those projects certainly came in well over budget. Mr. Weiss wants to use a forward-looking approach where it lowers costs, but reverts to the embedded world when that benefits him. This is inconsistent and incorrect modeling and will yield

meaningless data. No rational businessperson would develop a business case based on assuming away a major portion of the costs of a project. In visiting AT&T cable placement sites, I observed extensive use of boring and hand-dig placement methods. Both of these activities are virtually ignored in the HAI default inputs.

Q. THE TESTIMONY FROM STAFF WITNESS MR. DUNKEL CLAIMS THAT THE QWEST MODEL USES BORING AND CUT & RESTORE METHODS FOR 60% OF THE DISTRIBUTION CABLE LENGTH. IS THIS TRUE?

A. No. In LoopMod, distribution plant uses boring, cut & restore concrete, cut & restore asphalt, and cut & restore sod for 41% of the cable length. It is not unrealistic, as Mr. Dunkel claims, to expect cable replacement projects to use either boring or some sort of cut & restore method to place cable in mature neighborhoods. Because of the significant costs and disruption that result from digging up and repairing yards, sidewalks, and streets in mature neighborhoods, boring is a very efficient practical placement method for these areas. The data and real-life experience from Omaha and Bismarck confirm that boring is a practical solution for placing plant in existing areas.

Q. IS IT CORRECT TO ASSUME THE MODELED MIX OF PLACEMENT METHODS SHOULD MIRROR THE MIX USED IN NEW SUB-DIVISIONS?

A. No. The models all assume that the universe of customers is being served by the latest technologies and can benefit from the economies of scale that can be achieved in a total plant replacement. It would be inconsistent to model a network replacement using

forward-looking designs and technologies and then assume the same accessibility for trenching as was available when the area was first developed. Mr. Dunkel is correct that the industry practice is to place plant prior to the construction of streets and homes in new sub-divisions. Unfortunately, the number of lines involved in new sub-divisions is a small fraction of the total lines included in the TELRIC models. The vast majority of those lines are located in areas that are already built. Putting new technologies in these locations will require building around and through the landscaping and streets that currently exist. Mr. Dunkel's use of placement methods that are appropriate for new sub-divisions is inconsistent with the other inputs to the models and will produce a number that is neither forward-looking nor embedded. The costs produced by Mr. Dunkel's adjusted inputs will not provide any meaningful data for use in setting TELRIC-based rates.

Q. MR. WEISS CRITICIZES THE LOOPMOD INPUTS AS BEING BASED ON OPINIONS OF SUBJECT MATTER EXPERTS (SMES). HOW DOES LOOPMOD'S RELIANCE ON SME OPINIONS COMPARE TO THE HAI MODEL'S RELIANCE ON SME OPINIONS?

A. The inputs to HAI appear to rely heavily on SME opinions. As a matter of fact, the support for various inputs in the Hatfield Inputs Portfolio cites SME opinion or judgment over 40 times. Mr. Weiss is being a bit disingenuous in discounting the opinions of Qwest experts, who actually are involved in the development and maintenance of networks in the Qwest region, while wholeheartedly endorsing the inputs supported by

HAI opinions. These opinions often assume the best case, such as in sharing and placement methods, which will have a major impact on the estimated costs of the loop. The Qwest assumptions regarding structure sharing are based on Qwest experience with pole ownership and joint trench and SME opinions on joint builds of conduit systems. The HAI "judgment" is that in most density zones, every single foot of trench for buried cable will involve sharing by three different providers. This is completely out of line with the data that Qwest has gathered on sharing in distribution plant replacement projects.

Q. MR. WEISS ALSO CLAIMS THAT QWEST FAILED TO PROVIDE SUPPORT FOR THE MATERIAL PRICES USED IN LOOPMOD. IS THIS A VALID CRITICISM?

A. No. In its data requests, AT&T asked for proprietary vendor contracts. Qwest was not able to provide this information without first securing permission from each vendor involved. Qwest has now substantially completed that process and is in the process of providing responsive information. In addition, AT&T asked for data from the Qwest Continuing Property Records (CPR). LoopMod does not use information from CPR. One reason for this is the very problem cited by Mr. Weiss. CPR summarizes information at a level that is unsuitable for modeling purposes.

VI. GROOMING

Q. MR. WEISS COMMENTS ON THE COSTS FOR EQUIPMENT USED TO GROOM OUT UNBUNDLED LOOPS. PLEASE EXPLAIN WHAT GROOMING IS.

A. Grooming refers to the process by which a lower bit rate circuit, such as a DS-0, is removed from a higher bit rate circuit prior to connecting to the local switch. Digital Loop Carrier (DLC) systems use high bit rate circuits (DS-1s or OC-3s) to transport multiple DS-0s from the remote electronics to the central office. If the system is a universal DLC, the equipment in the central office will demultiplex the signal to a DS-0 level and hand it off at the MDF or COSMIC frame. If the DLC is integrated, the DS-1s from the remote will use a DSX to cross-connect to the switch. In a large, integrated DLC, a multiplexer at the central office will be used to separate out the DS-1s in the OC-3 circuit and the DS-1s can then be routed through the DSX and connected to the switch. The grooming equipment allows the DS-1s to be reduced further to a DS-0 level. This is done so that unbundled loops can be terminated on an IDF and cross-connected to a CLEC's equipment. This only occurs for those loops that are derived from an Integrated Digital Loop Carrier (IDLC) system. The equipment is not necessary for copper loops or loops derived from universal DLC systems. For that reason, the grooming costs are reduced to reflect that although they apply to all unbundled loops, they only occur on the loops modeled as IDLC derived loops. In Arizona, the model assumes that 44% of the loops are on IDLC. The grooming investments are multiplied times 44%, and the

reduced amount is used to develop the cost for grooming. This charge is then applied to all unbundled loops. Resale loops and UNE-P elements do not incur this charge because those circuits utilize the Qwest switch and would not need to be cross-connected to CLEC collocation equipment.

Q. MR. WEISS STATES THAT CLECS WILL BE PURCHASING LOOPS IN FULLY INTEGRATED DLC SYSTEMS AND THAT QWEST WILL NOT NEED TO GROOM OUT THOSE LOOPS. IS THAT TRUE?

A. No. The situations where a CLEC wishes to access loops (DS0s) that are derived from an IDLC are exactly the situations that cause the necessity for grooming. If not for the interconnection requirement, the IDLC DS-1 would connect directly to a DS-1 level line card on the switch. When the CLEC requests a DS-0 circuit that resides within the IDLC DS-1, some sort of equipment is necessary to demultiplex the DS-1 to DS-0s, hand off the appropriate DS-0 to a frame, and route the remaining DS-0s (in the DS-1 circuit) to the switch. This equipment is a capital cost item. It is not included in the maintenance expense, as claimed by Mr. Weiss. It also costs less to groom than to take a circuit through a switch.

VII. SENSITIVITY TESTS

Q. PLEASE EXPLAIN THE SENSITIVITY TESTS THAT MR. WEISS CONDUCTED ON THE TECHNOLOGY CROSS-OVER POINT OR MAXIMUM COPPER FEEDER DISTANCE DEFAULT.

A. The default maximum distance for copper feeder in LoopMod is 12 kilo-feet. This means that all loops that connect to an FDI at less than 12,000 feet from the central office will be served on physical copper and all loops longer than that will be served using digital loop carrier systems. These systems are connected to the central office by fiber optic facilities. The model allows the user to vary this break point between copper and DLC. Mr. Weiss ran the program with the maximum copper distance set at 9,000 feet. In addition, he ran the program with the distance set at 8, 10, and 11 kilo-feet. He states that the changes in the cost results were less than his experience led him to expect.

Q. WHAT EXPECTATIONS WOULD YOU HAVE IN RUNNING THESE TESTS?

A. I would expect minimal cost impact when moving the maximum copper distance a few kilo-feet one direction or the other. The reason for this is that costs change only for those loops that were served on copper and are now served on DLC. And because they are at or near the point where the costs are the same for either solution, the cost difference will be very small. When you take a small cost difference for a small percentage of the total lines, the logical assumption is that there will be very little difference in the average cost of the loop. The same sort of test Mr. Weiss conducted with LoopMod can be conducted

with HAI. If one changes the maximum copper feeder distance from 9 kilo-feet to 12 kilo-feet (a 33% increase), the cost changes from $10.10 to $10.00, a 1% decrease. This shows that the percentage change in maximum copper feeder distance is meaningless. What is important is the change in the cost of the affected circuits and the percentage of affected circuits. When changing from 12 kilo-feet to 9 kilo-feet, both of these are fairly small values. Thus, the impact on average loop cost will be minimal.

Q. WHAT OTHER SENSITIVITY TESTS DID MR. WEISS CONDUCT?

A. Mr. Weiss also made adjustments to the cable sizing factors for feeder and distribution. Once again, he stated that he would have expected the results to have changed more than they did. In fact, changing the cable sizing factors should have very little impact on the average. First, it only affects cable material and does not impact the structure (trench) cost. Second, it only affects those cables that are on the cusp of one cable size versus another. For example, a demand of 70 lines divided by an 80% sizing factor yields 87.50 for the cable selection calculation. The LoopMod program will select a 100 pair cable. If the sizing factor is changed to 85%, the result will be 82.35 and the program will still select a 100 pair cable. In this situation, there is no cost impact due to the factor change. As long as the demand is less than 80% of the next larger cable (i.e. 79 line demand is less than 80% of the 100 pair cable), a shift from an 80% sizing factor to an 85% sizing factor is unlikely to impact costs at all. Mr. Weiss' conclusion appears to be based on a misunderstanding of how both HAI and LoopMod function.

Q. DID YOU PERFORM SIMILAR TESTS USING THE HM 5.2A PROGRAM?

A. Yes, I did. For copper feeder cable sizing factors, I adjusted the input to Zone 1 (lowest density) from 65% to 70%. For Zone 2, I adjusted the input from 75% to 80%. All other zones were changed from 80% to 85%. The cost decreased less than 1/10th of 1%. This compares to the 4/10^{ths} of 1% that Mr. Weiss generated when making his adjustments to the LoopMod feeder cable sizing factors. Mr. Weiss' expectations are out of line with the results of both LoopMod and HAI52a. For the distribution cable sizing factors, I adjusted the HAI default inputs from 75% to 95% in all zones. Here, a 27% increase in the value of the input resulted in a 2.5% to 4% decrease (depending on the staring point) in the loop monthly cost.

Q. GIVEN THE RESULTS FROM THESE SENSITIVITY RUNS, HOW DO YOU RESPOND TO MR. WEISS' CRITIQUE OF HIS LOOPMOD RUNS?

A. HAI and LoopMod both show that changes to the cable sizing factors, whether feeder or distribution, produce relatively minor changes to the average cost. This is due to the fact that changes only affect a small percentage of the cables and that those cable changes only affect the total investment by the incremental increase or decrease in material cost. Mr. Weiss accuses Qwest of some sort of sinister programming effort. But he bases this accusation on LoopMod results that are very consistent with HAI results. This sort of unfounded accusation gives me general skepticism about other criticisms that Mr. Weiss presents.

VIII. MODEL STRUCTURE

Q. MR. WEISS AND MR. HYDOCK CLAIM THAT LOOPMOD WAS CONSTRUCTED SO AS TO MAKE ANALYSIS "QUITE DIFFICULT" AND WOULD REQUIRE "AN INORDINATE AMOUNT OF TIME TO ANALYZE". PLEASE COMMENT.

A. This is a fundamentally inaccurate assertion. The programming associated with upgrades to LoopMod was aimed at adding features or functionality. There was no effort to make the model "quite difficult" to analyze. Neither Mr. Weiss nor Mr. Hydock offered their opinions on the ease of analyzing HAI5.2a. HAI contains hundreds of formulas like the one pictured below for Drop Investment per Cluster.

```
=IF(calculations!BH2=1,0,(VLOOKUP(density,density_inputs,17)*(slbus_lines)
+VLOOKUP(density,density_inputs,17)*IF(hh_tot>1,(hh_det+hh_att*drop_material
+drop_struct*CEILING(hh_att/(2*occ_SFA),1)+hh_2*drop_material+drop_struct*
CEILING(hh_2/(2*occ_2),1)+hh_4*drop_material+drop_struct*
CEILING(hh_4/(2*occ_4),1)+hh_mob+hh_other),1)+
VLOOKUP(density,density_inputs,15)*((bus_lines-slbus_lines+SA_loops)
*drop_material+(firms-slbus_lines)*drop_struct+pub_lines)+
VLOOKUP(density,density_inputs,15)*IF(hh_tot>1,
IF(hh_tot=0,0,(hh_59*drop_material+
drop_struct*CEILING(hh_59/(7*occ_59),1)+hh_1019*drop_material+drop_struct*
CEILING(hh_1019/(14.5*occ_1019),1)+hh_2049*drop_material+
drop_struct*CEILING(hh_2049/(34.5*occ_2049),1)
+hh_50*drop_material+drop_struct*
CEILING(hh_50/(50*occ_50),1))/hh_tot*res_lines),0)))
```

The models are complex enough as they are without attempting to confuse analysis. Understanding exactly how the loop models develop investments for all the various

components of the network is a difficult task and requires a fair amount of effort. Mr. Weiss' and Mr. Hydock's complaints should be disregarded.

Q. IN HIS DISCUSSION OF DISTRIBUTION DESIGN, MR. WEISS CRITICIZES THE LOOPMOD DENSITY GROUP DESIGNS. IS HIS ANALYSIS FLAWED?

A. Yes, it is. First, he ignores the fact that LoopMod uses actual network DA data on density characteristics to adjust the distribution designs, not to replicate the embedded network. He claims that the unique characteristics of DAs need to be accounted for in any modeling effort and that LoopMod cannot do this. The main cost driver in distribution plant design is density -- in other words, how much cable is required to pass all the customers. Larger lots require more cable. Smaller lots require less cable. LoopMod starts with standard designs that allow the model to recognize the impact of common areas, cul-de-sacs, and other real world aspects of distribution plant construction. These real-world considerations are missed in a purely mathematical approach to branch and backbone cable distance. LoopMod then applies a multiplier based on the individual DA densities to adjust the cable lengths in the standard design. Mr. Weiss claims that the actual DAs are not the least-cost design, but he offers no evidence to support that statement. He says that, on a forward-looking basis, some would be larger and some would be smaller, but regardless of the direction of the changes, it would lower cost. This is pure speculation by Mr. Weiss. The Qwest loop model uses the network DA data to incorporate the unique densities of the actual distribution areas. The designs are based

on the current architectures utilized by Qwest. The model does not attempt to recreate the existing network, as Mr. Weiss erroneously claims.

IX. SHARING

Q. MR. DENNEY PROVIDES TWO EXAMPLES OF QWEST DATA THAT HE CLAIMS SUPPORT THE HAI5.2A SHARING ASSUMPTIONS. ARE THESE EXAMPLES PERTINENT TO THE TELRIC MODELING?

A. No, they are not. His first example cites the Qwest tariff concerning agreements between homebuilders and Qwest on the provisioning of distribution plant. This would be pertinent if the models were addressing only new growth in the existing network. If this were the case, the models would look at only the demand in those growth locations. Instead, the models look at total demand, which allows them to reflect the economies of sizing plant to serve the universe of customers. It also allows the models to reflect the shorter loop lengths associated with existing customer locations that are close to the serving wire center. Assuming the sharing (or developer provided trenching) for new areas and the universe of existing locations is inconsistent and will produce questionable results. His second example is of the Qwest long distance, inter-city fiber construction project. This is a far cry from the replacement of distribution plant. It is possible that companies that are building a major section of plant between two large population centers may be able to time their builds so as to share structure. It is unlikely that the ILEC or a company such as AT&T Broadband, will find other companies who wish to place

distribution plant at the same time, in the same area as the upgrading company. The examples of distribution plant upgrades offered as evidence in this hearing show little if any structure sharing in the distribution environment. The cable company mentioned earlier stated that they were able to share approximately five miles of trench out of the 220 miles of cable placed in the Bismarck upgrades. This would yield a sharing percentage of 98.86% assigned to the incumbent. WorldCom, AT&T and XO assume that, to achieve a factor of 33% assigned to the incumbent, three companies will share the cost of the trench 100% of the time. There is no data to support this dramatic adjustment to the placing costs.

Q. MR. HYDOCK FAULTS QWEST FOR NOT USING THE FCC USF SHARING PERCENTAGES. WERE THESE INPUTS USED IN THE HAI MODEL FILED IN ARIZONA?

A. No. The HAI5.2a default inputs anticipate far more sharing of structure costs than either the ACC or the FCC inputs would indicate. HAI assigns as little as 25% of the aerial structure costs and 33% of the buried structure costs to the ILEC. These inputs are completely out of line with the FCC inputs he appears to advocate.

Q. IN YOUR DIRECT TESTIMONY, YOU COMPARED THE RESULTS FROM LOOPMOD WITH THE RESULTS FROM AN ADJUSTED RUN OF HAI5.0A. WOULD THE COMPARISON BE DRAMATICALLY DIFFERENT USING HAI5.2A?

A. HAI5.2a will produce investments similar to HAI5.0a when run with the same inputs and the strand distance (DRD) adjustment turned off. While there have been changes to HAI5.2a, such as line counts, occupancy factors and the strand distance calculation, the vast majority of the inputs and algorithms are identical to those in HAI5.0a. Dr. Fitzsimmons provides data in his rebuttal testimony demonstrating that HAI5.2a, with reasonable adjustments to a limited group of inputs, will develop an average loop investment of $741(after removal of wire centers that have been proposed for sale).

X. EMBEDDED INPUTS

Q. MR. HYDOCK STATES IN HIS TESTIMONY THAT LOOPMOD CONTAINS "NON-FORWARD-LOOKING NETWORK COMPONENTS". IS THIS TRUE?

A. No. I'm not sure what components Mr. Hydock is referring to. And, based on his testimony, it appears he doesn't know how or if the inputs are used. But for some unexplained reason, without identifying which components he is addressing, he concludes that this proves that LoopMod is not a forward-looking model. LoopMod uses forward-looking designs to serve the current demand. The components in those designs are network components currently being installed by Qwest. The prices to purchase and place those components are the current prices Qwest pays to actually build plant in Arizona. Mr. Hydock offers no evidence that there is anything of an embedded nature in the LoopMod investments.

Q. MR. HYDOCK REFERS TO DA INFORMATION USED BY LOOPMOD AS IN APPROPRIATE EMBEDDED DESIGNS. PLEASE COMMENT.

A. The DA information is used in the same fashion as density data in HAI. It allows the model to determine levels of density and differentiate between buildings and houses. This provides data needed to best match the DAs density characteristics to the forward-looking distribution designs. The model does not use existing terminal configurations in the distribution designs as Mr. Hydock erroneously claims. LoopMod is a forward-looking model and does not attempt to replicate the existing network or develop embedded investments.

XI. SUB-LOOP

Q. WHAT IS DISTRIBUTION SUB-LOOP?

A. The Unbundled Distribution Loop is a QWEST provided facility from the QWEST Serving Area Interface (SAI) to the Network Interface Device or other point of demarcation at the customer location. The point of demarcation is where the Qwest owned facilities end and the customer owned facilities begin. This element consists of:

1. A connection point at the serving area interface (SAI) or feeder distribution interface (FDI);
2. The wires between the FDI and the customer NID or building terminal;
3. The simple or complex NID or building terminal at the customer residence; and

4. Any Qwest owned intra-building cable that may exist in the customers building.

The company proposes deaveraging this element consistent with the method the Commission used to de-average the unbundled loop.

Q. IS DR. COLLINS' INTERPRETATION OF THE QWEST DISTRIBUTION SUB-LOOP CORRECT?

A. No. Dr. Collins claims that based on my direct testimony that the distribution plant excludes cable on private property because the description does not expressly mention that situation. The excerpt from the testimony, which is a general description, discusses the various network components used in building distribution plant. It does not address where the cable is placed. It describes the distribution as being the facilities that extend from the Serving Area Interface (SAI) to some sort of network interface at the customer's location. Dr. Collins provides no evidence that "campus wire" has been left out of the Distribution Sub-Loop costs. The reality is that the LoopMod Density Group 2 (DG2) design contains underground cabling placed in building owner provided duct. This cabling provides the connectivity between the SAI and the building terminals at each building in a multi-building/multi-tenant environment.

Q. DR. COLLINS ADVOCATES PRICING THE CAMPUS CABLING AS A UNIQUE SUB-LOOP ARRANGEMENT. WHAT WOULD BE THE IMPACT OF THIS CHANGE?

A. Qwest believes that the campus cabling investment is an appropriate part of the average distribution investment. Any additional de-averaging of the distribution would have to create new elements that are both higher and lower than the current average. Because the campus or DG2 arrangement is a lower cost distribution design, removal of that design will result in a higher cost for the remaining average sub-loop distribution.

XII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSION

IN THE MATTER OF INVESTIGATION INTO	)	
QWEST CORPORATION'S COMPLIANCE	)	DOCKET NO. T-00000A-00-0194
WITH CERTAIN WHOLESALE PRICING	)	PHASE II
REQUIREMENTS FOR UNBUNDLED	)	
NETWORK ELEMENTS AND RESALE	)	
DISCOUNTS	)	

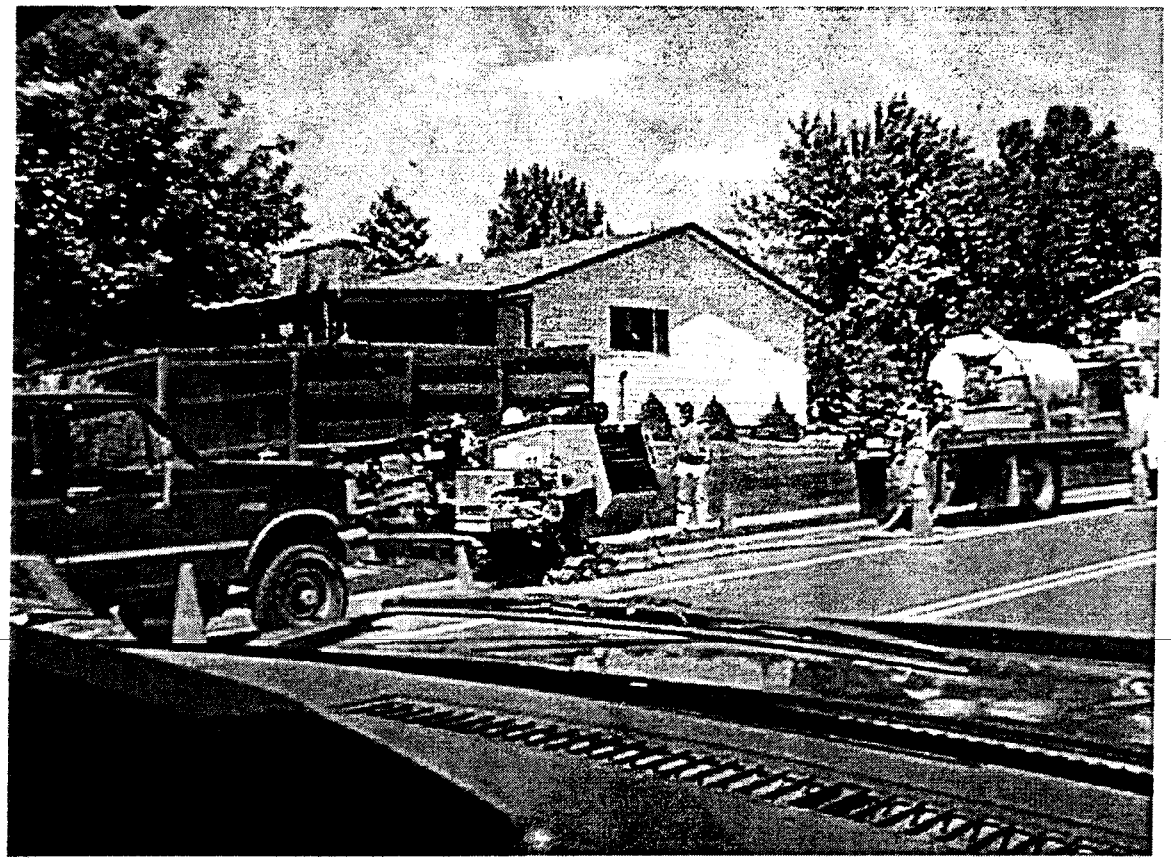
EXHIBIT OF

DICK BUCKLEY

JUNE 27, 2001

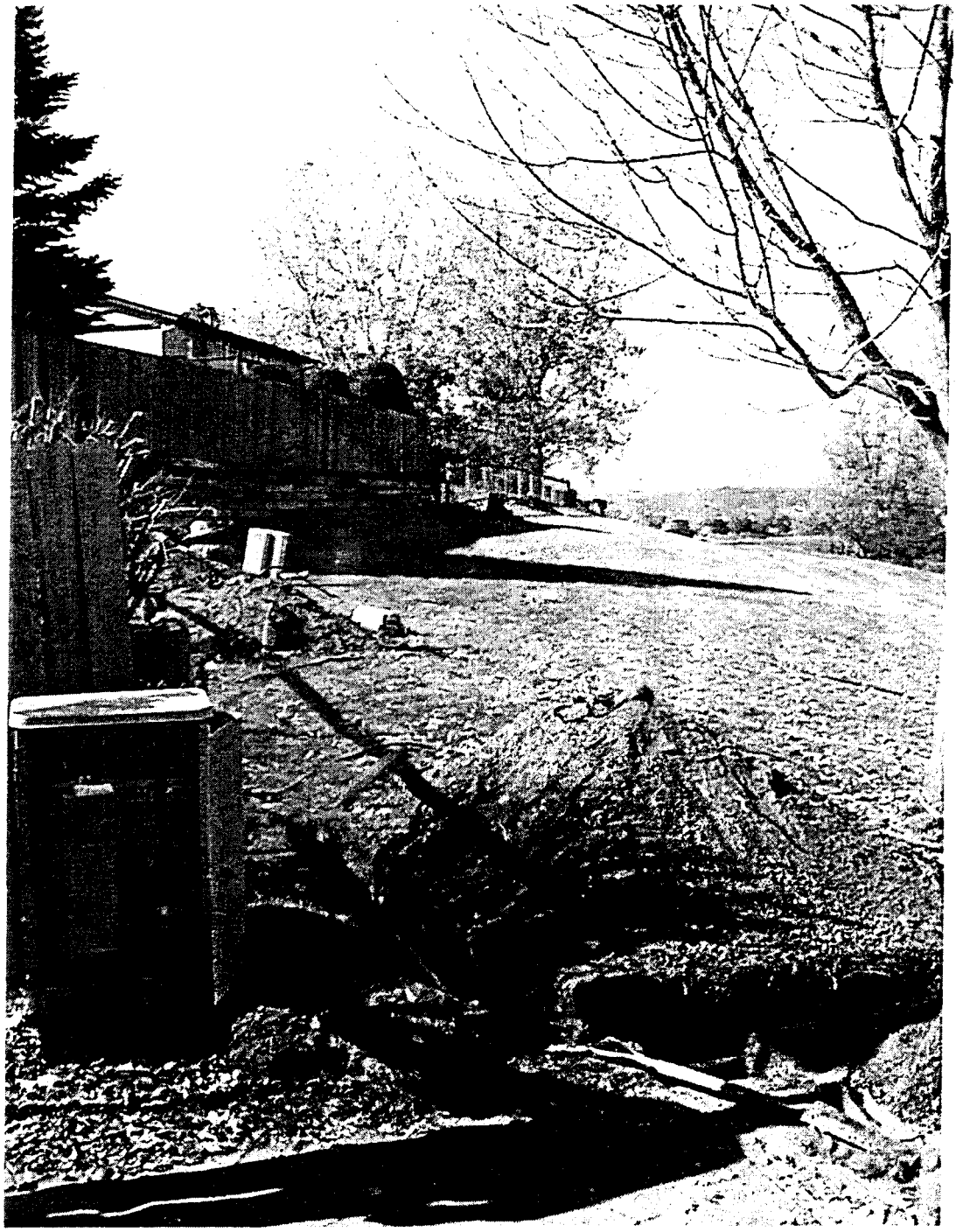
CATV hand-dig and missile, no sharing

CATV directional boring backyards, no sharing

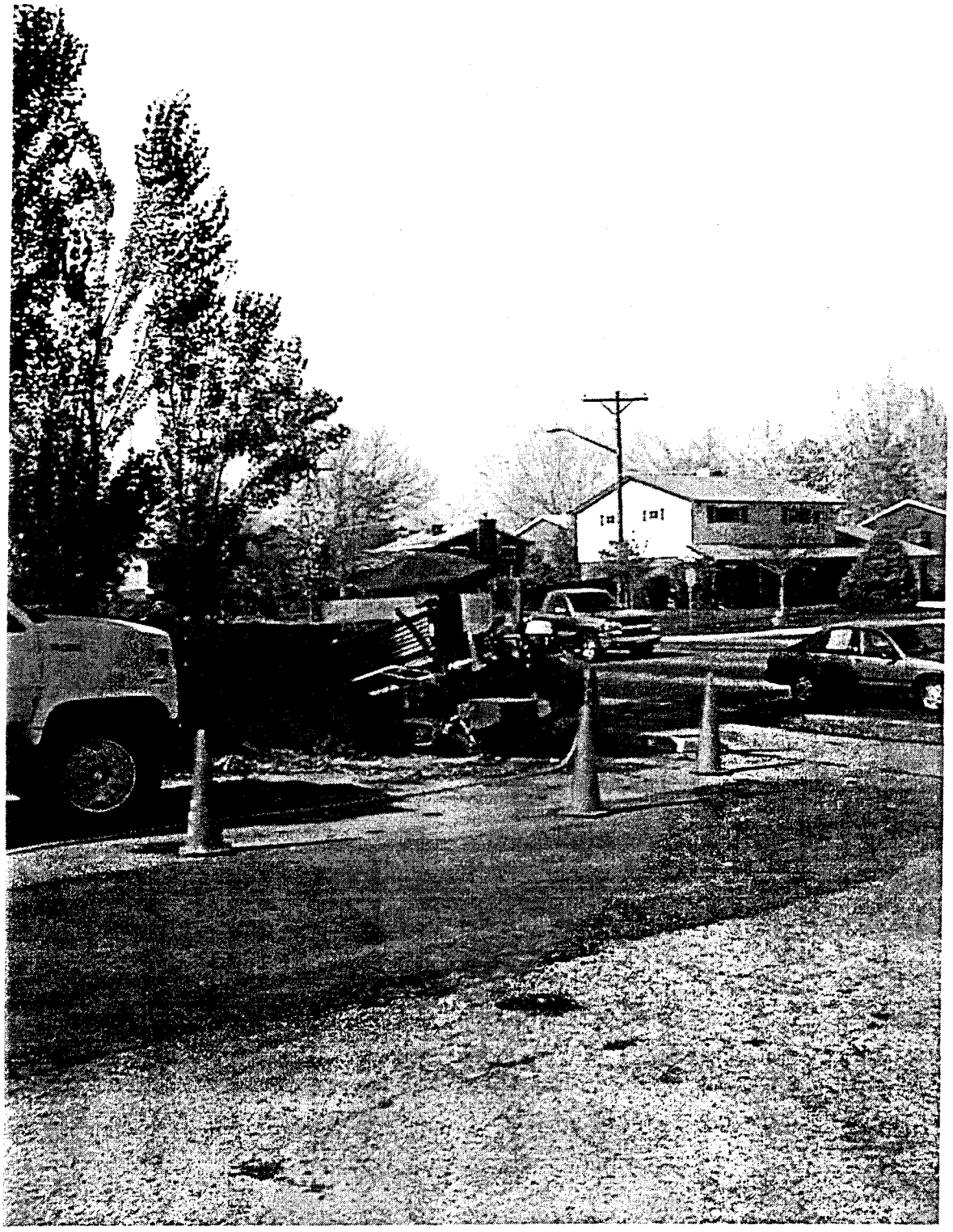


CATV hand-dig and missile, no sharing.

CATV hand-dig and missile, no sharing.

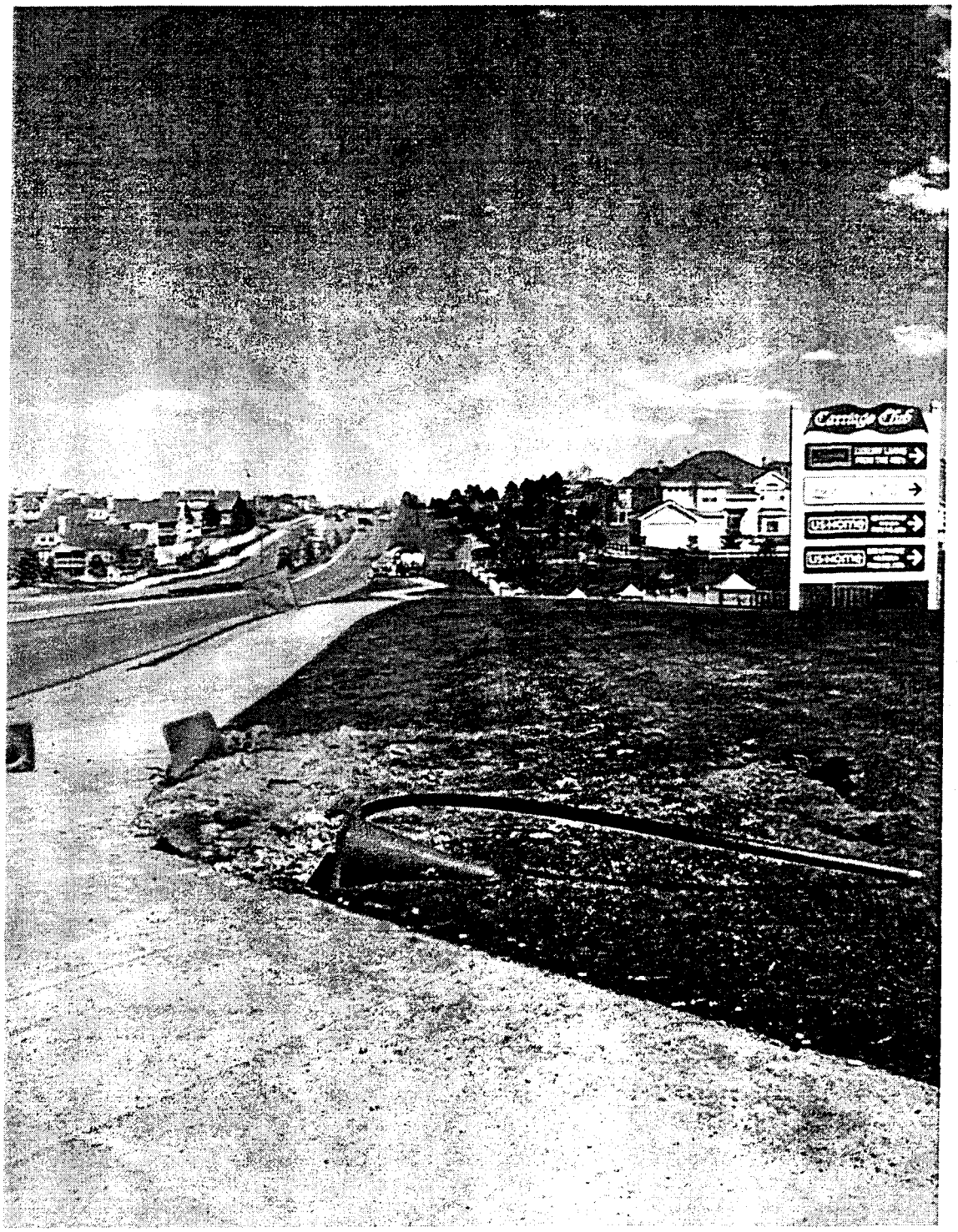


CATV directional boring backyards

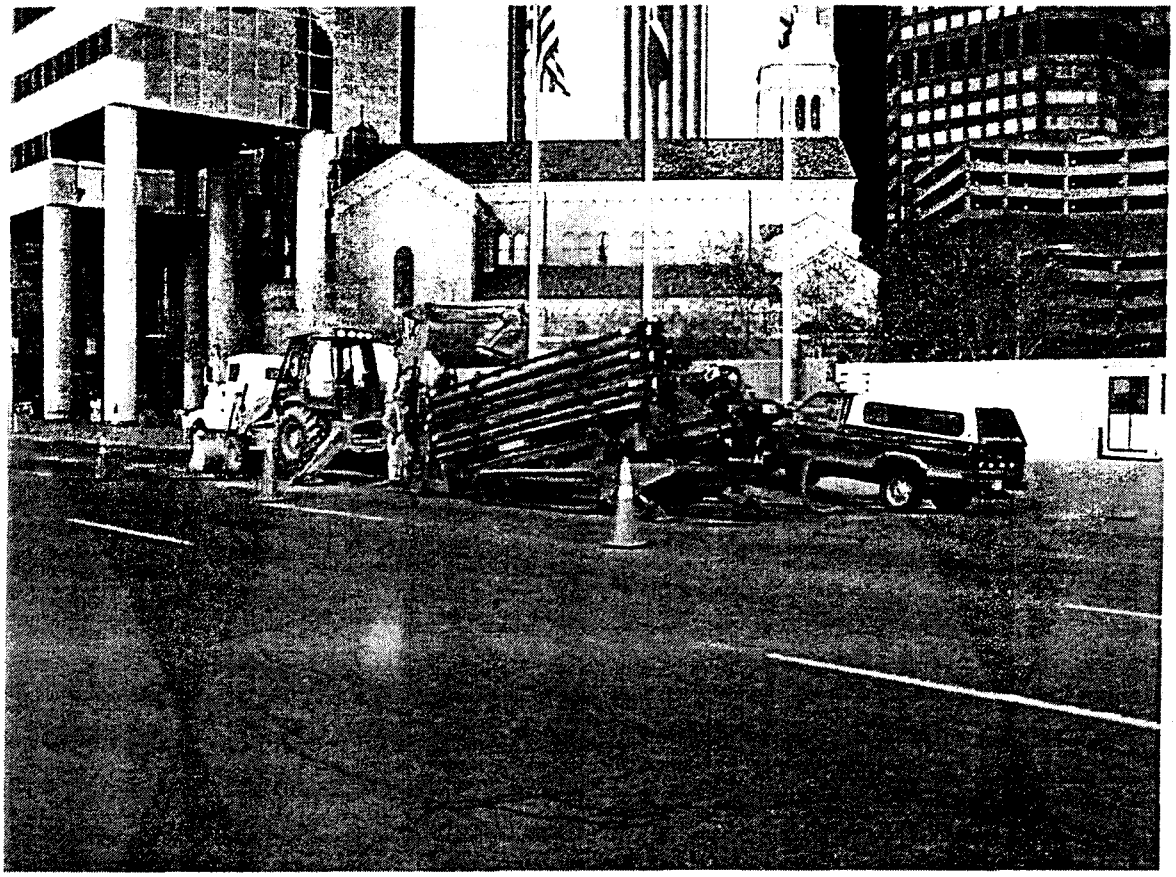


CATV directional boring street crossing and full block of easement.
(Receiving pit is near white pick-up by bikepath.)

CATV directional boring adjacent to main roadway.



Directional boring on main downtown street.



BEFORE THE ARIZONA CORPORATION COMMISSION

JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	**DOCKET NO. T-00000A-00-0194**
WHOLESALE PRICING REQUIREMENTS	)	**PHASE II**
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

REBUTTAL TESTIMONY OF

JOSEPH CRAIG

ON BEHALF OF

QWEST CORPORATION

JUNE 27, 2001

REBUTTAL TESTIMONY OF JOSEPH CRAIG
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IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, JOB TITLE AND BUSINESS ADDRESS.

A. My name is Joseph Craig. I am employed by Qwest Corporation ("Qwest") as a Director, Technical Regulatory in the Local Network Organization. My business address is 700 W. Mineral, Littleton Colorado, 80120.

Q. PLEASE REVIEW YOUR WORK EXPERIENCE AND PRESENT RESPONSIBILITIES.

A. I have been in the telephone business since 1974. I began as a directory assistance operator for Mountain Bell. After about 2 ½ years in that position, I transferred into Network Operations and since that time have had network-related responsibilities. My introduction to network responsibilities began in the late 1970s when I had responsibility for installing and repairing telephone service. I had responsibility for installations and repairs until 1980 when I became a Central Office Technician assigned to the Denver South Switching and Control Center in Denver, Colorado.

As a Central Office Technician, I was responsible for switch alarm surveillance, switch maintenance and repair, trunk installation, line and routing translations, switch equipment installation and software upgrades. My responsibilities as a Central Office Technician provided me with detailed knowledge of engineering

issues relating to trunking, routing and alarm surveillance in the switching network. I also worked closely with vendor equipment installers and acquired substantial knowledge about switching equipment, switch translations and the overall operation of the switching network.

In 1987, I accepted a three-year rotational assignment to Bellcore's training facility in Chicago, Illinois where I was a Switch Lab Manager. In that position, I was responsible for servicing switching equipment and modifying the equipment to update it with the latest features. My experience at the Bellcore training facility gave me the opportunity to work with switching experts from around the country and to learn about new switching technology and advanced switching repair techniques. I developed expertise in switch repair and recovery techniques, and the operations and functions of Signaling System 7 ("SS7"). While at Bellcore, I was selected for an award for exceptional performance called the Esteemed Member of Bellcore Staff.

In 1990, I returned to U S WEST working in Network Administration where I acquired additional experience in switching capacity and service measurements. After three years, I assumed responsibility for the Switching Control Center, where I managed the technicians who were responsible for monitoring the switching network for all of Colorado. In 1994, I was assigned to the SS7 Control Center, where I had responsibility for provisioning and maintaining the SS7

signaling network for the 14-state U S WEST region.

In 1997, I accepted a position in Network Planning, and became responsible for writing network plans for new switch services in the SS7 network. I also was responsible for monitoring these plans through the implementation phase. In 1998, I was honored as a recipient of Presidents Club for successfully implementing SS7 into the 911 network for the state of Minnesota.

In June 1999, I accepted a promotion to my current position in Technical Regulatory, Interconnection Planning. In my current position, I provide litigation support before federal and state commissions on issues relating to switching, SS7, trunking, and routing. As of June 30, 2000 I assumed the same job responsibilities for Qwest.

PURPOSE OF TESTIMONY

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to issues raised in the direct testimony of Intervenor witness Richard Chandler regarding Unbundled Packet Switching.

I address these issues from a technical perspective.

UNBUNDLED PACKET SWITCHING

Q. ON PAGE 4, LINES 7 THROUGH 13 OF HIS DIRECT TESTIMONY, MR. CHANDLER DESCRIBES WHAT PACKET SWITCHING IS. IS THIS DESCRIPTION ACCURATE FOR THE QWEST PACKET SWITCHING PRODUCT?

A. No it is not. In fact, his description does not accurately define what packet switching is.

Q. WHAT IS PACKET SWITCHING?

A. From a technical perspective, packet switching is the technology, not the technique as Mr. Chandler claims, of sending data in packet form through a network to some remote location. Each data packet has a unique identification and carries its own destination address. Each packet is, therefore, independent of other packets. With packet switching, multiple packets traverse the network in a stream of packets that flow from the originating packet switch to the packet switch or node that is the destination. The packets sometimes travel by different routes, therefore making packet switching more efficient when compared to circuit switching.

Q. WHAT IS UNBUNDLED PACKET SWITCHING?

A. Unbundled Packet Switching ("UPS") is Qwests response to the FCC UNE Remand Order, FCC 99-238, to provide access to the Qwest packet switched network. The Qwest packet switched network is based on Asynchronous Transfer Mode ("ATM"), or a packet like switch, that is used to provide DSL Service offerings.

Q. WHAT IS A DSL SERVICE OFFERING?

A. Digital Subscriber Line ("DSL") Service offering involve the use of the frequencies of the copper wires other than the frequencies used for analog voice. This access to the frequencies other than voice, for example, Asymmetric Digital Subscriber Line ("ADSL") allows the customer to use their phone for voice conversation at the same time they are using their computer for various different purposes, including, for example Internet access.

Q. ON PAGE 4 OF HIS DIRECT TESTIMONY, MR. CHANDLER INCLUDES A FOOTNOTE, CLAIMING THAT DSL IS SYNONYMOUS WITH ADSL, AND EQUATES THIS WITH ALWAYS ON. IS THIS TRUE?

A. Definitely not. First, DSL technology has many different versions. Other versions of DSL include VDSL, HDSL, RADSL, IDSL and SDSL to name a few. Each version of DSL has unique characteristics, such as frequency, bit rate or

speed, and require different modem equipment both at the users location and the remote device or node the user is connecting to. ADSL service is the most common type, and it can be provisioned over a customers existing copper line, or twisted pair, and is offered as a nailed up service, always on, or a dial-up service. ADSL, although originally developed by Telcordia, is now standardized by the American National Standards Institute ("ANSI") as T1.413.

Q. WHAT IS ALWAYS ON AND HOW DOES IT DIFFER FROM DIAL-UP?

A. Always on means the users DSL connection is provisioned in the Digital Subscriber Line Access Module ("DSLAM") to maintain a constant, or dynamic, virtual connection to the remote node, for example to an Internet Service Provider ("ISP"). In other words, the user is always connected to their ISP, and the only limiting factors relating to idle time are those that are under the control of the ISP. This means that after a period of idle time on the circuit, for example 10 minutes, the ISP may terminate the session. This requires the user to re-establish a new session with the ISP.

Dial-up means the user's DSL connection is provisioned in the DSLAM to a modem pool. This requires the user to dial-up their ISP, or make a connection to their ISP, each time the user initiates an ISP session. With dial-up DSL service, idle time is limited at the modem pool. This means that after a period of idle time on the circuit, for example 10 minutes, the modem at the modem pool will

terminate the session, thus requiring the user to dial-up their ISP, or re-connect, before a new ISP session can be initiated. This choice of DSL is only offered to customers whose DSL service is provisioned in a central office DSLAM, not a remote terminal.

This means that Mr. Chandler's assertion that Qwest UPS is a dial-up offering is incorrect. Qwest's remote DSL unbundled offering is always on.

Q. IS DSL SERVICE QUALITY DETERMINED BY ALWAYS ON OR DIAL-UP COMPARISON AS MR. CHANDLER SUGGESTS ON PAGE 3, LINE 20 THROUGH PAGE 4, LINE 5?

A. No it is not. It appears that Mr. Chandler is confusing DSL service quality with customer choice. A choice by a customer to be provisioned to a modem pool as opposed to a virtual circuit is not a proper indicator of the quality of a DSL service.

It would be more appropriate to determine DSL quality of service by bit rate. This is because the loop quality and DSLAM limit combined is 7Mbps. However, the bit rate is dependent on the loop length and the quality of the copper. Bit rate is the speed that data is transferred. Mr. Chandler admits this on pages 8 and 9 of his testimony. Mr. Chandler goes to great lengths to describe Unspecified Bit Rate, and then suggests there are other bit rates that are available but that are not

accurately identified in Qwest's testimony. The customer selects constant (256 Kbps, 512 Kbps, 768 Kbps, 1 Mbps, or 7 Mbps), variable (bit rate varies) or unspecified as a bit rate when they order DSL service. The bit rate is provisioned accordingly on the appropriate service the customer requested. Since DSLAMs are bit rate sensitive, this would be a better service measure of DSL rather than the customer choice of always on or dial-up. In fact, Mr. Chandler himself admits this on page 8, line 18 through page 9, line 8 of his testimony.

Qwest UPS offering supports DSL services with bit rates that are high enough to make DSL service high quality. Qwest offers the same bit rates with UPS as it does for its own DSL customers.

Q. ON PAGE 6, LINES 7 AND 8, MR. CHANDLER STATES "THERE ARE TWO GENERAL TYPES OF VIRTUAL CIRCUITS – SWITCHED AND PERMANENT". HE THEN CLAIMS THAT ATM CAN SUPPORT BOTH. IS HIS CLAIM CORRECT?

A. Mr. Chandler's statement that ATM can support both switched and permanent virtual circuits is not entirely correct. While ATM *technology* can support both, not all ATM deployed *networks* can support both. This is because ATM Forum implementation agreements are not widely adopted by ATM vendors and/or service providers.

Q. MR. CHANDLER DESCRIBES SWITCHED AND PERMANENT VIRTUAL CHANNELS ON PAGE 6, LINE 9 THROUGH PAGE 7, LINE 7, AND INCLUDES A FOOTNOTE THAT STATES "VIRTUAL CIRCUIT" AND "VIRTUAL CHANNEL" ARE INTERCHANGEABLE. IS THIS TRUE?

A. Definitely not. There is a difference between a virtual circuit and a virtual channel. A virtual channel is a single connection that allows the switching of different ATM cells in a virtual path to different destinations.

A virtual circuit is a voice or data communications link that is generally set up on a per call basis and disconnected when the call is ended. A virtual circuit is referred to as a logical, rather than a physical, path for a call. Virtual circuits can be permanent or switched.

Since Mr. Chandler compares packet switching to circuit switching, an analogy here would be to compare a DS1 to a DS0. Consider the DS1 the virtual channel, and the DS0 the virtual circuit.

Q. IS WHAT MR. CHANDLER DESCRIBES AT PAGE 6, LINE 9 OF HIS TESTIMONY MORE ACCURATELY CALLED A SWITCHED VIRTUAL CIRCUIT?

A. I believe so; however, his answer is not correct. Once again, Mr. Chandler appears to be confused. Simply, a switched virtual circuit is nothing more than a virtual circuit connection established across a network on an as needed basis and lasting only for the duration of the transfer. Mr. Chandler claims that "switched virtual circuits are generally not very useful for data transmission." Yet, switched virtual circuits are used extensively in X.25 networks and increasingly more so in Frame Relay networks. This is because switched virtual circuits provide automatic and dynamic network load balancing. In other words, switched virtual circuits are set up through signaling in consideration of the load on the network in order to establish the least congested paths and to achieve the lowest possible amount of delay in the transmission of data.

Q. WHAT IS A PERMANENT VIRTUAL CIRCUIT?

A. A permanent virtual circuit is "permanently" defined in routing tables in packet network switches or routers. The network path is fixed in program logic and is dependent on ATM capability. This is similar to Private Line service in the circuit switched network. Since this permanent virtual circuit uses a fixed logical channel over a physical network, the term circuit and channel are not interchangeable. It is "either or", not one in the same.

Q. DO PERMANENT OR SWITCHED VIRTUAL CIRCUITS HAVE ANY AFFECT ON ALWAYS ON OR DIAL-UP DSL SERVICE?

A. No, they do not. Permanent or switched virtual circuits have no affect on nailed up, always on, or dial-up DSL user connections.

Q. ON PAGE 15 OF HIS TESTIMONY, MR. CHANDLER CLAIMS THAT THE USE OF COPPER-BASED DLC TECHNOLOGY IN THE QWEST COST STUDY LEADS TO AN OVERSTATEMENT OF COSTS. IS THIS CLAIM ACCURATE?

A. No it is not. Mr. Chandler is suggesting that Qwest retrofit its existing Digital Loop Carrier ("DLC") systems with ADSL cards. Rather than retrofitting the existing DLC systems, Qwest has chosen to overlay the ADSL architecture. This architecture uses a separate cabinet and the associated electronics for the sole use of ADSL service. This additional cabinet is placed in the network on the customer side of the DLC system. This allows Qwest to offer UPS on lines that are provisioned for voice using an IDLC. In other words, Qwest's use of DLC does not impair requesting carriers access to Qwest UPS.

SUMMARY OF TESTIMONY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Qwest Unbundled Packet Switch service is in full compliance of the FCC's UNE Remand Order that ruled that Incumbent Local Exchange Carriers ("ILEC") must provide requesting carriers access to unbundled packet switching in situations

where the ILEC has placed its DSLAM in a remote terminal. The ILEC is relieved of its unbundling obligation only if it permits a requesting carrier to collocate its DSLAM in the ILEC's remote terminal, on the same terms and conditions that apply to its own DSLAM.[1]

The study presented in this docket deals with the FCCs exception, not the remote collocation of a requesting carrier's DSLAM. The testimony of Mr. Chandler appears to reference DSL technology that is not yet generally available. Qwest cost studies model the latest technology available, based on the technology Qwest plans to deploy in its network. The network design and architecture on how this technology is deployed is Qwest's choice, not the choice of the requesting carriers.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

[1] FCC 99-238, ¶313

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JAMES M. IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194 PHASE II

REBUTTAL TESTIMONY OF

WILLIAM L. FITZSIMMONS

ON BEHALF OF QWEST CORPORATION

JUNE 27, 2001

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I. QUALIFICATIONS AND PURPOSE OF TESTIMONY

Q. PLEASE STATE YOUR NAME AND POSITION.

A. My name is William L. Fitzsimmons. I am a Director at LECG, LLC. My business address is 2000 Powell Street, Suite 600, Emeryville, CA 94608.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS.

A. I hold a Ph.D. in Resource Economics from the University of Massachusetts, Amherst. My industry experience prior to joining LECG in 1994 includes two years of modeling demand for private line services for AT&T in New Jersey and six years as a financial modeler for BellSouth in Atlanta. At LECG, my work is focused on the analysis and financial modeling of telecommunications issues. Since 1996, I have testified numerous times on cost models and economic issues related to network unbundling. My curriculum vitae is attached as Exhibit WLF-1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to: 1) respond to witnesses Dr. Ford and Mr. Gillan on the correct interpretation of total element long run incremental cost (TELRIC); 2) express concerns about the loop cost estimates put forward by Mr. Denney on behalf of AT&T, WorldCom, and XO; 3) perform a sensitivity analysis on the HAI model to demonstrate the effect of substituting reasonable inputs for several unreasonable inputs that the model uses; 4) explain why this Commission should not be concerned <u>in this proceeding</u> with the possibility that Qwest could over-recover the cost of its loop network if it leases the high frequency portion of the loop

for a positive price; 5) explain that loop costs are not shared costs with add-on and usage-based services; 6) explain that forward-looking costs related to network upgrades are the costs of upgrading Qwest's actual network, not the cost of upgrading a network that does not exist; 7) describe why the Cox direct cost analysis does not add to the informed debate on cost estimates in this proceeding; and 8) respond to witnesses on a number of other issues.

II. PUBLIC POLICY GOALS AND PRICES OF UNBUNDLED NETWORK ELEMENTS

A. TELECOMMUNICATIONS PUBLIC POLICY

Q. IS THE ADVOCACY OF DR. FORD AND MR. GILLAN CONTRARY TO A CENTRAL GOAL OF PUBLIC POLICY AS IT RELATES TO TELECOMMUNICATIONS?

A. Yes. Dr. Ford and Mr. Gillan advocate setting prices for unbundled network elements (UNEs) at levels that will "provide a springboard to a competitive future."[1] This is an advocacy designed to support the financial performance of a set of firms at the expense of the development of real and lasting local telecommunications competition in Arizona. As such, their advocacy is contrary to a fundamental goal of public policy related to telecommunications.

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[1] Gillan Direct, p. 2.

Q. WHAT CENTRAL GOAL OF TELECOMMUNICATIONS POLICY IS CONTRARY TO THE ADVOCACY OF DR. FORD AND MR. GILLAN?

A. A central goal of telecommunications public policy is the promotion of the investment and innovation necessary to maintain a dynamic and modern network capable of providing high quality, ubiquitous services to customers at affordable prices.[2] Over the years, methods used by regulators to promote efficient innovation and investment have adapted to changes in technology and customer demand. For many years, government agencies pursued this goal with rate of return regulation. In the 1980s alternative forms of regulation began to surface, often referred to as incentive regulation. As the name implies, this form of regulation was a step toward the use of market-type incentives to achieve public policy goals. In 1996, Congress took a large and logical step forward by setting in motion a full transition toward competitive telecommunications markets for all services. Throughout all of the changes in regulation, the fundamental goal of promoting efficient innovation and investment has remained unchanged. It is the primary motivation for setting cost-based prices for UNEs in this proceeding.

The goal of promoting efficient innovation and investment will be furthered with cost-based prices for unbundled elements that: 1) compensate the firm that owns the network for the actual, forward-looking costs of building and operating an efficient network; and 2) provide competitors with accurate pricing signals that will result in efficient investment decisions, including build-versus-lease decisions. Prices that do not satisfy these conditions will disrupt the ongoing development of

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[2] Federal Communications Commission, CC Docket No. 98-146, Released February 2, 1999, ¶1.

local telecommunications competition in Arizona.

Q. DOES ACHIEVING THIS PUBLIC POLICY GOAL BEGIN WITH AN OBJECTIVE AND ACCURATE ESTIMATION OF COSTS?

A. Yes. Setting cost-based UNE prices that will promote efficient innovation and investment begins with an objective and accurate estimation of the costs of network elements. Costs determined in this manner are crucial inputs to the process of setting cost-based prices. Mr. Gillan recognizes that the "starting point...must be wholesale prices that reflect underlying costs."[3]

A fundamental economic concept underlying the decision to transform local telecommunications into a competitive market is that competition will provide the proper incentives for more efficient investment and innovation. To assist with this transformation, the FCC mandated that ILECs make productive assets available to competitors at prices that attempt to simulate competitive conditions. In an effort to simulate competitive conditions, the FCC specified that UNE prices should be based on forward-looking costs. In its First Report and Order, the FCC explained its rationale <u>as it relates to CLECs</u> as follows:

> Because a pricing methodology based on forward-looking costs **simulates the conditions in a competitive marketplace**, it allows the requesting carrier [of unbundled elements] to produce efficiently and to compete effectively, which should drive retail prices to their competitive levels.[4]

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[3] Gillan Direct, p. 3.

[4] FCC 96-325, First Report and Order, Released August 8, 1996, CC Docket Nos. 96-98 and 95-185, ¶679. (emphasis added)

For the development of efficient competition, it is also necessary that UNE prices adequately compensate the ILEC that owns the asset. In the First Report and Order, the FCC recognized that this goal is also served by prices for UNEs that replicate competitive prices to the greatest extent possible. The FCC explained its rationale as it relates to the ILECs as follows:

> The **just and reasonable rate** standard of TELRIC plus a reasonable allocation of the joint and common costs of providing network elements that we are adopting attempts to replicate...the rates that would be charged in a competitive market.[5]

In other words, to promote efficient investment and innovation, prices for unbundled elements should replicate prices that would prevail in a competitive telecommunications market. TELRIC-based prices (including a reasonable allocation of joint and common costs) are an attempt to simulate competitive prices that will lead to efficient investment decisions by entrants and incumbents during the transition to competition. Prices for UNEs that are out of sync with prices that would reasonably prevail in a competitive market will have a disruptive impact on local telecommunications services competition.

Dr. Ford says that "the analysis is simple: lower UNE rates promote competition; higher UNE rates deter competition."[6] This facile view misses the essence of this proceeding. It is not to assist the entry of competitors with rock-bottom prices that fail to compensate Qwest for the use of its network by competitors. Dr. Ford attempts to blur the important distinction between jump-starting competitors and

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[5] Id., ¶740. (emphasis added)

[6] Direct Ford, p. 8.

promoting efficient competition. It is not the number of competitors, but efficient competition that leads to benefits to consumers. Promoting an increase in the number of competitors at the expense of efficient entry is bad public policy.

Q. IS DR. FORD CORRECT THAT IT IS NECESSARY TO "HAVE AN ANALYTICAL FRAMEWORK...TO EVALUATE PROPOSED UNE RATES"? [FORD, P. 4]

A. Yes. Estimating costs that provide a meaningful basis for setting cost-based UNE prices is an important and difficult task. It is necessary, therefore, to develop an analytical framework for estimating costs and setting prices based on costs. Recognition of this fact provided the impetus for entrants, incumbents, and regulators to devote enormous resources to the development of cost models. Parties in this proceeding use these models to propose cost estimates for a number of unbundled elements. Often, these cost estimates are very different from each other. A proper analytical approach begins with determining how much of the variation in cost estimates is due to differences in the structures of the models and how much is due to values of key inputs.

Several regulatory bodies employed this methodology over the past several years. In Arizona, the Commission recognized that "[a]djusting inputs in one model produced charges similar to the outputs from the other model."[7] In Iowa, the Iowa Utilities Board devised three sets of values for key inputs and instructed all parties to run their models with these inputs. At the conclusion of this process, the Board noted that:

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[7] Opinion and Order, Arizona Corporation Commission, Docket No. U-3021-96-448 et al., January 30, 1998, p. 6.

> "The runs filed by the parties showed that both models produced results that were reasonably close to one another when similar inputs were used. All parties thus agreed the critical choice for the Board was not between the RLCAP [now part of ICM] and Hatfield [now HAI] models, but rather what input values should be used in running a model."[8]

Carefully considering values for inputs and running a model with these inputs is not, as Dr. Ford suggests, a willy-nilly process.[9] It is a systematic analytical framework that was successfully adopted in many jurisdictions in the United States and elsewhere, including in the earlier cost docket in Arizona. This is not a perfect process, but it is the most systematic analytical process available to us for the task of estimating costs for the basis of setting cost-based prices for unbundled elements.

Q. WHAT OTHER CONCERNS DO YOU HAVE WITH DR. FORD'S ADVICE TO SET UNE PRICES IN A MANNER THAT WILL JUMP-START COMPETITION?

A. A central goal of telecommunications policy is to promote efficient innovation and investment. Setting prices below the costs that Qwest and other facilities based providers incur when they actually invest in facilities will disrupt the ongoing development of competition in Arizona. As noted by Chairman Powell of the FCC:

> "government policy was a little too generous in incenting quick [business] models...I think we probably bent a little more in the direction of resale than facilities because everybody was really anxious to get competition...we have to do the hard medicine stuff

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[8] Final Decision and Order, State of Iowa Department of Commerce Utilities Board, Docket No. RPU-96-9, April 23, 1998, p. 16.

[9] Ford Direct, p. 4.

> now...[to] make sure that whatever competition does come is real and lasting."[10]

In a market in transition toward competition, there is considerable risk related to network investments that must be recovered from periodic payments over a number of years. During the last five years, several competitors have invested in telecommunications facilities in Arizona. It is likely that a portion of this investment would have been foregone if the prices for unbundled network elements were set below the cost of building facilities. Contrary to Dr. Ford's advice, when this Commission faces two alternatives—one that may jump-start competitors and one that favors continued efficient investment in facilities by CLECs and Qwest—following the second option will best serve the goal of continued development of real and lasting competition.

B. LOCAL EXCHANGE COMPETITION IN ARIZONA

Q. WOULD YOU PLEASE COMMENT ON MR. GILLAN'S STATEMENT THAT THE COMPETITIVE SECTOR OF THE TELECOMMUNICATIONS INDUSTRY IS ON THE "BRINK OF COLLAPSE"? [GILLAN DIRECT, P. 4]

A. Mr. Gillan's statement that the competitive sector of the telecommunications industry is on the brink of collapse is a gross mischaracterization of the facts. Many competitors have failed and more will likely follow. The competitive sector remains strong, however, and it spans a range of technologies including high-capacity fiber

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[10] "Powell Blames CLEC Money Woes on Lenders, Bad Business Plans," Part 2 of Powell's Interview Transcript, Edie Herman, Mary Greczyn, Communications Daily, May 23, 2001.

systems, narrowband and broadband wireless, and cable-based competitors. In Arizona and elsewhere, competitive local exchange providers continue to invest in network facilities and extend their market penetration. In year 2000, there were ten CLECs with fiber networks in Phoenix and four in Tucson.[11] According to a recent study, CLECs invested an estimated $8 billion in network facilities nationwide during 2000, CLEC network route miles grew by 14 percent, and CLEC revenue grew by 34 percent to over $39 billion.[12] CLECs are successfully competing for profitable lines and usage.

A number of firms are also using wireless and cable facilities to compete for local communications customers in Arizona. Cox Communications is successfully offering cable telephony service Chandler, parts of North Phoenix, Scottsdale, Peoria and Mesa.[13] Cox is investing millions of dollars to complete the rollout of telephony services throughout its service area in the Phoenix metropolitan area.[14] In addition to cable telephony, Cox and other cable companies are offering cable modem service in Arizona. Across the nation, cable-based firms are providing a large share of high-speed Internet access service to residential and small business customers. At year-end 2000, there were 3.7 million residential cable modem subscribers compared with 1.7 million residential DSL subscribers, and another

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[11] "Competition for Special Access Service, High-Capacity Loops, and Interoffice Transport," In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 Joint Petition of BellSouth, SBC, and Verizon for Elimination of Mandatory Unbundling of High-Capacity Loops and Dedicated Transport, CC Docket No. 96-98, Submitted by the United States Telecom Association, Prepared for BellSouth, SBC, Qwest, and Verizon, April 5, 2001, p. B-2 and B-6.

[12] "The State of Local Competition 2001," The Association for Local Telecommunications Service, February 2001.

[13] www.cox.com/Phoenix/telephone/FAQ's.asp, downloaded June 21, 2001.

[14] www.cox.com/Phoenix/telephone/FAQ's.asp, downloaded June 21, 2001.

75,000 subscribers using broadband satellite.[15]

The use of mobile wireless is continuing to grow rapidly. At year-end 2000, there were over 1.8 million mobile wireless subscribers in the state, an increase of 63 percent from year-end 1999.[16] This means that at the end of 2000 there were nearly as many wireless subscribers in Arizona as there were residential wirelines in Arizona served by Qwest. (At year-end 2000, Qwest had slightly over 2 million residential wired lines in service.) If even a small percentage of wireless subscribers are substituting wireless usage for wireline usage, wireless represents a substantial amount of facilities-based competition in Arizona. In May of last year, Sprint also chose Phoenix as the metropolitan area for the launch of its broadband wireless service called Sprint Broadband Direct™. This service was touted in a Sprint press release as "a truly revolutionary method of providing two-way, broadband Internet access and services using fixed wireless technology."[17]

Currently, competitive telecommunications carriers are under pressure from financial markets. Industry analysts note that while financial pressures will result in consolidation, the competitive local exchange sector remains strong. Competitors with strong management, focused business plans, solid cash management, and a growing customer base are doing well. Many of these strong CLECs, such as AT&T, Cox, Time Warner Telecom, WorldCom, and XO, are operating in Arizona.

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[15] Goodman, Michael, "Residential Broadband Cable Modems and DSL Reach Critical Mass," Yankee Group Report, Vol. 5, No. 3, p. 1, March 2001.

[16] Local Telephone Competition: Status as of December 31, 2000, Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, May 2001

[17] "Sprint Launches First Broadband Wireless Market in Phoenix," Sprint Press Release, Sprint Broadband Wireless Group, Russ Robinson, May 8, 2000, p.1.

One analyst concludes: "It is clear that the industry is entering a more stable environment, which is natural after the peak in capital expenditures and as players become more rational."[18]

Q. IS THE FAILURE OF A NUMBER OF FIRMS IN A COMPETITIVE MARKET EVIDENCE OF A FAILURE OF COMPETITION?

A. No. The fact that a number of CLECs have failed and that other CLECs will fail in a slower economy is not surprising. Particularly when the economy slows after an extended expansion, new entrants in most industries will face difficult challenges, and it is probable that a significant number of new entrants will fail. This result is a part of, not a failure of, the competitive process. Competition is based on risks and rewards, and failure can have many causes – a bad business plan, shoddy implementation, a lack of acumen, or simply bad timing. Figure 1 shows that over half of all businesses are dissolved within the first four years of operation.

Figure 1
Business Dissolution Rates by Age of Business[19]

Age of Businesses (Minimum Years)	All Firms
2	23.7%
4	52.7%
6	62.2%
8	70.9%

[18] Salomon, Smith Barney report on The 2001 SSB Telecom, Media & Entertainment Conference, p. 3, January 19, 2001. See also Bartash, Jeffry, "'Equipped' for a Telecom Slowdown," CBS.MarketWatch.com, Dec. 27, 2000.

[19] Note: Firms were traced beginning in 1996 and observed, if available, every other year beginning 1978 and ending in 1990. Business dissolution includes businesses that dissolve for any reason at all, including failure, bankruptcy, owner retirement, owner health, or the desire to enter a more profitable endeavor. See *The State of Small Businesses: A Report to the President, 1996*, US Small Business Administration, Office of Advocacy, p. 226.

Instead of recognizing that the cause of the financial woes of some CLECs is due, at least in part, to the CLECs' own actions and the vagaries of competition, Mr. Gillan lays all of the blame on the behavior of ILECs and bad decisions by regulators. Fortunately, Mr. Gillan's dim prediction for the competitive sector and his finger pointing is not universally shared by CLECs. Allegiance's CEO, Royce Holland, for example, arrived at a very different conclusion than Mr. Gillan.

> "He described the CLEC shakeout as only natural – the result of the overheated capital markets of 1999 and early 2000. In those days, there was 'no business plan too weak or management team too inexperienced to get funded,' he said.
>
> 'But for the companies remaining, there will be a good environment when the market returns.'
>
> Many companies were dragged down by an over-reliance on high-yield debt, Mr. Holland asserted. 'For a year or two, it was really easy to get high-yield debt...Over time, you'd see these balance sheets with high-yield debt [levels] three or four times higher' than the market value of the company, he said. 'Anyone with that high a debt is in big trouble.'"[20]

Mr. Gillan also fails to recognize that failure of some competitors is expected to lead to greater strength for those left standing. Failure by a subset of competitors is not a failure of competition, but rather a normal part of the maturing process of a developing competitive market. While some competitors will not survive as independent companies, their assets will be purchased and used by other companies, and customers will continue to benefit from competitor investments. This process will, in fact, strengthen competition as the assets of failed companies are purchased by stronger companies at discount prices. A similar maturation

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[20] "CLEC Representatives Have Doubts about the FCC's Recip Comp Order," Telecommunications Report Daily, May 15, 2001.

process is occurring among wireless providers. Analysts for Strategis Group support this expectation with the statement that "the CLEC industry will ultimately be comprised of a much smaller group of larger and stronger companies better able to compete against the ILECs and each other."[21]

Before laying blame on regulators and Qwest for the failure of a number of competitors, it is also helpful to consider that, compared with entrants into other markets, CLECs are afforded unprecedented opportunities to succeed in local telecommunications. They have the opportunity to find the most effective mix of building facilities, using UNEs priced to include all of the economies of scale of the incumbent, and reselling incumbents' retail services. Where the combination of UNEs is lower than the discounted price of retail service, CLECs are even free to undercut the wholesale cost of retail services with UNE-P. Mr. Gillan should consider the words of the FCC Chairman when he discussed the failures of a number of competitors:

> "The government does have some culpability, but...a lot of competitive companies entered the market on really inefficient and short-term business models...Many of them were designed to get bought. Many of them were designed to take advantage of reciprocal compensation until it was gone.[22]

Q. ARE CLECS CURRENTLY COLLOCATED IN MANY OF QWEST'S WIRE CENTERS IN ARIZONA?

A. Yes. As of year-end 2000, there were 32 active competitors collocated in Qwest's

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[21] Meyer, Lisa, "Investors hang up on most CLECs," Red Herring, April 10, 2001.

[22] "Powell Blames CLEC Money Woes on Lenders, Bad Business Plans," Part 2 of Powell's Interview Transcript, Edie Herman, Mary Greczyn, Communications Daily, May 23, 2001.

wire centers in Arizona. Because building collocation facilities requires capital investment, it is reasonable to conclude that if a competitor is collocated in a Qwest wire center, it is serving customers in that wire center. At year-end 2000, 94 percent of Qwest's access lines were in wire centers with at least one collocated competitor, and 80 percent of Qwest's access lines were in wire centers with three or more collocated competitors.[23] Collocation information provides a clear picture of the extent of Qwest's customer base that can be easily reached by competitors. By leasing unbundled loops, a CLEC can compete for all of the customers within a wire center in which it is collocated.

Q. WHAT IS THE SIGNIFICANCE OF THE FACT THAT FACILITIES-BASED COMPETITION IS ONGOING IN ARIZONA?

A. With ongoing facilities-based competition, we are now at the point where setting prices or conditions to favor one group of CLECs can harm others.

C. TELRIC-BASED PRICING

Q. WOULD YOU PLEASE REVIEW THE PURPOSE AND RULES OF TELRIC?

A. For cost proceedings, the purpose of TELRIC is to estimate forward-looking, efficient costs associated with providing unbundled network elements. These cost estimates can be used to determine the appropriate prices for unbundled network elements that provide incentives for efficient investment decisions by facilities-

[23] Information from Qwest.

based competitors. TELRIC is an estimate of the cost of providing network elements at the level of output provided by the current network, using current wire center locations and the least cost, most efficient, currently available technology and procedures. The assumption that the entire network will be replaced from the existing grid of network nodes is often referred to as the "scorched node" assumption. TELRIC includes all investments and activities that are incremental to providing a service using the best available technology and the most efficient mix of resources (land, labor, and capital).

Q. DOES THE TELRIC METHODOLOGY ATTEMPT TO SIMULATE A NETWORK THAT QWEST WILL ACTUALLY CONSTRUCT?

A. No. TELRIC is a theoretical construct; it does not design an actual network that Qwest will construct, nor does it estimate the actual costs that Qwest will incur. For example, in the TELRIC methodology we assume the replacement of the entire network with today's most efficient technology and procedures. Any real world ubiquitous network will include a mixture of plant vintages that will be placed over a long period of time.

Q. DOES TELRIC PROVIDE MEANINGFUL INFORMATION FOR SETTING COST-BASED PRICES OF UNBUNDLED NETWORK ELEMENTS?

A. Yes. Even though TELRIC is a theoretical construct, properly constructed TELRIC estimates can provide meaningful information regarding direct, forward-looking, efficient costs. TELRIC provides cost estimates that are not encumbered with past regulatory depreciation decisions or artificial separations of costs, which are difficult

to exclude from embedded cost studies. As such, TELRIC models can provide valuable input for determining appropriate prices for UNEs that are provided over existing facilities.

Nonetheless, TELRIC is a theoretical construct. It was created to assist with the process of setting UNE prices that simulate prices that would prevail in a competitive market. Dr. Ford concurs that the "goal of TELRIC pricing for UNEs is to replicate what the price would be for an element in a competitive market."[24] To the extent that TELRIC estimates accomplish this goal, they provide meaningful information for setting UNE prices. To the extent that TELRIC estimates diverge from this goal, they do not.

Q. WHAT HAPPENS IF PRICES ARE NOT SET CORRECTLY?

A. Setting cost-based prices of network elements that are consistent with prices that would prevail in a competitive market is critical for the ongoing development of efficient and beneficial competition in Arizona. If sound economic principles are adopted for the costing and pricing of network elements, ILECs will receive compensation for their large and ongoing network investments, and CLECs will receive pricing signals that will encourage them to use an efficient mix of resale, unbundled elements, and construction of their own facilities. Incorrectly set prices will impede the ongoing development of beneficial competition by sending the wrong pricing signals to Qwest and CLECs.

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[24] Ford Direct, p. 17.

Q. SHOULD THIS COMMISSION SET UNE PRICES BASED ON AVERAGE REVENUES FROM BASIC LOCAL RESIDENTIAL SERVICE?

A. No. The fact that the average revenue from residential basic local service is below the estimated average forward-looking cost for this service has no bearing on setting cost-based prices for UNEs. TELRIC is a framework for estimating the efficient cost of constructing and operating a high-quality operational network. It is estimated without regard to prices of services or rates of return.[25] If Z-Tel, or any other competitor, cannot earn sufficient revenues to cover TELRIC-based prices of UNEs, that does not mean that the costs are inaccurate. As the FCC stated recently in an analogous context, "[t]he Act requires that we review whether the rates are cost-based, not whether a competitor can make a profit by entering the market."[26] An important factor related to the slow development of residential competition is the fact that a large portion of residential customers do not provide revenues in excess of the cost of serving them.

Dr. Ford laments that the cost-based prices of UNEs in Arizona make it very difficult for a UNE-P provider serving residential customers, like Z-Tel, to offer financially viable competition in Arizona.[27] Qwest no doubt shares this lament, but it has absolutely no bearing on the estimation of forward-looking long run incremental

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[25] Section 252(d)(1)(a)(i) of the Telecommunications Act of 1996 states that "the just and reasonable rate for the interconnection of facilities and ... network elements... shall be based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element"

[26] In the Matter of Application of SBC Communications, Inc., for Provision of In-Region InterLATA Services in Kansas and Oklahoma, CC Docket No. 00-217, Memorandum Opinion and Order, FCC 01-29 at ¶92. (Rel. Jan. 22, 2001.)

[27] Ford Direct, p. 3.

costs for unbundled network elements. In his testimony, Dr. Ford ignores the strong likelihood that the problem faced by Z-Tel is not that cost-based prices for UNEs are too high, but that the revenue from basic residential service in Arizona is too low. Competitors that serve residential customers at current prices are in the same position as Qwest. To remain financially viable, they need to capture contributions from non-basic or non-residential services.

Q. DOES THE TELRIC COMPLIANCE TEST PRESENTED BY DR. FORD PROVIDE USEFUL INFORMATION FOR DEVELOPING ACCURATE, COST-BASED PRICES FOR THIS PROCEEDING?

A. No. Dr. Ford's version of the TELRIC compliance test was derived from the test that the FCC used in negotiations with SBC and Verizon prior to granting interLATA relief in several states.[28] The FCC's version of this test is tenuous at best, and Dr. Ford's version of this test serves no useful purpose in this proceeding for setting cost-based prices.

Q. WOULD YOU PLEASE PROVIDE A BRIEF DESCRIPTION OF THE FCC COMPLIANCE TEST?

A. As part of the approval process for Verizon and SBC to provide interLATA service in Oklahoma and Massachusetts pursuant to section 271 of the Telecommunications Act, the FCC applied a test to determine if the agency was satisfied that certain of the companies' UNE prices were in compliance with

[28] InterLATA relief refers to the ability of ILECs to provide in-region interLATA service. These proceedings are often called 271 proceedings in reference to Section 271 of the Telecommunications Act of 1996.

TELRIC. This test began with a review of the proceedings that were used to set the UNE prices in Texas (SBC) and New York (Verizon). It is my understanding that the FCC approved the UNE prices set in state proceedings for both of these states. It then used the UNE prices in these states and the agency's HCPM model to compare relative cost differences (not actual costs) between the two states. The FCC established three criteria for these cost comparisons: 1) the states had a common BOC and geographic similarities; 2) the states had similar rate structures, and 3) the rates in the comparison state had already been found by the FCC to be reasonable.[29]

Q. WHY DOES DR. FORD'S TESTIMONY RELATED TO THE FCC'S COMPLIANCE TEST FAIL TO PROVIDE USEFUL INFORMATION FOR SETTING COST-BASED PRICES IN THIS PROCEEDING?

A. Dr. Ford's testimony related to the FCC's compliance test is not useful for establishing cost-based prices for a number of reasons.

1. Dr. Ford's application of the FCC's TELRIC compliance test relies totally on his unsupported assumption that cross-company price comparisons provide meaningful information, even though the FCC specifically states that the first of three criteria that must be met in order to compare prices between states is that the states "have a common BOC and geographic similarities."[30] As

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[29] Application of Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions) and Verizon Global Networks Inc., for Authorization to Provide In-Region, InterLATA Services in Massachusetts, Memorandum Opinion and Order, FCC 01-130, CC Docket No. 01-9, ¶28 (Released April 16, 2001) ("*Verizon Massachusetts Order*")

[30] *Verizon Massachusetts Order*, ¶28.

applied by the FCC, the TELRIC compliance test began with a careful evaluation of the UNE prices in Texas and New York. (The FCC concluded that the UNE loop prices in these states are TELRIC-compliant.) Next, the FCC used SBC's prices in Texas to evaluate one of SBC's loop prices in Oklahoma and Verizon's prices in New York to evaluate one of Verizon's prices in Massachusetts. Making cross-company comparisons clearly introduces an additional source of uncertainty.

2. Dr. Ford includes UNE prices from Oklahoma and Kansas in his analysis. This introduces a second order error akin to the reduction of clarity caused by re-faxing a fax. With Dr. Ford's methodology, errors introduced by the first application of the compliance test are compounded when these prices are used as benchmarks for prices in other states. Furthermore, prices for UNEs agreed to in Kansas and Oklahoma, as a *quid pro quo* for interLATA relief, are poor substitutes for UNE prices that were set in extensive cost proceedings using carefully considered inputs within state specific applications of cost models.

3. The underlying FCC compliance test methodology is itself seriously flawed. It relies on the unsubstantiated assumption that the FCC's Synthesis Model is capable of producing cost estimates that are consistently accurate across states. The Synthesis Model has substantial shortcomings and flaws that render its cost estimates highly suspect.

4. Without careful control over input values and a careful analysis of the causes for differences, cross-state comparisons of the differences between cost

models raise more questions than they answer.

5. The loop price recommended by Dr. Ford as a result of his version of the compliance test is clearly below the forward-looking cost of the loop. As shown in Section IV of my testimony, when the HAI model is run with reasonable and consistent values for key inputs, it estimates the cost of a loop in Qwest's service territory in Arizona to be nearly $20 per month.

If Dr. Ford does not agree with the results of the cost models that are run with the most reasonable inputs, he is free to roll up his sleeves and demonstrate where these models overstate costs. His misguided approach of making cross-company, cross-state comparisons of the results of different cost models with different input values is a distraction from the important issues of establishing cost-based prices in this proceeding. The proper approach is to establish a range of reasonableness for UNEs giving careful consideration to the best set of inputs to use with models that simulate the cost of UNEs in the state of Arizona.

III. IT IS NECESSARY TO RE-RUN THE HAI MODEL

A. BRIEF HISTORY OF THE HAI MODEL

Q. WHY DO YOU ANALYZE COSTS USING THE HAI MODEL?

A. Cost estimates derived from the HAI model were proposed in this proceeding by Mr. Denney on behalf of AT&T, WorldCom, and XO and by Mr. Dunkel on behalf of the Arizona Corporation Commission Staff. These estimates are based on runs of

this model that include unreasonable values for key inputs, and these unreasonable input values result in an unreasonable estimate of the cost of building and operating a loop network to serve Qwest's customer base in Arizona. The purpose of this and the next section of my testimony is to show that the HAI model, run with more reasonable values for a small number of key inputs, produces a loop cost estimate that is significantly higher than the estimates put forward by Mr. Denney or Mr. Dunkel. Prior to working through this analysis, I provide a brief history of the HAI model.

Q. WOULD YOU PLEASE PROVIDE A BRIEF DESCRIPTION OF THE HISTORY OF THE HAI MODEL?

A. Mr. Dunkel is incorrect when he states that the "Hatfield model is the model that the ACC utilized in Decision No. 60635."[31] The Hatfield model that was used in that proceeding bears little resemblance to the HAI model that is used by Mr. Denney and Mr. Dunkel in this proceeding. Numerous versions of the model were released since September 1996. These revisions were necessary because of significant errors in each version of the model.

In September 1996, AT&T filed Version 2.2.2 of the Hatfield model in arbitration proceedings in all fourteen states in Qwest's region, including Arizona.[32] Qwest uncovered numerous mechanical and conceptual flaws during the arbitration proceedings. For example, the model provided approximately one-half of the

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[31] Dunkel Direct, p. i.

[32] Initially, MCI (now WorldCom) was also a sponsor of the Hatfield model.

sheath miles necessary to reach the customers currently served by Qwest, indicating that the model builders did not subject their important design parameters to basic reality checks.

Five months later, in February 1997, Release 3.0 was introduced. This version included a total redesign of the distribution section of the model. In particular, it addressed the issue of insufficient sheath miles to reach a large portion of telephone customers. Release 3.1 was introduced just three weeks later to correct significant errors. This version, however, was also plagued by errors, and Release 3.1 Update was introduced less than two months later, in April 1997.

In July 1997, Release 4.0 "preliminary" was introduced. This release of the model was rife with interface errors, and was replaced within three weeks with the updated Release 4.0.

On December 11, 1997, AT&T issued Release 5.0 of the model and a later version 5.0a and then a revised version of 5.0a. This version of the HAI model continued to exhibit serious flaws, such as a significant understatement of distribution distances and costs in rural areas. HAI 5.0a was the model of record at the close of 1998. After the close of 1998, there was a sharp decline in the use of cost models in state proceedings. Mr. Denney now presents cost estimates from HAI 5.2a. It is telling that in Mr. Denney's run of the model, distribution distances are calculated with a theoretical graphing methodology ("strand distances") rather than with model's distribution design. Choosing strand distances over a distribution methodology that supposedly reflects a realistic network suggests that proponents of the HAI model do not have confidence in the model's distribution design. HAI 5.2a is very different

from the model that was reviewed by this Commission when it set UNE rates in 1998, and it continues to have serious problems.

My review of the history of the many fundamental changes to the model confirms the accuracy of a statement by an Administrative Law Judge in a decision issued last month that rejected the HAI model 5.2. The ALJ stated that "[w]hen all is said, the recurring corrections to the Model seem to confirm its weaknesses more than its suppleness, and the Model continues to suffer from the flaws identified by the [New York] Commission in [a previous] Proceeding."[33] The fundamental nature of the many changes that the developers have made and continue to make to the HAI model does demonstrate the structural weakness, not the flexibility, of the model. As the New York ALJ described further, the model "is a ponderous tool," and has a "tenuous link to the real world."[34]

B. MODELING TOWARD PRE-DETERMINED RESULTS

Q. DO THE COST ESTIMATES FROM THE RELEASES OF THE HAI MODEL SUGGEST THAT ITS DEVELOPERS ARE MODELING TOWARD PREDETERMINED RESULTS?

A. Yes. For unbundled loops, the default run of Hatfield 2.2.2 estimated that the statewide average investment was $618, with an average monthly cost of $13.79.

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[33] Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements, Case 98-C—1357, Recommended Decision by Administrative Law Judge Joel A. Linsider at 34. (N.Y. Pub. Svce. Commission May 16, 2001)

[34] Id. at 34-35.

Now, at least ten versions[35] and hundreds of changes later, Mr. Denney's run of HAI 5.2a estimates that the statewide average investment for an unbundled loop is $442, with an average monthly cost of $10.10. The fact that the HAI modelers have more than doubled the amount of distribution distance in their model, while reducing loop investment and monthly cost by more than 25 percent, is enough to raise serious concerns about the model and its values for key inputs. Figure 2 summarizes these contradictory trends in the outputs of the HAI model from Release 2.2.2 to Release 5.2a.

Figure 2
Comparison of Distribution Miles and Unbundled Loop Costs

Model Version (default run)	Distribution Miles	Percent of 2.2.2 Miles	Monthly Loop Cost	Percent of 2.2.2 Loop Cost	Investment Per Line
HAI 2.2.2	12,296	100%	$13.79	100%	$618
HAI 5.0a	25,162	205%	$11.72	85%	$483
HAI 5.2a	26,328	214%	$10.10	73%	$442

C. THE USE OF INCONSISTENT VALUES FOR KEY INPUTS

Q. ARE COSTING PRINCIPLES A MAJOR SOURCE OF CONTENTION BETWEEN QWEST AND AT&T?

A. No. TELRIC is based on economic costing principles that are well known and generally accepted in the industry. These costing principles, as expressed by the

[35] AT&T and MCI have filed Versions 2.2.2, 3.0, 3.1, 3.1 (4/11), 4.0, Preliminary 5.0, 5.0, 5.0y, and 5.0a, and 5.2a in Qwest's states.

FCC, are not a major source of contention between Qwest and most CLECs. The real cost modeling issues in this proceeding are concerned with the correct and consistent application of the principles. Costing principles are subject to interpretation and are only fully realized and understood when they are applied within cost models.

Q. WHY DO YOU STRESS THE IMPORTANCE OF FOCUSING ON THE MOST REASONABLE VALUES FOR KEY INPUTS?

A. Evaluating cost models without using reasonable and consistent values for key inputs is akin to trying to evaluate cake recipes using ping pong balls as ingredients in the place of eggs. There is considerable debate in Arizona, throughout Qwest's states, and at the federal level regarding the relative merits of models designed to estimate unbundled element and basic local service costs. Whatever models are selected for these purposes, values for key inputs will continue to play an important role in estimating accurate and reliable costs. Even a perfectly specified model will provide inaccurate and unreliable results unless care is taken to populate the model with appropriate values for key inputs.

Q. WHAT ARE THE IMPORTANT ATTRIBUTES OF MODEL INPUTS?

A. To produce accurate cost estimates, inputs should be as realistic as possible and consistent with each other, as well as with the purpose and rules of TELRIC. For Arizona, inputs should reflect state-specific information wherever this information provides a reliable guide to forward-looking costs in a scorched node environment.

Inputs and assumptions should interact and "build on" each other to depict a

consistent view of the process being modeled. If we were modeling the cost of building and operating an automobile, the assumptions about the weight of the car, engine size, and gas mileage should be consistent with each other and consistent with the type of car that we are planning to build. Otherwise, the model is likely to depict a mongrel machine with mismatched parts and unrealistic operating parameters. In the same vein, it is important to recognize that even a well-constructed model may allow for the insertion of inconsistent inputs. It is the responsibility of the user of the model to design a set of inputs that are consistent with each other and with the purpose of the modeling exercise. Our car model may allow us to specify inputs for a two-ton sedan with an undersized engine and high gas mileage. The fact that the model does not reject these inputs does not guarantee that such a car will serve our purpose, or even move, if it is actually built.

Q. DOES MR. DENNEY USE UNREASONABLE VALUES FOR A NUMBER OF KEY INPUTS TO THE HAI MODEL?

A. Yes. There are three areas where Mr. Denney uses inconsistent, unsupported and counterfactual inputs, which result in understated cost estimates. First, Mr. Denney adopts input values that are inconsistent with the fact that the HAI model includes all of Qwest's current demand that is related to the network elements in the model.[36] Including all of Qwest's current demand is important to the model's cost estimates, because there are significant cost reductions related to economies of scale that can only be achieved if the network is constructed to serve all of the

[36] Denney Direct, p. 31.

current customer base.[37] Support for Mr. Denney's sharing input values, however, is inconsistent with a model that includes all of Qwest's current demand. Support for Mr. Denney's sharing inputs asserts that Qwest could experience wide-scale sharing of the cost of placing access lines with other telecommunications providers. If we assume that competitors are placing wide-scale facilities at the same time as Qwest, then it is inconsistent to assume that Qwest will achieve the economies of scale represented in the model. The assumption that Qwest would build a new network to serve all of its current customers eliminates the possibility of wide-scale sharing of costs with other providers of access lines. I explain the effect of this inconsistency in my sensitivity analysis presented in Section IV.

The second issue associated with the application of costing principles involves the implications of the "long run" and "forward-looking" requirements for TELRIC models. In the context of estimating economic costs, long run does not mean long time. In the definition of TELRIC, "long run" means simply that all costs are variable. The scorched node assumption is a convenient method of forcing all network inputs to be variable, because this assumption implies a complete replacement of the network. By adopting the scorched node assumption in their models, all parties in this proceeding meet the long run criteria. This is true even if we assume that the entire network is replaced in one year. Forward-looking costs are costs that are based on the best technology and practices in common use today. Adherence to the forward-looking definition implies that the TELRIC network is built using a single vintage of today's best technology and practices. Taken

[37] FCC 99-304, Tenth Report and Order, Released November 2, 1999, CC Docket Nos. 96-45 and 97-160, ¶57. (Hereinafter "Tenth Report and Order.")

together, these model requirements lead to the assumption that the TELRIC network is built out almost instantaneously. No other build-out schedule would result in a ubiquitous network that contains one vintage of technology.

An instantaneous build-out of a ubiquitous network with a single vintage of technology is unrealistic, but it is the world depicted in TELRIC models, and it has important implications for the estimates of costs. For instance, given this modeling framework, we are attempting to set prices for UNEs based upon today's technology and practices, not technology and practices that may exist sometime in the future. It is inconsistent with this framework to support values for inputs such as structure sharing and network operations with the expectation that we are considering changes over a long period of time.

Third, Mr. Denney uses counterfactual inputs that understate costs. As I show throughout my sensitivity analysis, there are a number of instances where Mr. Denney ignores actual data in favor of unsupported assumptions about forward-looking costs. In particular, the inputs that Mr. Denney uses in his run of the model for structure sharing, business and special access lines, drop investment, plant mix, and overhead all posit cost relationships which are directly contrary to facts.[38]

Q. WOULD YOU PLEASE SUMMARIZE YOUR COMMENTS RELATED TO THE SELECTION OF THE MOST REASONABLE VALUES FOR KEY INPUTS?

A. Before the HAI 5.2a model can produce reasonable cost estimates, it must be populated with reasonable values for key inputs. Issues related to determining the

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[38] Denney Direct, pp. 40-42.

most reasonable input values are not new, and it would be counter-productive to begin our search for the most reasonable input values from scratch. It is also counterproductive for the supporters of the HAI model to continue to use values for key inputs long after support for these values was discredited. As I describe in the following section, original support for the HAI default values for structure sharing, network operations, and overhead were all discredited and withdrawn by supporters of the model, and yet these values remain in the model and were used by Mr. Denney to estimate costs in this proceeding. It is time to build on what we have learned and stop forcing the debate back over the same ground. In the following section, I examine the reasonableness of key input values within the context of a sensitivity analysis of HAI 5.2a.

IV. HAI SENSITIVITY ANALYSIS

Q. WHY DO YOU PERFORM A SENSITIVITY ANALYSIS OF THE HAI MODEL'S STATEWIDE AVERAGE LOOP COST ESTIMATE?

A. As presented by Mr. Denney on behalf of AT&T, WorldCom, and XO, the HAI model provides unreasonably low estimates for loop cost and other elements. Mr. Denney's use of counterfactual and inconsistent values for a number of key inputs is a major cause of the unreasonably low cost estimates. In my sensitivity analysis, I examine the effect on the HAI model's loop cost estimate of modifying the values of a small number of key inputs. My analysis shows that inserting more reasonable values for a small number of key inputs increases the loop cost estimate from the HAI model significantly.

Q. HOW DO YOU STRUCTURE YOUR SENSITIVITY ANALYSIS?

A. In my sensitivity analysis, I replace inconsistent and counterfactual input values used by AT&T/WorldCom/XO with more reasonable values for key model inputs. Much has transpired over the last five-plus years. We have learned a great deal about cost modeling and selecting reasonable values for key inputs. It is time to build on what we have learned. My modified input values are the result of extensive analysis by: 1) my staff and others at LECG; 2) Qwest's cost analysts; 3) the FCC; and 4) other participants in arbitrations, universal service proceedings, and cost dockets.

Impacts of input modifications in my sensitivity analysis build upon one another in a logical sequence. For example, I make the necessary changes to investment levels prior to changing expenses. If careful consideration of the input values leads to the decision to change only a subset of the inputs in my analysis, it is a simple matter to rerun the model with the subset of input changes. In the interest of clarity of exposition and time, I present a sequential and cumulative run of the model. All dollar impacts used in this testimony are extracted from this sequential run of the model.

For each modification to the HAI model, Exhibit WLF-2 provides the relevant values from the AT&T/WorldCom/XO run of the model, the appropriate replacement values, the cumulative and incremental impacts of the modifications, and supporting documentation.

Q. DID YOU REMOVE SOLD EXCHANGES PRIOR TO RUNNING YOUR SENSITIVITY ANALYSIS?

A. All of my modifications shown in Figure 3 are run using a database without removing sold exchanges. In keeping with the cost estimates presented by Mr. Denney, I remove the sold wire centers as my final model adjustment.

Q. WHAT ARE THE RESULTS OF YOUR SENSITIVITY ANALYSIS ON HAI'S LOOP COST ESTIMATE?

A. My sensitivity analysis demonstrates that when the HAI model is run with reasonable modifications to a few key inputs, the model produces an average statewide basic loop cost estimate that is significantly higher than the estimate supported by CLECs in this proceeding. The results of my sensitivity analysis are shown below in Figure 3 and in Table A of Exhibit WLF-2. Using CLEC input values, HAI 5.2a estimates per-line loop investment of $442 and monthly unbundled loop cost of $10.10 before sold exchanges are removed. My sensitivity analysis increases the loop investment per line to $803, and increases monthly unbundled loop cost to $19.61.

Figure 3
HAI 5.2a Unbundled Loop Costs With Modified Inputs and Assumptions

Modification	Loop investment (per line)	Monthly Loop Cost	Cost Incremental Change
HAI 5.2a, Denney run	$442	$10.10	N/A
1. MST Off	$473	$10.86	$0.76
2. Lines Adjustment	$489	$11.28	$0.42
Investments			
3. Structure Sharing	$590	$13.14	$1.86
4. Drop Length	$609	$13.55	$0.41
5. Plant Mix	$742	$15.03	$1.48
6. Buried Placement Costs	$803	$16.40	$1.37
Operating and Overhead Factors			
7. Network Operations Factor	$803	$17.76	$1.36
8. General Support Allocators	$803	$18.63	$0.87
9. Corporate Overhead	$803	$19.07	$0.44
Capital Costs			
10. NID, SAI, Drop Depreciation	$803	$19.61	$0.54
Sold Exchanges			
11. Remove Sold Exchanges	$741	$18.43	($1.18)

A. MST FUNCTION

Q. WHY DO YOU TURN OFF THE MINIMUM SPANNING TREE FUNCTION IN THE HAI MODEL?

A. The minimum spanning tree (MST) is a theoretical lower limit on the distances that are required to reach a number of points. It is an estimate of the distances required to connect customer locations as if they were dots on a blank page. As such, it is a

useful diagnostic tool to assess a distribution design, but it is not an appropriate method of designing a telecommunications network. The pattern described by connecting the dots on a blank page is not analogous to the method of connecting real world locations with telecommunications facilities. Real world customers are not on a blank page, and a real network must go around buildings and lakes and other man-made and natural obstructions. For this and other reasons, real world telecommunications networks bear little resemblance to the connect the dots lines described by the HAI model's version of the MST. With the MST function turned off, the HAI model adopts a distribution design that at least attempts to simulate a real world network. When the MST function in the HAI model is on, it replaces the HAI model's distribution design with a connect the dots design described by the MST.[39] This is inappropriate.

Furthermore, AT&T/WorldCom/XO have not established that there is a meaningful relationship between the model's MST estimates and actual distances required to reach actual customer locations. Evidence in earlier proceedings indicates that the relationship between MST distances and actual distances required to connect real world customers varies significantly by line density and dispersion.

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[39] According to Mr. Denney, the MST function in HAI 5.2a provides for the extra distance required to connect points using "right angle routing" rather than direct point to point connections. This adjustment to the MST does not change the fundamental problems of using an MST methodology to estimate distribution plant.

Q. WOULD YOU PLEASE PROVIDE A BRIEF DESCRIPTION OF HOW THE MST WAS USED IN PREVIOUS PROCEEDINGS TO EVALUATE AN EARLIER VERSION OF THE HAI MODEL?

A. Analysis of the network design of the HAI 5.0a model raised concerns about the ability of the network design to reach customers, especially customers in rural areas. In effect, the model systematically understated the dispersion of customers in low-density rural areas. To test this hypothesis, a number of parties compared the distribution and drop distances specified by the model to the number of miles that would be needed if cables could be placed according to the MST. The analyses showed that even the minimum spanning tree distances were significantly greater than the distribution plus drop distances for many of the clusters used in the HAI 5.0a model. This failing in the HAI 5.0a model was most pronounced in the model's low-density clusters. The failure of clusters in the HAI 5.0a model to pass this "sanity check" indicated that the model was an inadequate tool to estimate the unbundled loop costs in rural areas. The MST function in the current version of he HAI model appears to be a response to this fact.

Q. WAS ANALYSIS PRESENTED IN EARLIER PROCEEDINGS THAT THE RELATIONSHIP BETWEEN THE MST AND THE MINIMUM DISTANCES FOR A REAL WORLD NETWORK VARIES WITH CUSTOMER DENSITY AND DISPERSION?

A. Yes. It makes common sense that the differences between distances required to place real world networks and distances from connecting the dots on a blank page will increase as densities of customers increase. In urban areas, there are many

more man-made obstructions that a network must go around. Analysis presented by Stopwatch Maps in a Minnesota cost proceeding supports this common sense conclusion.[40] In a low density area represented by the town of Montevideo (2.5 subscribers per square mile), Stopwatch Maps estimated that an efficient real world network would require 20 percent more cable than would be provided by the minimum spanning tree. In Montevideo, direct rights of way for telephone lines, long drops, and the absence of obstructions allow the telephone network to come relatively close to matching the minimum spanning tree. In a higher density area, such as Marshall (approximately 2,000 subscribers per square mile), Stopwatch Maps estimated that an efficient, real world network would require twice as much distance than would be provided by the minimum spanning tree multiple.[41] Higher densities of customer locations in Marshall, relative to Montevideo, cause a greater divergence between the layout of a telephone network and the connect the dots pattern depicted by the minimum spanning tree.

Q. IS THE MST FUNCTION IN THE CURRENT HAI MODEL AN APPROPRIATE REMEDY FOR A FLAWED DISTRIBUTION DESIGN?

A. No. In the Minnesota proceeding, I provided an MST-based analysis to demonstrate that the flawed network design in the HAI 5.0a model resulted in a

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[40] Supplemental Direct Testimony of Richard D. Emmerson and Kevin T. Duffy-Deno, *In the Matter of the Commission's Generic Investigation of US WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements*, Before the Minnesota Public Utilities Commission, Docket No. P-442, 5321, 3167, 466, 421/CI-96-1540, June 16, 1998, Exhibit EDD-4.

[41] This trend was also demonstrated by the HAI model. In the lowest two density zones, the majority of the HAI clusters did not satisfy the minimum spanning tree criteria. In the higher density zones, the majority of the clusters satisfied this criteria.

significant understatement of costs in low-density, rural areas. As I stated in that testimony, this methodology was devised for the sole purpose of providing a reasonable estimate of the dollar magnitude of the error in the HAI model; my methodology was not an appropriate solution to a serious design problem in the HAI model. An appropriate fix requires changes in the model's cluster data and distribution algorithms to derive the appropriate distribution distance necessary to provide service to all customers. Rather than take this appropriate step in this proceeding, AT&T/WorldCom/XO put forward a run of their model with an MST function turned on that actually decreases the overall distribution distance and loop cost estimated by the model. This is an inappropriate, and even perverse, response to a substantial amount of careful analysis that revealed a serious problem with their model.

Q. WHAT IS THE IMPACT OF TURNING OFF THE MST FUNCTION?

A. In my sensitivity run, I turn off the MST function. With additional analysis into the relationship between the estimates of this function and real world distribution distances in different density zones, this function may prove useful as a "sanity check" on the model's distribution design. Turning off this function decreases the loop investment and cost per line in the lowest density zone and increases the per line investments and costs in every other density zone. Overall, turning off the MST increases the loop investment per line by $31 and the per month unbundled loop cost by $0.76.

1 ***B. ACCESS LINES***

2 **Q. WHY DO YOU ADJUST ACCESS LINES?**

3 A. The version of the HAI model filed by Mr. Denney continues to count many digital
4 access lines on an access line equivalent basis. This is incorrect, and it has the
5 effect of reducing cost per line.

6 Overstating line counts with access line equivalents is not a new issue. In earlier
7 versions of the HAI model, non-switched special access lines were erroneously
8 counted on an access line equivalent basis. Many regulatory agencies, including
9 the FCC and the majority of the 14 state commissions in Qwest's service area
10 determined that access lines should not be counted on an access line equivalent
11 basis.[42] Now AT&T and WorldCom agree, and in running HAI 5.2a, Mr. Denney
12 estimated special access lines on a physical line basis.[43] In the sensitivity analysis,
13 I use Qwest actual physical counts of special access lines in place of Mr. Denney's
14 estimates.

15 **Q. ARE THERE ANY OTHER LINE TYPES THAT REQUIRE ADJUSTMENT?**

16 A. Yes. Mr. Denney's run of the HAI model includes digital business lines that are
17 reported on a channel equivalent basis. In the past several years, services that use

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[42] The FCC states that "[s]ince 24 communications channels can be carried by two pairs of copper wires, the number of copper cables required to carry digital traffic is computed by dividing the number of digital channels by 12." (Tenth Report and Order, ¶100.) Excerpts of relevant state orders in Colorado, Iowa, Nebraska, New Mexico, South Dakota, North Dakota, Montana and Wyoming are included in Exhibit WLF-2.

[43] Deposition of Douglas Denney, Before the Arizona Commerce Commission, Docket No. T-00000A-00-0194, Tuesday, June 19, 2001, p. 12.

high capacity lines have expanded well beyond special access. ISDN Primary Rate is an example. This service uses DS1 technology to provide a low-cost substitute for Centrex and PBX services. An increase in access line equivalents over the last several years is driven by the continued migration to ISDN Primary Rate service by medium and large businesses and the growth in use of ISDN Primary Rate by small businesses. In Qwest's line counts, ISDN Primary Rate is counted as approximately 21 access line equivalents, reflecting the average number of channels used by Qwest's customers. The FCC states that in the line counts reported by Qwest and other reporting companies "[d]igital access lines are shown in 64 Kbps equivalents."[44] It is appropriate to restate these access line equivalents as physical pairs.

Q. WHAT IS THE IMPACT OF CORRECTING THE LINE COUNTS IN THE HAI MODEL?

In this sensitivity analysis, I substitute Qwest actual physical counts of special access lines for Mr. Denney's estimates and restate business digital access lines on the basis of physical pairs. These adjustments increase the loop investment per line by $16 and the per month unbundled loop cost by $0.42.

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[44] "Statistics of Communications Common Carriers," 1999, Common Carrier Bureau's Industry Analysis Division, p. 26.

1 ***C. STRUCTURE SHARING***

2 **Q. WHAT IS YOUR ASSESSMENT OF THE STRUCTURE SHARING INPUTS USED**
3 **BY MR. DENNEY?**

4 A. Mr. Denney adopts the default values of the HAI model for structure sharing and
5 assumes that, on average, Qwest would pay little more than one-third of the cost of
6 placing distribution, feeder, and transport cables for an all-new local
7 telecommunications network in Arizona.[45] This level of sharing is significantly
8 greater than: 1) firms are achieving in the real world; 2) the previous decision by the
9 Arizona Corporation Commission; and 3) the values specified by the FCC in its
10 Tenth Report and Order. I suspect strongly that it is also well above the experience
11 of the CLECs that Mr. Denney represents in this proceeding. As noted earlier, the
12 support for this unrealistic level of sharing is based on logic that is inconsistent with
13 other important inputs and assumptions of the HAI model. Figure 4 presents the
14 sharing percents used in the HAI model, ordered by the Arizona Corporation
15 Commission, and specified by the FCC.

16 **Figure 4**
17 **Percent of Buried Placement Costs Borne by Qwest**

[45] Denney Direct, pp. 40-42.

Density Zone (lines/ sq. mi)	Denney	Arizona Order	FCC
0	33%	50%	100%
5	33%	50%	100%
100	33%	50%	85%
200	33%	50%	65%
650	33%	50%	65%
850	33%	50%	65%
2550	33%	50%	55%
5000	33%	50%	55%
10000	33%	50%	55%

Clearly, the inputs used by Mr. Denney are out of line. Given the fact that the original support for 33 percent was discredited and withdrawn by AT&T in other proceedings, it is improper to continue to put forward cost estimates based on this value.

Q. CAN YOU SHOW THAT THE ORIGINAL SUPPORT FOR MR. DENNEY'S SHARING INPUT WAS BASED UPON VALUES THAT HAVE BEEN DISCREDITED AND WITHDRAWN?

A. Yes. The original support for the AT&T sharing inputs was based on a mistaken application of cost principles. This support has since been discredited and withdrawn. AT&T assumed that all utilities were scorched, not just the local telecommunications provider. In September 1996, the president of Hatfield Associates, Dr. Mercer, stated the original support for the 33 percent sharing input as follows:

> "That was...a matter of observation that quite typically telephone poles are shared by electric utility, telephone and cable...I've done some work with electric utilities in places and understand from that work that conduit is similarly shared between multiple providers in

> cities where conduit is installed...I went telephone, cable, electric, and saw that was three, basically...I said it seems reasonable on the average that the number 3 is the right number to use. And .33 is 1 over 3."[46]

This position was reiterated in the Washington Costing and Pricing Workshop by AT&T's witness on outside plant costs, Mr. John Donovan, when he testified as follows:

> "Mr. Potter: So in effect you're assuming that the cities are as they exist today but all of the utilities are building their respective networks anew at the same time.
>
> Mr. Donovan: Yes.
>
> Mr. Carnall: I want to be sure that you are clear that you're assuming that all the utilities are building at the same time?
>
> Mr. Donovan: That's correct.
>
> Mr. Carnall: So this is scorched everybody not just scorched telephone.
>
> Mr. Donovan: Correct."[47]

Later, AT&T made it very clear that it decided to withdraw the "scorched everybody" assumption as support for its sharing inputs. AT&T witness Mr. Klick stated unambiguously that "[w]e are <u>not</u> arguing that other utilities are scorched."[48] I agree that the proper assumption is that only the Telephone Company is scorched. It is unreasonable, however, that Mr. Denney continues to use a sharing factor of 33

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[46] Before the Colorado Public Utilities Commission, "Video Deposition of Robert Mercer," Docket No. 96A-345T, September 19, 1996, pp. 86-87.

[47] Washington Costing/Pricing Workshop, UT-960369, February 14, 1997, pp. 188-189.

[48] Presentation of John C. Klick, Before the Public Service Commission of Wyoming, September 30, 1997. The appropriate slide from Mr. Klick's presentation is included in Document 3.4 of Exhibit WLF-2. (Hereinafter "Klick Presentation.")

1 percent even after the key support for this level of sharing was abandoned. When
2 a value for a key input is discredited, it is time to launch a fresh search for the most
3 reasonable value.

4 **Q. DOES THE HAI INPUTS PORTFOLIO THAT MR. DENNEY REFERS TO IN HIS**
5 **TESTIMONY ADD ANY MEANINGFUL SUPPORT TO JUSTIFY THE DEFAULT**
6 **SHARING INPUTS ADOPTED BY MR. DENNEY?**

7 A. No. The HAI Inputs Portfolio offers a contradiction of AT&T's own position by
8 basing support for its sharing inputs on the development of a competitive industry.[49]
9 The model's input portfolio states that "accelerated facilities based entry by CLECs
10 into local telecommunications markets will expand further future opportunities for
11 underground structure sharing."[50] This position, however, is inconsistent with the
12 fact that the HAI model includes all of Qwest's access lines. Economies of scale
13 that stem from building a network to serve all access lines produce lower per loop
14 cost estimates in the HAI model. It appears that Mr. Denney wants to combine cost
15 reductions from including all of Qwest's access lines with cost reductions from
16 having new facilities-based providers placing facilities at the same time as Qwest.
17 It is simply not possible to have it both ways. Mr. Denney's position was even
18 refuted by AT&T's own witness. Mr. Klick, stated in a previous proceeding: "We do
19 not contend that sharing opportunities are induced by competition."[51]

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[49] In Appendix B of the HAI Model Inputs Portfolio, CLECs try to support their structure sharing assumptions by pointing to sharing opportunities that will develop when competitive phone companies enter the market.

[50] HAI Model Release 5.2a Inputs Portfolio, May 16, 2001, Appendix B, B.1 Overview.

[51] See Klick Presentation.

Q. WOULD YOU PLEASE RESPOND TO MR. DENNEY'S NEW ARGUMENTS FOR THE SHARING LEVELS HE ASSUMES IN THE MODEL? [DENNEY PP. 40-42]

A. In an attempt to bolster the discredited default sharing values in the HAI model, Mr. Denney attempts to create new support for his assumption that Qwest would only bear approximately one-third of the cost of placing facilities in a forward-looking environment. For several reasons, his attempt to create new support for this value is flawed.

First, Mr. Denney quotes a statement by Qwest's chairman that his company was able to place its long distance network through revenues gained by selling capacity to other users.[52] I gather that Mr. Denney is implying that Qwest could use this same strategy to place a local network. One problem with this assumption is that it is inconsistent with the fact that the model includes all of Qwest's access lines. This assumption is important to the end result because there are significant cost reductions related to economies of scale that can be achieved only if there is a single provider. If Qwest were able to coordinate its activities with two other firms, such that there would be at least three local service providers in each trench, Qwest would not achieve anything like the economies of scale assumed by Mr. Denney's run of the HAI model. This is another example of Mr. Denney trying to build in the economies of scale from one provider of Qwest's lines and the savings from having multiple providers building facilities. Even in the hypothetical world of TELRIC, you cannot have it both ways.

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[52] Denney Direct, p. 41.

1 Second, Mr. Denney says that "[f]irms in a competitive market find ways to minimize
2 costs."[53] This is true, but real world evidence demonstrates that Mr. Denney is
3 wrong in his assumption that this leads to wide-scale sharing of placement costs by
4 facilities-based firms. Time after time, in municipalities across the country,
5 facilities-based providers go it alone when they place facilities.[54] No doubt, one
6 reason is difficulties involved in coordinating activities across competitors.

7 Third, Mr. Denney states that high sharing percentages are justified by savings that
8 the model does not reflect, such as the ability to share feeder and distribution
9 routes.[55] If Mr. Denney can demonstrate that Qwest could achieve cost savings by
10 sharing feeder and distribution routes, he should include this in the model's outside
11 plant design, along with incremental costs associated with this form of sharing. If
12 he intends to use sharing to reflect real world cost savings not included in the
13 model, he may consider the more even-handed approach of also including
14 unforeseen costs that are not included in the model.

15 Finally, Mr. Denney suggests that we should consider the ability of Qwest to share
16 with itself in the future through the re-use of existing trench and conduit. This is a
17 recurring theme in Mr. Denney's testimony. He states that "[t]raditional models...do
18 not realize any of the cost savings resulting from growth."[56] Again, to be even-
19 handed, he should state that traditional cost models also do not realize costs from

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[53] Denney Direct, p. 42.

[54] Shear, Michael D., "Ground Dug Up, Public Fed Up; Va. Trying to Limit Cable Excavations," The Washington Post, December 20, 2000.

[55] Denney Direct, p. 42.

[56] Denney Direct, p. 39.

stranded plant caused by losses of market share. Going forward, incumbents may not realize any of the cost savings from growth. Qwest faces real threats of line loss from facilities-based CLECs, providers of cable telephony and cable modem service, and wireless providers. Line losses are also caused by innovative methods of economizing on lines by using high-capacity circuits to replace multiple lines. Consistency demands that, if we are going to consider the impact on current costs from future growth in demand, we also need to consider the loss of demand from all current sources of access line competition. All of the factors listed above will reduce Qwest's access lines or access line growth, even if current competitors place no more facilities than exist today.

For this proceeding, I recommend that we adhere to the FCC's directive and calculate average costs using current demand in the denominator. Estimating the average cost of a prudent build-out to the current customer base is a difficult enough process without entering into the contentious process of forecasting the dynamics of growth and market share loss.

Q. ARE MR. DENNEY'S SHARING INPUTS FOR BURIED PLACEMENT ALSO AT ODDS WITH DECISIONS AND EVIDENCE FROM OTHER JURISDICTIONS?

A. Yes. Many regulatory bodies have determined that the HAI model's default sharing percentages are too low. The Federal-State Joint Board on Universal Service recommended the assignment of 100 percent plowing costs and 66 percent of the costs for most other types of placement to the facilities provider.[57] In South Dakota,

[57] Document 3.7 in Exhibit WLF-2 contains excerpts of state commission decisions concerning structure sharing.

the Commission rejected the HAI model values for structure sharing as too high. In Iowa, the Utilities Board announced that it has accepted buried sharing percentages of 70 percent for distribution and feeder plant. In New Mexico, the Commission assigned 70 percent of buried placement cost to US WEST. In Colorado, where I recommended 84 percent buried placement, the Commission stated, "We find that...[a]djusting the calculations of USWC witness Fitzsimmons for this [sharing] assumption...is reasonable."[58]

Experiences by CLECs are also at odds with the Mr. Denney's sharing percentages. In a deposition in an Iowa proceeding, Mr. Kirk Kaalberg, Network Service President of McLeod USA, stated that "we look very aggressively for partners to share our construction costs." Even with an aggressive effort to share, Mr. Kaalberg stated that McLeod bears 60 to 75 percent of buried placement costs.[59]

Q. DO YOU ADOPT THE FCC SPECIFIED INPUT VALUES FOR SHARING?

A. I adopt the FCC's specified values for this input for aerial facilities and buried and underground facilities in the lowest three density zones. Indications from actual placement activities, however, do not support the FCC's values for buried and underground sharing in the higher density zones. In these density zones, I fix the portion that Qwest would pay in a forward-looking environment at 80 percent. Forward-looking costs are costs that are based on the best practices in current use.

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[58] Decision No. C97-739, Before the Public Utilities Commission of the State of Colorado, July 16, 1997, page 24.

[59] Deposition of Kirk E. Kaalberg, Docket No. RPU-96-9, pp. 23, 27-28, 34.

In a TELRIC environment, with one firm building a network to serve all of Qwest's current demand, there would be even fewer opportunities to share. Electricity and cable firms already have most of their facilities in place, and the scorched node assumption does not extend to these firms. With limited firms to share with in a TELRIC world, the rational expectation is that Qwest would pay well over 80 percent of the cost of placing a ubiquitous network.

Q. WHAT IS THE OVERALL IMPACT OF MODIFYING THE VALUES OF THE STRUCTURE SHARING INPUTS?

A. When I modify the values of structure sharing inputs for distribution, feeder, buried drops, and transport placement, investment per loop increases by $101, and the monthly unbundled loop cost increases by $1.86.

D. DROP LENGTH

Q. WHAT MODIFICATIONS DO YOU MAKE THAT CHANGE MR. DENNEY'S DROP LENGTH VALUES?

A. In Mr. Denney's run of the HAI model, the weighted average drop length is approximately 66 feet. These drop lengths are unreasonably short and result in unreasonably low drop investment. Determining the average length of drops is an empirical exercise. During the last round of model-based arbitrations, cost dockets, and universal service proceedings, Qwest undertook an extensive data collection process to determine average drop lengths. Empirical evidence from a sample of thousands of drops across seven states reveals an average drop length of

1 approximately 150 feet.[60]

2 In my sensitivity analysis, I double the drop lengths in the HAI model. This results
3 in a weighted average drop length of approximately 135 feet. Compared with
4 Qwest's average drop lengths, the drop lengths and resulting drop investments in
5 my sensitivity analysis are conservative, reflecting economies that Qwest would
6 strive toward with a network-wide, timely build-out of drops in Arizona. My
7 adjustments to the drop length inputs increase the per-line loop investment by $19
8 and increase the monthly unbundled loop cost by $0.41.

9 ***E. PLANT MIX***

10 **Q. WHAT MODIFICATIONS DID YOU MAKE TO THE PERCENT OF PLANT MIX?**

11 A. Qwest's actual percent of aerial facilities in Arizona is the most reliable guide
12 available to the aerial plant that would exist in a forward-looking network. Today,
13 Qwest uses aerial facilities for 17.5 percent of its cable in Arizona, down from 18.6
14 percent in 1995. By adopting the HAI defaults, Mr. Denney assumes that the
15 percent of aerial cable will increase significantly in a TELRIC world. The HAI
16 default values for aerial distribution cables range from 25 percent of all placement
17 in the lowest density areas to 85 percent in the highest density areas.[61] This is
18 clearly an unreasonable view of what a reconstructed network would look like in
19 Arizona. Current trends are to reduce aerial distribution in response to community

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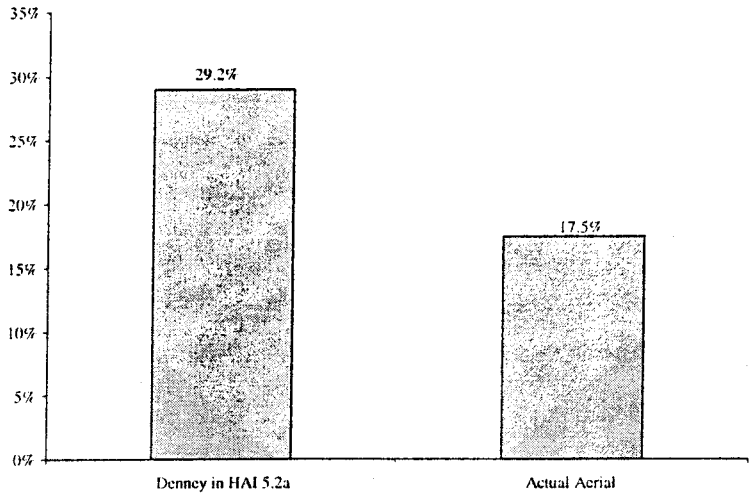
[60] This average is calculated from data collected drop length surveys conducted in seven Qwest states. The average is calculated with long drops capped at a distance of 500 feet.

[61] The 85 percent includes block and riser cable (65 percent), as well as aerial cable (20 percent).

aesthetic concerns and maintenance issues, not to increase aerial distribution above current levels. Figure 5 compares the percentage of aerial plant modeled in the HAI model to the actual percentage of aerial plant in Arizona today.

Figure 5
Percent Aerial Plant in HAI 5.2a Compared to Actual in Arizona



To better reflect Qwest's experience, I modify the aerial distribution specified by the FCC so that the weighted average equals Qwest's current, actual statewide aerial percentage. HAI plant mix inputs do not comport with Qwest's actual experience and understate per-line loop investment by $133, and the per-month loop cost by $1.48.

F. PLACEMENT COSTS

Q. WHAT COMMENTS DO YOU HAVE REGARDING BURIED PLACEMENT COSTS IN THE HAI MODEL?

A. In an earlier proceeding, AT&T presented Hatfield 2.2.2, which is an earlier version of the HAI model presented by Mr. Denney in this proceeding. In Hatfield 2.2.2, the average placement cost for buried distribution facilities was almost $5.00 per foot.

In the current model, the weighted average placement cost in Arizona is $2.65 per foot. I show this substantial drop in the effective placement cost in Figure 6.

Figure 6
Change in HAI Buried Distribution Placement Costs

			Buried Placement Cost (per ft)	
Density Zone	HAI 5.2a (MST off) Buried Distribution Distance (ft)	Percentage of Total Buried Distribution	HAI 2.2.2	HAI 5.2a
0	25,205,656	24%	$2.00	$1.77
5	30,094,111	28%	$2.00	$1.77
100	4,177,419	4%	$2.00	$1.77
200	11,014,394	10%	$2.00	$1.93
650	3,388,358	3%	$3.00	$2.17
850	15,958,061	15%	$3.00	$3.54
2550	14,116,781	13%	$20.00	$4.27
5000	2,119,050	2%	$20.00	$13.00
10000	59,391	0.1%	$20.00	$45.00
Total	106,133,220	100%		
		Weighted Average Cost, Distribution Buried Placement	**$4.95**	**$2.65**
		Percent of Hatfield 2.2.2 Weighted Average Cost	**100%**	**54%**

In my sensitivity analysis, I use buried placement costs based on Qwest's experience as represented in the ICM. The weighted average cost of buried placement costs using the Qwest inputs is $4.60. Mr. Denney's inputs for placement costs understate per-line loop investment by $61, and the per-month loop cost by $1.37.

G. NETWORK OPERATIONS FACTOR

Q. WHAT ARE NETWORK OPERATIONS EXPENSES?

A. Network operations expenses include plant operations and administration,

engineering, testing, network administration, and power. These are not maintenance expenses.

Q. WOULD YOU PLEASE COMMENT ON THE EVIDENCE USED BY AT&T TO SUPPORT A FIFTY PERCENT REDUCTION IN NETWORK OPERATING EXPENSES?

A. The HAI default input adopted by Mr. Denney assumes that Qwest could immediately cut its network operations expense in half in a forward-looking TELRIC world. The original support for this large reduction in expenses was discredited and, hence, was withdrawn. After withdrawing the original support, the HAI supporters put forth equally flawed evidence in an attempt to support the same unrealistic value instead of conducting an objective inquiry into determining the most reasonable value for network operations expenses.

Q. WHAT SUPPORT WAS OFFERED FOR ADOPTION OF THE FIFTY PERCENT REDUCTION IN NETWORK OPERATING EXPENSES?

A. Supporters of the HAI model attempt to bolster the assumption of a large reduction in network operations expenses with after-the-fact, wrong-headed arguments that are devoid of factual support. The paper containing these arguments literally poses the problem and solution as follows:

> "Problem: Pacific Bell provided a Declaration by Mr. Scholl...in which he asserts that the Hatfield's characterization of his testimony is a misrepresentation...

1 Solution: Find support for the 50% NOE factor other than the
2 testimony of Richard L. Scholl."[62]

3 This is a clear statement that supporters of the model are providing after-the-fact
4 analysis for a discredited (and it appears predetermined) input value. By adopting
5 the default value, Mr. Denney assumes that Qwest could immediately cut its
6 network operations expense in half in a forward-looking TELRIC world.

7 In an attempt to shore up this input value, HAI supporters also confuse forward-
8 looking costs with future costs. Forward-looking costs are based on today's best
9 technology and operating practices, not technology and operating practices that will
10 be unavailable until some indefinite time in the future. It is inconsistent with the
11 proper interpretation of the long run concept to estimate today's costs based on
12 productivity gains that Qwest may achieve over the next eight years. This policy
13 would always have Qwest pricing below its current costs.

14 **Q. IS THE COMMISSION'S SELECTION OF AN INPUT VALUE FOR NETWORK**
15 **OPERATIONS LIKELY TO HAVE AN IMPACT ON SERVICE QUALITY?**

16 A. Yes. It is important to note that parameters set by this Commission for running cost
17 models are likely to become self-fulfilling projections of future resource allocations.
18 For example, if this Commission were to adopt Mr. Denney's input for the network
19 operations factor, it would send a message that Qwest needs to perform the
20 functions included in network operations with only 50 percent of the resources that
21 it uses today. Most of these resources are people. To operate its network within

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[62] "First Draft - Network Operations Factor (.50)" White Paper by Paul Hansen, Submitted by AT&T as a Late-Filed Exhibit, Docket RPU-96-9, July 30, 1997, pp. 1-2. This paper is included as Document 7.3 of Exhibit WLF-2.

the costs suggested by Mr. Denney, Qwest would need to significantly reduce the number of employees performing network operations functions immediately. It is almost certain that such a significant reduction would have a noticeable negative impact on service quality.

Q. HAS QWEST'S NETWORK OPERATIONS EXPENSES PER LINE DECLINED SINCE THE LAST COST DOCKET?

A. Yes. As Qwest witness, Ms. Marti Gude, explains, network operations expense in Arizona declined between 1995 and 1997 due to the regionalization of network operations and a change in accounting in which more engineering support costs were capitalized. Since 1997, network operations expense per line has remained relatively flat. This shows that Qwest made significant business changes to reduce network operations costs, but that these cost reductions cannot be replicated every year, or even over a series of years. By basing network operations expenses on year 2000 data, the HAI model has already captured the cost reductions achieved by Qwest in prior years. Applying an arbitrary 50 percent reduction on top of cost savings already achieved grossly understates network operation expenses.

Q. WHAT IS THE EFFECT OF CHANGING THE NETWORK OPERATIONS FACTOR TO ONE?

A. Resetting the network operations factor to 100 percent increases the monthly unbundled loop cost by $1.36.

1 ***H. GENERAL SUPPORT***

2 **Q. WHAT COMMENTS DO YOU HAVE CONCERNING GENERAL SUPPORT**
3 **EXPENSE?**

4 A. General Support costs relate to furniture, office equipment, general-purpose
5 computers, motor vehicles, garage work equipment and other work equipment. HAI
6 5.2a multiplies General Support investment and expenses by "Allocator" fractions,
7 which reduce these costs by over 50 percent. Neither the HAI documentation nor
8 Mr. Denney provide support for these reductions. Ms. Gude explains how the
9 "allocators" are applied and why they are inappropriate. Changing the "Allocator"
10 fractions to 1 increases the unbundled loop cost by $0.87.

11 ***I. CORPORATE OVERHEAD FACTOR***

12 **Q. WHAT COMMENTS DO YOU HAVE REGARDING THE CORRECT VALUE FOR**
13 **THE PERCENT OF CORPORATE OVERHEAD EXPENSE?**

14 A. Mr. Denney adopts the HAI model's default value for overhead of 10.4 percent.
15 According to the HAI inputs portfolio, overhead was set at 10.4 percent based on a
16 calculation of AT&T's overhead percent from 1994, and the steps in this calculation
17 is a matter of record. I include the supporting documentation in WLF-2. Even if
18 AT&T overhead provided a relevant target value for Qwest, which it does not, the
19 calculation of AT&T's overhead used to support the HAI default input is seriously
20 flawed. The calculation of 10.4 percent does not properly account for the access

revenues that AT&T "passes through" to the local exchange carriers.[63] In its Order, the Iowa Utilities Board clarified this point as follows:

> "The 10.4 percent represents AT&T's overhead factor in its own operations. The AT&T factor is not analogous to U S West's operations, because it includes access charges as part of total revenues...Access charges are collected by interexchange carriers as a part of toll revenue and are passed through directly to local exchange carriers. Thus revenue collected for access charges require little overhead support and should not be included in the calculation...Indeed, removing access charges from AT&T's revenues produces an overhead factor of 16.2 percent...It thus appears a variable overhead factor of 13.6, as calculated by AT&T and MCImetro, will best reflect Qwest's overhead in the near future."[64]

Using AT&T's overhead also relies on the misguided claim that AT&T's overhead is a relevant measure of Qwest's overhead. Not only is this claim false, but it was refuted by an AT&T witness when he stated unequivocally that "AT&T's overhead factor ...is not relevant to this proceeding."[65] AT&T's long distance telecommunications business is in fact very different from Qwest's local telecommunications business, and these differences render direct cross company comparisons meaningless.

Furthermore, efficiency gains in non-overhead costs are already reflected in lower overhead expenses in the HAI model. Overhead is calculated by multiplying the overhead percentage by all other expenses. For example, if all other expenses

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[63] In Document 9.2 of Exhibit WLF-2, I present my analysis that shows that correcting this flaw makes AT&T's overhead percent exceed the QWEST specific number as calculated by AT&T.

[64] Before the Iowa Department of Commerce Utilities Board, Final Decision and Order, Docket No. RPU-96-9, April 23, 1998, pg. 24.

[65] Before the Public Service Commission of Montana, Response of AT&T to Data Request USWC-062, Docket No. D97.9.167, February 6, 1998.

decline by 10 percent, overhead will also decline by 10 percent within the model.[66] Artificially reducing overhead to 10.4 percent would cause overhead expense to decline faster than the average decline of all other expenses in the HAI model. There is no evidence or reason that this should occur. There are efficiency reasons for the existence of overhead expenses for such functions as legal services and human resources. Reducing overhead as a percentage of all expenses could lead to duplication of efforts for such functions and an increase in costs for all services.

Q. DID MR. DENNEY OFFER NEW SUPPORT FOR THE 10.4 PERCENT VALUE FOR OVERHEAD IN HIS TESTIMONY? [DENNEY PP. 36-37]

A. Yes. Mr. Denney offers a flawed calculation of Qwest's overhead value for the past five years as new support for the input value of 10.4 percent.[67] This analysis comes up short on two accounts. First, Mr. Denney's calculation is mechanically flawed. To calculate overhead expense in a manner that is consistent with how this factor is used in the HAI model, overhead expenses should be divided by non-overhead expenses. The denominator of this equation equals all expenses minus overhead expenses. Mr. Denney neglects to subtract overhead expenses from all expenses in the denominator of his equation. Fixing this mechanical error increases the average overhead value from Mr. Denney's calculation from 10.4 percent to 12.0 percent. Second, Mr. Denney deviated from the methodology that was used for years by supporters of the model when he subtracts selected

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[66] Assume that all expenses other than overhead decline from $1000 to $900 (i.e., $100 or 10 percent). If the overhead factor is 20 percent, overhead will decline from $200 to $180 (i.e., $20 or 10 percent).

[67] Denney Direct, pp. 36-37.

expenses from the numerator of his equation. Overall, Mr. Denney's new support for the default overhead value of 10.4 percent appears to be no more than another attempt to bolster a discredited input value.

As described by Ms. Gude, the five-year average overhead expense using the HAI methodology is 15.1 percent. After making a downward adjustment to overhead expense for year 2000 to account for merger-related expenses, Qwest's overhead values for years 1999 and 2000, consistent with the HAI methodology, are 13.3 and 12.9 percent. In my sensitivity analysis, I use the overhead value of 13.0 percent. Using this value for overhead increases the unbundled loop cost by $0.44.

J. DEPRECIATION

Q. WHAT CHANGE DID YOU MAKE TO THE DEPRECIATION EXPENSES USED IN MR. DENNEY'S RUN OF THE HAI MODEL?

A. As described by Ms. Gude, the depreciation life that Mr. Denney uses for SAIs, NIDs and drops is unsupported and much longer than lives for comparable classes of outside plant. In the sensitivity analysis, I use the depreciation life recommended by Ms. Gude. Changing only this one depreciation life increases the unbundled loop cost by $0.54.

K. MR. DUNKEL'S RUN OF THE HAI MODEL

Q. IS MR. DUNKEL'S RUN OF THE HAI MODEL FLAWED?

A. Yes. Mr. Dunkel states that he ran the model with the ACC's input values where available and with the FCC's values for inputs that were not specified by the ACC in Decision No. 60635.[68] A review of the scenario inputs used by Mr. Dunkel shows that he failed to accomplish this goal. Instead, he used a mishmash of input values, several of which do not appear to be based on the ACC Decision, the FCC's Tenth Report and Order, or the HAI default values. For example, Mr. Dunkel discounts by approximately 55 percent all of the SAI costs specified by the FCC. Mr. Dunkel does not provide any rationale for this discount. He also picks and chooses FCC-specified values without any explanation. For example, Mr. Dunkel appears to ignore the FCC-specified values for plant mix and placement cost. (Exhibit WLF-3 provides a list of Mr. Dunkel's unexplained inputs.) Mr. Dunkel recognizes that "study results are very dependent on assumptions or inputs that require some judgement."[69] I agree with this statement, and I agree with its corollary: a model run with inputs that are not the product of sound judgement will not provide meaningful results. Mr. Dunkel provides a mongrel run of the HAI model that lacks coherence, explanation, or meaning.

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[68] Arizona Corporation Commission, Docket Nos. U-2428-96-417 et al., January 30, 1998. (Hereinafter "ACC Decision.")

[69] Dunkel Direct, p. 4.

V. FULL RECOVERY OF LOOP INVESTMENT BY QWEST IS UNCERTAIN

Q. WOULD YOU PLEASE COMMENT ON MR. FARRAR'S STATEMENT THAT A PRICE GREATER THAN ZERO FOR THE HIGH-FREQUENCY SPECTRUM UNE WOULD ALLOW QWEST TO OVER-RECOVER THE COST OF ITS LOOP NETWORK? [FARRAR, P. 10]

A. For a meaningful discussion of recovery of the cost of the loop network, it is necessary to establish: 1) the actual cost of the loop network; 2) how Qwest's revenues recover this cost today; and 3) if revenues in the future will be sufficient to recover loop costs. To my knowledge, no intervenors in this proceeding provide information about the actual cost of the loop network or analysis that demonstrates how amortized loop costs are being recovered with current revenues from current customers. Without this information, there is a substantial degree of uncertainty about any intervenor assertion related to Qwest's ability to recover the cost of its loop network. With the increasing development of competition, Qwest faces increasing uncertainty about the extent to which future revenues will be able to contribute to loop costs. In fact, with accelerating competition in local telecommunications, there is a legitimate concern that Qwest may not recover the full cost of its loop network, even with a positive price for the high-frequency spectrum UNE.

It is a fact that it will take many years for Qwest to recover the long-term and ongoing investments in its loop network. It is also a fact that local telecommunications is becoming increasingly competitive. A determination of full recovery, therefore, needs to include a consideration of the ability of Qwest to

recover its loop investment with periodic payments from retail service revenues and UNE prices over a number of years in a competitive environment.

Q. HOW HAS COMPETITION CHANGED THE CONSIDERATION OF FULL RECOVERY OF QWEST'S INVESTMENT IN ITS LOOP NETWORK?

A. The pertinent question for considering full recovery of Qwest's investment in its loop network is: Will Qwest be able, in the future, to fully recover the cost of its investments? Considerations of this issue were more straightforward in the past, when implicit subsidies were sustainable and almost all local telecommunications demand was served by the ILEC. The Telecommunications Act of 1996 irrevocably changed the environment of local telecommunications. All of Qwest's products are now open to competition. With competitors eagerly seeking and exploiting profitable opportunities, there is no assurance that the prices and volumes required to provide full recovery would continue to be realized.

In the increasingly competitive local telecommunications market, this Commission is no longer able to guarantee the full recovery of Qwest's long-term investments. Other firms will serve an increasing proportion of local telecommunications demand. There will be winners and losers among competitors. This is the nature of competition. Furthermore, it is clear that Qwest cannot depend on recovering its loop costs from its current subsidy-laden pricing structure, which is unsustainable in a competitive market.

Q. WILL ALL REVENUE GENERATED BY THE HIGH FREQUENCY SPECTRUM UNE BE INCREMENTAL TO QWEST'S CURRENT REVENUES?

A. No, it will not. It is likely that the high-frequency spectrum UNE will be used to replace current elements or services. For example, many of Qwest's customers currently use second lines to access the Internet with dial-up modems. The high-frequency spectrum UNE can provide much faster Internet access and also eliminate the need for second lines for these customers. It is expected, therefore, that revenues from the high-frequency spectrum UNE will be at least somewhat offset by losses from second lines. Perhaps even more significant is the prospect of voice-over-DSL service, which has the potential of supplanting Qwest as the provider of the voice services that currently provide substantial contributions to the recovery of costs.

Q. WOULD YOU PLEASE SUMMARIZE YOUR REBUTTAL COMMENTS RELATED TO THE RECOVERY OF THE COST OF QWEST'S LOOP NETWORK?

A. Competition is escalating across a wide range of local telecommunications services. The increase in competition is due, in part, to the availability of Qwest's productive assets to competitors at TELRIC-based prices. Qwest is required to lease bare unbundled loops at TELRIC, and it is now required to lease just the high-frequency portion of its customers' loops at a price that will be determined in this proceeding. Escalating competition is also due to the fact that competitors are eagerly seeking profitable opportunities, including opportunities to exploit Qwest's subsidy-laden retail pricing structure. In this environment, there is a legitimate concern about Qwest's ability to recover the full cost of its loop network from its

current customers and prices.

VI. LOOP COSTS ARE NOT SHARED COSTS WITH ADD-ON AND USAGE-BASED SERVICES

Q. IS MR. DUNKEL CORRECT THAT THE LOOP COST "IS CAUSED BY THE ENTIRE FAMILY OF SERVICES THAT USE THE LOOP"? [DUNKEL DIRECT, P. 40]

A. Absolutely not. The cost of a loop is not caused by the provision of usage services, such as intraLATA toll, or add-on services, such as call waiting. The first principle of cost estimation is cost causation. Loop costs are caused by the dedicated nature of the connection established between the end user and Qwest. Consider two customers, Smith and Jones. Smith subscribes to basic local service from Qwest, but almost never uses her phone. Jones uses his phone line an average of five hours every day. The cost of the underlying loop is the same for Smith and Jones, because the cost of the loop does not vary with usage or add-on services. Using a loop ten minutes or ten hours a day does not change the cost of creating or operating a loop. Usage causes incremental switching costs, not loop costs. The same is true for add-on services. If Jones uses call-waiting and call-forwarding or does not use any add-on services, the cost of his loop does not change. Given the fact that usage-based services and add-on services do not have any impact on the cost of the loop, it is not credible to claim that these services cause the cost of the loop. The cost of the loop is caused by the dedicated connections that it provides, whether or not a customer uses these connections.

Q. HOW IS THE HFPL DIFFERENT FROM USAGE-BASED AND ADD-ON SERVICES?

A. The high- and low-frequency spectrums on a loop are joint costs. When there is a demand for both, then these two products jointly cause the cost of the loop. They are joint products because they are created in the same production process. When a copper loop is created, it has the physical property that it contains the capacity to carry high-frequency and low-frequency signals. In this sense, the high- and low-frequencies share similar characteristics with other joint products. In Ohio, a DLEC witness suggested the joint product example of mutton and wool.[70] Although mutton and wool are not classic joint products, they share some of the key attributes of joint products and suffice for illustrative purposes.[71] Mutton and wool are created in the same process of raising sheep. If the shepherd who raises the sheep also produces a basting sauce for mutton or looms for the wool, these are not joint products created in the same process of raising sheep. There are separate costs for producing basting sauce and looms. In this example, mutton and wool are akin to the low frequency and the high frequency of a shared line, and usage-based and add-on services are akin to the looms and basting sauce.

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[70] Deposition of Terry Murray, Before the Public Utilities Commission of Ohio, Case No. 96-922-TP-UNC, p. 71.

[71] Classic joint products vary in equal proportions, such as chicken wings and chicken breasts. With each chicken there is generally an equal amount of each chicken part.

Q. DOES MR. DUNKEL FAIL TO APPRECIATE THE DIFFERENCE BETWEEN A JOINT PRODUCT OF THE LOOP ON A SHARED LINE (THE HFPL), AND USAGE-BASED AND ADD-ON SERVICES (SUCH AS TOLL AND CALL WAITING)?

A. Yes. Mr. Dunkel attempts to use the fact that the HFPL is a joint product of the loop on a shared line to support his incorrect position that the loop cost is caused by usage-based and add-on services.[72] For costing and pricing purposes, the fact that the HFPL is a joint product of the loop on a shared line makes the HFPL fundamentally different from services that are not joint products of the loop. Usage-based and add-on services are not joint products of the loop.

Q. WHY IS IT IMPORTANT TO MAINTAIN THE DISTINCTION BETWEEN THE HFPL AND BOTH USAGE-BASED AND ADD-ON SERVICES?

A. A competitive market will allocate a portion of the loop cost for recovery by the price of the HFPL based on the relative levels of demand of the low- and high-frequency spectrum. This is because the HFPL causes the cost of the loop, along with the use of the low-frequency on a shared line. Add-on and usage-based services do not cause the cost of the loop. A competitive market will drive prices toward the costs caused by usage-based and add-on services, and these costs do not include the cost of the loop.

A return to the example using mutton, wool, and basting sauce illustrates this point. Mutton and wool jointly cause the cost of raising sheep, and they are produced in

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[72] Dunkel Direct, pp. 37-40.

the same sheep-raising process. Assume that the shepherd also produces a basting sauce for mutton that he sells to many of his customers. The sauce does not cause the cost of raising sheep; it is not produced in the same sheep raising process; and it causes costs that are totally separate from raising sheep. If the shepherd has a monopoly across all of his products, he can choose to sell mutton and wool below the cost of raising sheep and subsidize the sheep–raising process with a price for basting sauce that is substantially above the cost of making the basting sauce. Consider what would happen if he tried to maintain this pricing structure in a competitive market. Firms that do not raise sheep could sell basting sauce at a price that was close to or equal to the cost of producing the sauce (including a reasonable rate of return on their investments), thereby undercutting the shepherd's price and winning substantial market shares. If the shepherd possesses a modicum of business sense, he would soon realize that his pricing structure is not sustainable in a competitive market, and he would lower the price of his basting sauce to meet the market. To cover all of his costs he would need to increase the price of mutton or wool or both, depending on the relative levels of customer demand for mutton and wool. In total, the cost of the loop in a competitive market would need to be recovered by the revenues from the joint products, mutton and wool. Firms do not make the decisions about the relative amounts of the joint costs to allocate to the two joint products; this decision is dictated by the relative strengths of customer demand.

Q. IS THERE A REAL-WORLD TELECOMMUNICATIONS EXAMPLE OF THE FACT THAT ALLOCATING LOOP COST FOR RECOVERY IN THE PRICES OF A USAGE-BASED SERVICE IS NOT SUSTAINABLE IN A COMPETITIVE MARKET?

A. IntraLATA toll service provides a real-world example of why allocating the cost of the loop for recovery in the price of a usage-based service (rather than a joint product) is not sustainable in a competitive market. IntraLATA toll service does not cause the cost of the loop. If a basic local service customer never makes or receives an intraLATA toll call, she nonetheless causes the entire cost of the loop. Furthermore, competitors are not required to pay for a portion of the loop when they provide intraLATA toll service. Consider a firm that only provides intraLATA toll service. It can price this service to cover its switching and transport costs, but need not price to recover a portion of its customers' loop costs. If Qwest is required to recover a portion of the loop cost in the price of its intraLATA toll service, it will lose substantial market share.

Switched access service provides another real-world example. At one time, it was common practice for ILECs to allocate a significant amount of loop costs for recovery in the prices for switched access that they charged to long distance companies, such as AT&T. With the proliferation of special access services in the late 1980s, it soon became apparent that this source of implicit subsidy was not sustainable, at least not for long distance calls to heavy volume business customers. Long distance providers bypassed switched access by purchasing special access circuits from the ILECs, and soon thereafter, competitive access providers (CAPs) became established by offering full facilities bypass of ILEC

1 access facilities.

2 Vestiges of implicit subsidies still exist in the prices of some usage-based and add-
3 on services, but these subsidies are not sustainable in a competitive market.
4 These services do not cause the cost of the loop, and firms that are not subject to
5 regulatory pricing will undercut the ILEC prices and skim off the subsidies designed
6 to support the cost of the loop.

7 ***VII. FORWARD-LOOKING COST GOING FORWARD***

8 **Q. DOES MR. DENNEY'S INTRODUCTION OF AN ADJUNCT MODEL FOR**
9 **ESTIMATING THE COST OF PROVIDING DS1, XDSL, AND ADSL LOOPS**
10 **RAISE CONCERNS RELATED TO FORWARD-LOOKING COSTS?**

11 A. Yes. It is my understanding that the HAI XDSL Adjunct model describes a method
12 for providing DS1, HDSL, and ADSL loops that would require upgrades to Qwest's
13 current network. Rather than estimate the costs of upgrading Qwest's actual
14 network, however, this model estimates costs for upgrading the theoretical HAI
15 network. This is inappropriate. Investments in technology that Qwest must make
16 going forward to upgrade its network are the forward-looking costs.

17 **Q. GOING FORWARD, SHOULD THE COSTS OF UPGRADING QWEST'S**
18 **NETWORK BE BASED ON ITS CURRENT NETWORK DESIGN?**

19 A. Yes, prices for new network capabilities that are created with new investments
20 should be based on the actual cost for these investments, not on costs of
21 upgrading a fictional network. In this section, I address the proper interpretation of

long-run, forward-looking costs and explain why the actual costs that Qwest incurs to implement network upgrades going forward are the proper basis for setting forward-looking prices.

Q. WHAT IS THE RELEVANCE TO THIS PROCEEDING OF THE METHODOLOGIES USED TO ESTIMATE LOOP COSTS IN EARLIER PROCEEDINGS?

A. There are differences of opinion about the proper conceptual framework for estimating the cost-based prices of loop networks. One side maintains that the actual network configuration is the proper one for estimating loop costs; another side supports estimating these costs using a hypothetical network configuration.[73] It is not necessary to expand on this debate for this proceeding. It is interesting to note, however, that this debate is only relevant for UNEs created by historic investments. It has no meaning for new UNEs created with current and future investments in modern technology. The debate would have little meaning if firms were building, or had plans in place to build, ubiquitous real-world loop networks from scratch with the best technology and practices currently in use today. Actual and projected costs of real investments would provide a more accurate indication of the cost of a loop network than estimates based on a fictional network. Of course, this will not happen for loop networks. Due to the enormity of the undertaking, no firm would or could build a ubiquitous loop network with one vintage of technology

[73] The Eighth Circuit found that "basing the allowable charges for the use of an ILEC's existing facilities and equipment (either through interconnection or the leasing of unbundled elements) on what the costs would be if the ILEC provided...the most efficient configuration available today...violates the plain meaning of the Act." (United States Court of Appeals for the Eighth Circuit, *Iowa Utilities Board, et al, v. FCC*, No. 96-3321, Filed July 18, 2000, p. 7.)

1 and practices.

2 Given this reality, several years ago, with direction from the FCC's *First Report and*
3 *Order*, we embarked on the contentious process of estimating loop costs using cost
4 proxy models. Although there are many unrealistic assumptions in the models
5 used to estimate loop costs, including a reconfiguration of the network, these
6 assumptions were deemed appropriate by the FCC for estimating the forward-
7 looking cost to replace a network that was constructed over a long period of years.
8 The contentious process of using proxy models is not necessary, however, for
9 estimating the costs of investments that firms are actually undertaking, or have real
10 plans to undertake. Using a simulated network to estimate forward-looking costs is
11 a second-best solution. It is not appropriate to use this method to second-guess
12 investment decisions that facilities-based carriers are making to upgrade their
13 networks going forward.

14 **Q. FOR A NETWORK UPGRADE CREATED WITH NEW INVESTMENTS, WHAT IS**
15 **THE LONG-RUN, FORWARD-LOOKING COST?**

16 A. Going forward we can observe and project the actual forward-looking costs that
17 firms will incur to make long-run investments. For a new network upgrade,
18 therefore, the long-run, forward-looking cost is the cost that a firm incurs, or is
19 projected to incur, for a real investment. Qwest will incur actual, efficient
20 expenditures going forward to innovate and invest to increase the capabilities and
21 capacity of its network. The actual expenditures that are incurred to create new
22 network elements and services are the long-run, forward-looking costs that are
23 relevant to pricing new elements and services. Recall that TELRIC is the cost of

providing all of the facilities investments and all associated costs necessary to provide a network element or service, assuming that all other elements and services are already provided at current levels. Although we spent a great amount of effort studying TELRIC models, it is worth reminding ourselves that today's network elements are provided over the existing network, not over the fictional TELRIC model networks. Furthermore, new elements and services will come from investments that are applied to the existing network. The appropriate perspective for considering the cost of upgrading the network is based on an analysis of the costs of upgrading the actual network. Finally, decisions about network investments going forward are best made by the firm that faces the financial burden of recovering the costs of these investments.

Q. DOES A FICTIONAL NETWORK PROVIDE A SOUND BASIS FOR INVESTMENT DECISIONS RELATED TO NETWORK INNOVATIONS AND INVESTMENTS?

A. No. A fictional network does not provide a sound basis for investment decisions related to network innovations and investments going forward. When a facilities-based carrier makes financial decisions about investing in new technology, it must make these decisions based on costs that it will actually incur. This means making investment decisions based on the cost to upgrade the actual network, not costs for upgrading a fictional network. Qwest is incurring actual costs to improve the actual network. Serious negative repercussions on network investment will almost definitely occur if Qwest is expected to incur actual costs to innovate and invest, but Qwest's rivals can incur much different costs, based on the cost of upgrading a fictional network. If Qwest's competitors can purchase new facilities and

capabilities at prices that do not reflect the actual costs that Qwest incurs, it will discourage the initiative and innovation of Qwest's rivals, and it will depress the willingness and ability of Qwest to undertake investments going forward, especially risky investments needed to upgrade its network with new technology.

To promote efficient and beneficial competition, prices for new network elements created by new innovation and investment must be based on the actual costs that are incurred to bring them forth.

Q. WOULD YOU PLEASE SUMMARIZE YOUR REBUTTAL COMMENTS RELATED TO THE FORWARD-LOOKING COSTS OF NEW NETWORK INVESTMENTS?

A. It is not appropriate to use this method to second-guess investment decisions that facilities-based carriers are making to upgrade their networks going forward. For a new network upgrade, the long-run, forward-looking costs should include the cost that a firm incurs, or is projected to incur, for a real world investment. Qwest is incurring actual costs to improve the actual network. It would make bad public policy to expect Qwest to incur actual costs to innovate and invest, while Qwest's competitors incur much different costs, based on the cost of upgrading a fictional network, for use of the same network investments. To promote efficient and beneficial competition, prices for new network elements created by new innovation and investment should be priced on the actual costs that are incurred to bring them forth.

VIII. RESPONSE TO COX COMMUNICATIONS

Q. WOULD YOU PLEASE SUMMARIZE YOUR ASSESSMENT OF THE DIRECT COSTS ANALYSIS PRESENTED BY COX COMMUNICATIONS?

A. Cox Communications' witness, Dr. Collins, submitted comments in this proceeding that include a critique of Qwest's loop cost estimate. The core of the analysis is a cash flow spreadsheet, which Cox uses to estimate Qwest's direct cost factors for buried metallic cable. Dr. Collins attempts to use his cash flow spreadsheet to show that Qwest's estimates of these costs are too high. In this Section of my testimony, I describe some of the more glaring errors in the spreadsheet and demonstrate that, when these errors are corrected, the Cox spreadsheet estimates higher costs than Qwest's cost model (ICM). My conclusion is that the Cox spreadsheet does not add to the informed debate on cost estimates. Time spent correcting and considering this spreadsheet is time better spent on the substantive issues in this proceeding.

The current version of the Cox spreadsheet is very similar to a spreadsheet that Dr. Collins filed two years ago in Nebraska, also on behalf of Cox. At that time I undertook an analysis of the spreadsheet and filed testimony describing its major flaws in detail. In the Nebraska proceeding, when I corrected a small number of errors in the Cox cash flow spreadsheet, the Cox methodology produced cost estimates that were approximately equal to Qwest's estimates. I repeated this analysis with the current Cox spreadsheet for this section of my testimony, and the result is similar.

In this Section of my testimony, I present the results of fixing a handful of errors in the Cox spreadsheet. For a more detailed discussion of flaws in the spreadsheet, I attach my Nebraska testimony as Exhibit WLF-4.

Q. WOULD YOU PLEASE DESCRIBE FIVE OF THE FLAWS IN THE COX SPREADSHEET?

A. Cox makes at least five major mistakes in this spreadsheet; it: 1) confuses maintenance expenses with capital costs; 2) applies the incorrect maintenance factor; 3) inflates the stream of receipts in the cash flow analysis; 4) uses the incorrect average life for the investment; and 5) uses the wrong "curve shape" for recovering costs.

I corrected the Cox cash flow analysis to remove these five flaws. With these errors corrected, the cash flow approach advocated by Cox produces an estimate of total direct costs that is higher than Qwest's estimate. The results of my modifications to the Cox analysis are presented in Figure 7 below.

Figure 7
Restated Cox Spreadsheet Annual Charge Factor and Monthly Direct Costs with Modified Inputs
(For a $1,000 investment in buried metallic cable)[74]

Modifications by category	Annual Charge Factors	Monthly direct cost for a $1,000 investment	Incremental change in monthly direct cost
Cox values	**0.18018**	**$15.02**	--
1. Maintenance calculated separately	0.19900	$16.58	$1.57
2. Correct maintenance factor	0.21147	$17.62	$1.04
3. No inflation of receipts	0.23977	$19.98	$2.36
4. 12-yr average life	0.28632	$23.86	$3.88
5. Proper "curve shape" for depreciation	0.30910	$25.76	$1.90
Qwest values	**0.29687**	**$24.74**	--

Q. WHY ARE CAPITAL COSTS GENERALLY ESTIMATED WITH A CASH FLOW APPROACH, WHILE MAINTENANCE COSTS ARE NOT?

A. Capital costs are the costs caused by the obligation to meet investors' expectations and pay income taxes over the expected life of an asset. Estimating the annual or monthly costs associated with these obligations, therefore, requires an analysis that spans the expected life of the asset. This is done in cost models with variants of a cash flow analysis across the number of years in an asset's expected life.

Estimating maintenance costs does not require a cash flow analysis across the productive life of the asset. Maintenance expenses are incurred directly on an annual or monthly basis, and the monthly TELRIC estimate for maintenance is the expected monthly expense. Changing the depreciation life, cost of money, and tax

[74] Cox and Qwest values are reported in Collins' Direct Testimony, Exhibit FRC-G. (Hereinafter "Collins Direct.")

rate should have no impact on the estimated monthly maintenance cost. By including maintenance expenses in his flawed cash flow analysis, Dr. Collins inappropriately reduces the estimate of maintenance costs.

To correct the Cox spreadsheet, I adopted the methodology used in the ICM and HAI models and separated maintenance expenses from the capital cost cash flow analysis. This increases the sum of the direct cost factors in the Cox spreadsheet by 0.01882, a difference of $1.57 per month, based on a $1,000 investment in buried metallic cable.

Q. DID COX ALSO SPECIFY A MAINTENANCE FACTOR THAT IS DIFFERENT THAN QWEST'S VALUE?

A. Yes. Cox specifies a buried metallic cable maintenance factor of 0.084600, 15 percent less than Qwest's factor of 0.099529.[75] Using Qwest's maintenance factor increases the direct cost factor by 0.01248, or $1.04 per month for a $1,000 investment.

Q. WOULD YOU PLEASE EXPLAIN THE EFFECT OF USING AN INFLATED STREAM OF "RECEIPTS" IN THE COX CASH FLOW ANALYSIS?

A. Inflating the stream of receipts in the Cox spreadsheet reduces Cox's estimate of current costs. The cash flow method that Cox uses is designed to determine the amount of money that is needed each year for the life of an asset to pay taxes and compensate the debt and equity investors. The ICM and HAI models adopt the

[75] Collins Direct, Exhibit FRC-H.

appropriate assumption that the cost for a given investment remains constant throughout the life of the asset. Contrary to this correct approach, future receipts are inflated in the Cox spreadsheet. This has the effect of lowering current receipts; and it is current receipts that determine the cost factor and cost estimate in the Cox spreadsheet. By inflating the stream of receipts each year, Cox understates the cost factor and the associated capital costs incurred by Qwest to meet the expectations of their investors.

To correct the Cox spreadsheet, I adopted the methodology used in the ICM and HAI models and removed inflation from future receipts in Cox spreadsheet. This correction increases the direct cost factor by 0.02830, a difference of $2.36 per month, based on a $1,000 investment in buried metallic cable.

Q. DID COX USE THE PROPER AVERAGE LIFE FOR A BURIED METAL CABLE INVESTMENT?

A. No, Cox did not use the proper average life for a buried metallic cable investment. Cox used a 23-year average life instead of the prescribed life of 12 years.[76] Decreasing the recovery period increases the amount of cost that must be recovered each year. Using the proper 12-year average life adds 0.04655 to the direct cost factor, which is an additional $3.88 per month for a $1,000 buried metal cable investment.

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[76] Collins Direct, Exhibit FRC-E-2.

Q. IS IT APPROPRIATE TO RECOVER CAPITAL COSTS WITH STRAIGHT-LINE DEPRECIATION?

A. No, straight-line depreciation is not the proper "curve shape" for cost recovery. Although buried metallic cable has a prescribed average life of 12 years, retirement of some investments are expected within 2 or 3 years, while other investments are expected to have useful lives of over 20 years. Because of these dispersed retirements, the ICM and HAI models use depreciation "curve shapes" for determining cost recovery. It is my understanding that the capital cost module in ICM is based on the Bellcore CAPCOST model that received intense scrutiny in a large number of regulatory proceedings.

Using the ICM curve shape accounts for the early retirement of some plant and late retirement of other plant, all while maintaining the proper 12-year average life. Because plant is retired over time, the right curve shape recovers more cost in the early years and less cost in the later years. Applying the proper "curve shape" to the Cox spreadsheet raises the cost factor by 0.02278, increasing the monthly cost in the Cox spreadsheet by $1.90 for a $1,000 investment in buried metallic cable.

Q. WHAT IS THE CUMULATIVE IMPACT OF THESE FIVE CORRECTIONS?

A. As shown in Figure 7, the cumulative impact of the five corrections described above increases the Cox spreadsheet's cost estimate for a $1,000 investment in buried metallic cable by $10.74 per month, from $15.02 to $25.76 per month. The result is that the Cox spreadsheet estimates a cost that is actually higher than the direct cost estimate from Qwest's model, which is $24.74 for a $1,000 investment in metallic cable.

Q. IS IT YOUR PURPOSE TO "FIX" THE COX SPREADSHEET?

A. No. My purpose is not to fix the Cox spreadsheet or put forth an alternative methodology of estimating capital costs. We already have the ICM on the record, with a carefully crafted capital cost methodology, and the HAI model, with a similar methodology for estimating capital costs.

Q. WOULD YOU PLEASE SUMMARIZE YOUR ANALYSIS OF THE COX DIRECT COST SPREADSHEET?

A. My overall conclusion is that Cox has put forth a collection of unsubstantiated input changes and a flawed cash flow spreadsheet for estimating direct costs. When some of the glaring flaws in the spreadsheet are corrected, the Cox spreadsheet provides a direct cost estimate that is higher than Qwest's estimate. Putting forth a flawed spreadsheet in an effort to discredit the ICM does nothing more than distract time and effort from the consideration of the important and appropriate issues in this proceeding.

IX. OTHER ISSUES

Q. HOW DOES UNE-P ENTRY, THAT IS DISCUSSED AT LENGTH BY MR. GILLAN, RELATE TO THE UNDERLYING GOALS OF PROMOTING EFFICIENT INNOVATION AND INVESTMENT? [GILLAN DIRECT, PP. 13-14]

A. Using a platform of unbundled elements (UNE-P) to provide service is much more akin to resale than it is to unbundling or other means of facilities-based competition. A CLEC with none of its own facilities can provide local service to a customer with

UNE-P, just as it can with resale. When UNE-P is used in place of resale, UNE-P is nothing more than an opportunity for the CLEC to price shop. Without installing any facilities, a CLEC can choose between resale and UNE-P depending on which price is less. Mr. Dunkel reinforces this point when he observes that "[w]hen a CLEC subscribes to UNE-P service, Qwest actually provides the service using the same facilities that Qwest would use to provide service if it was a Qwest retail customer."[77]

As I discussed in Section II, a central goal of telecommunications policy is the promotion of efficient innovation and investment. Combining unbundled loops with a CLECs' own facilities, building fiber networks, expanding wireless capabilities, and upgrading cable networks are manifestations of progress toward robust and innovative competition. Except as an interim step toward facilities-based entry, UNE-P is a poor substitute for real and lasting competition. In 1998 the current FCC Chairman Powell provided the following advice to CLECs:

> "Whenever and wherever possible build facilities. Only by controlling your own facilities do I believe you can differentiate your service. And, the more you possess your own assets, the less you need to look to the Government for salvation...Relying too heavily on current regulatory distortions can provide short-term benefits, but is also perpetuates these and other distortions...Nearly every major evolution in the communications industry has come on the heels of a new development or application of technology...In this regard, cable, wireless, and satellite technologies all hold promise for competitors."[78]

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[77] Dunkel Direct, p. 49.

[78] "Local Competition – CLECs In the Midst of an Explosion," Prepared Remarks of Michael K. Powell, Defense Commissioner, Federal Communications Commission, Before the Association of Local Telecommunications Services ALTS Convention, Las Vegas, Nevada, December 2, 1998, Section "Access To ILEC Infrastructure and Resale."

It is important to note that when a facilities-based CLEC exits the market, as did Northpoint, the firm's assets are available to other carriers. When Northpoint filed for bankruptcy, AT&T bought its assets, including facilities and collocation arrangements in approximately 1600 central offices throughout the US.[79] These assets could immediately be put to use by AT&T to extend the geographic areas in which it could offer high-speed Internet access. In contrast, if a pure UNE-P provider exits the market, the primary asset it leaves behind is the stranded customer base and some OSS investments.

By holding UNE-P out as the bright flame of competition, Mr. Gillan ignores the fact that real local exchange competition is ongoing in Arizona based on the solid foundation of actual investments in fiber, switching, wireless networks, and cable facilities. This is not competition launched from a springboard of regulation that is designed to protect one group of competitors. It is real and lasting competition, promoted with cost-based prices of essential unbundled network elements and based on sound business plans, good customer service, technological innovation, and prudent investments.

Q. MR. GILLAN SUGGESTS THAT UNE-P IS THE REASON "MASS MARKET" COMPETITION HAS GROWN IN NEW YORK AND A FEW OTHER STATES [GILLAN DIRECT, P. 10-12]. IS THIS AN ACCURATE PORTRAYAL OF THE FACTS?

A. No. In attributing the growth in competition for mass market customers solely to

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[79] "Northpoint Communications' Petition for Emergency Discontinuance of March 23, 2001," Letter to the FCC from Michael Olson, April 1, 2001, pp. 3-4.

UNE-P, Mr. Gillan fails to take into account the important competitive dynamic resulting from ILEC entry into long distance services. In New York, for example, there is a clear correlation between the use of UNE-P by AT&T and WorldCom to provide local services to residential customers and the entry of Verizon (then Bell Atlantic) into long distance. In September 1999, following approval by the New York Public Service Commission, Verizon filed for authority to provide interLATA services with the FCC.[80] Because the 271 process takes months to complete, there is widespread knowledge in the industry about the status of RBOC entry into interLATA services. During 1999, there was an increasingly widespread belief throughout the industry that Verizon would receive interLATA authority in New York by the end of the year. Also during the year, there was a surge of competitive activity by MCI WorldCom and AT&T. At the end of 1998, MCI WorldCom reported that it served 35,600 access lines in New York; by September, it had signed up 160,000 residential customers, and by year-end 1999, it had 206,000 customers.[81] AT&T launched local service to residences in August 1999; by September 1999, the company had 5,000 customers, and by year end, the company had nearly 60,000 lines.[82] These rapid movements into residential services in New York by MCI WorldCom and AT&T suggest that these companies were anticipating

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[80] "Local Telecommunications Competition, A Chronology: 'Baby Bells' Section 271 Long Distance Applications," http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/1999/nrc9101a.html. (Downloaded 5/30/01.)

[81] "Carriers Ranked By Local Exchange Lines Served," from Competitive Analysis of Telecommunications in New York State, *New York Public Service Commission website,* downloaded November 22, 1999. See also, Goodman, Peter "Long Distance Market Calls to Bell Atlantic; Bid in New York May Guide Local Phone Firms," *The Washington Post,* September 27, 1999. Also see "Analysis of Local Exchange Service Competition in New York State," New York State Public Commission, Data as of December 31, 1999, p. 14. (Hereinafter "NY PSC report.")

[82] Goodman, Peter "Long Distance Market Calls to Bell Atlantic; Bid in New York May Guide Local Phone Firms," *The Washington Post,* September 27, 1999. Also see "NY PSC report," p. 14.

Verizon's entry into interLATA services and were positioning themselves to compete with Verizon.

Q. MR. GILLAN STATES THAT UNE-P IS NECESSARY BECAUSE VOICE IS "THE KILLER APPLICATION." [GILLAN DIRECT, P. 13] DO YOU THINK HIS CLIENTS WOULD AGREE WITH THIS STATEMENT?

A. No, business decisions by Mr. Gillan's clients indicate that they do not believe that voice is the killer application. During the last year, both of Mr. Gillan's clients made strategic decisions to focus their businesses on high-growth data services, while de-emphasizing voice services. WorldCom is aggressively moving away from voice and toward data services. The company reports that growth in domestic data services, as measured by voice grade equivalents of high capacity circuits, increased 98 percent between December 1999 and December 2000. Also, in the year 2000, only 31 percent of the company's revenue came from voice services, while 43 percent was generated by data services.[83] WorldCom projects that by 2004, only 11 percent of revenue will come from voice service.[84] AT&T is also emphasizing data services over voice services. In reports to investors, AT&T touts that revenue from data services is growing at 20 to 50 percent, while revenue from voice services is declining.[85]

Mr. Gillan's clients are not the only competitors emphasizing data services.

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[83] WorldCom 10K Report, Dec. 31, 2000, p. 13, 57. Voice grade equivalents grew from 33.1 million in December 1999 to 65.5 million in December 2000.

[84] Pappalardo, Denise, "WorldCom Splits in Two," *Network World Fusion*, November 1, 2000, www.nwfusion.com/news/2000/1101worldcom.html, downloaded June 8, 2001.

[85] AT&T September 30, 2000 10Q Report, p. 33.

1 Because of its continued high growth, data services provide the greatest revenue
2 and profit opportunities to competitors. CLECs are designing their networks to
3 handle data traffic efficiently and are heavily marketing their data offerings.[86]

4 **Q. DO YOU AGREE WITH MR. DUNKEL THAT "IT IS IN THE LECS INTEREST TO**
5 **MAKE THE CHARGES FOR UNES...AS HIGH AS POSSIBLE"? [DUNKEL**
6 **DIRECT, P. 5]**

7 A. No. The statement by Mr. Dunkel and a similar statement by Dr. Ford[87] show a
8 lack of understanding of competitive markets. Qwest is fully aware that competition
9 is here to stay. Qwest's management cut their teeth on competition before merging
10 with U S WEST, and understand the competitive realities that face their firm.
11 Competitive investments are in place in Arizona and these investments are serving
12 a growing base of Qwest's former customers. This is the market reality facing
13 Qwest. In this environment, Qwest's best interests are served with cost-based
14 prices that will lead to efficient build versus lease decisions for itself and its
15 competitors. Prices that are too low will not compensate Qwest for its investments
16 and expenses; prices that are too high will provide unwarranted incentives for
17 CLECs to bypass Qwest's facilities. Below-cost prices will hamper Qwest's
18 attempts to recover all of the cost of building and operating its network. If UNEs are

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[86] For example, XO Communications, another participant in this proceeding, is the product of a strategic decision by Nextlink, a facilities-based CLEC, to become a data-centric company. In June 2000, Nextlink acquired Concentric Network, a provider of Internet and data transmission services, and renamed itself XO. With this acquisition, Nextlink's business shifted from primarily voice to primarily data. In the words of XO CEO Dan Akerson, the company has evolved "from a voice-centric company to a data-driven" one. (See XO Communications September 30, 2000 10Q Report, p. 8 and Sullivan, Bruce, "More Data, Less Voice at XO," Communications Today, February 7, 2001, www.nprg.com/news/020701commtoday.htm, downloaded June 8, 2001.)

[87] Ford Direct, p. 8.

priced below cost, competitors will enter by purchasing UNEs and selling services at prices below the prices at which Qwest can profitably offer these services. Selling major portions of its network at below-cost prices would threaten Qwest's financial viability and its ability to maintain network investments in Arizona. Below-cost pricing will also provide a disincentive for facilities-based competitors to continue to invest in alternative networks. On the other hand, if prices for UNEs are above cost, Qwest will also lose. In this case, CLECs will have a strong incentive to use facilities of other providers or build additional facilities, even where they are not the low-cost providers.

Qwest's incentives are balanced: the company loses if cost-based prices are too high, and it loses if cost-based prices are too low. Qwest serves its own best interest by supporting a process that leads to efficient use of its network. This is also in the best interest of promoting efficient and beneficial competition in Arizona. Non-facilities-based competitors have the most unbalanced incentives in this proceeding. For a company with few facilities investments to protect, the lowest UNE prices possible will provide the greatest financial return.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Exhibit WLF-1

the use of assumptions and inputs which realistically reflect U S West's costs and existing local exchange network, the Hatfield Model may be used to estimate incremental costs rather than long run incremental costs using TELRIC principles.

3. It is reasonable to use the Hatfield Model default input for property taxes and a composite federal and state income tax rate of 41.57 percent.

4. It is reasonable to apply a sales tax rate of 5.42 percent to the input items as identified in Attachment 1, appended to this order.

5. It is reasonable to use an input for depreciation plant lives which reflects the settlement approved by the Board on April 11, 1997, in Docket No. DPU-96-1, as found in Attachment 2, appended to this order.

6. It is reasonable to use an input of ten percent for the cost of money which reflects a capital structure for U S West of 42.4 percent debt and 57.8 percent equity, a 7.08 percent cost of debt, and a 12.08 percent cost of equity.

7. It is reasonable to use a 90 percent input for the network operations factor.

8. It is reasonable to use a 13.6 percent input for the variable overhead factor.

9. It is reasonable to use structure sharing inputs of 50 percent for aerial cable placement costs, 70 percent for buried cable placement costs, and 75 percent for underground cable placement costs.

Service Date: March 20, 1997

DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

* * * * *

IN THE MATTER OF The Petition of AT&T Communications of the Mountain States, Inc. Pursuant to 47 U.S.C. Section 252(b) for Arbitration of Rates, Terms, and Conditions of Interconnection With U S WEST Communications, Inc.	)	UTILITY DIVISION DOCKET NO. D96.11.200 ORDER NO. 5961b

ARBITRATION DECISION AND ORDER

Signaling Links, Signaling Transfer Points, Signal Control Points/Databases, Collocation and Local Service Provider Change Charge ($5.00 as originally proposed).

Loop Rates--As stated above, both U S WEST and AT&T have strongly argued against the use of each other's models in favor of their own model to calculate U S WEST's loop costs and rates. The parties provided fairly extensive testimony regarding the plausibility of various inputs into the loop cost studies. We conclude the Hatfield Model, with revised inputs, can provide reasonable rates for interim purposes. The Commission requested that AT&T rerun its model with the following revisions: (1) a change in the corporate overhead factor from 10 percent to 14 percent; (2) changing the structure sharing assumptions for buried and underground feeder and distribution cable from 33 percent to 66 percent; (3) an increase in the number of distribution cables per census block density group; (4) an increase of the network operations factor from 70 percent to 85 percent; and (5) a decrease in the number of special access lines. As a result of these changes, the Hatfield Model calculates the following monthly aggregate loop and sub-loop prices: 1) the total loop price (including the NID) = $27.41; 2) the loop distribution price (including the NID) = $20/40; 3) the loop concentration price = $2.35; and 4) the loop feeder price = $4.65. The Commission adopts these revised prices for interim purposes.

Collocation Rates--AT&T did not perform any cost studies to determine collocation prices in this proceeding, but instead recommended the Commission adopt the physical collocation prices proposed by the Oregon PUC staff in an Oregon PUC proceeding, and the virtual collocation prices ordered by the Oregon PUC in the same proceeding. U S WEST has proposed it own collocation prices that it explains were developed in compliance with the FCC's TELRIC pricing rules. U S WEST also provided a comparison of interstate collocation prices of seven local exchange companies, on an aggregate, per DS1 price basis. The comparison indicated that U S WEST's price proposals was reasonable.

The Commission adopts U S WEST's proposed collocation prices, for interim purposes, until it conducts an investigation of collocation costing/pricing practices and policies. The Commission finds that these interim prices shall be subject to a true-up once permanent rates are determined.

Document 3.7

STATE CORPORATION COMMISSION
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BEFORE THE NEW MEXICO STATE CORPORATION COMMISSION

IN THE MATTER OF THE
INTERCONNECTION CONTRACT
BETWEEN AT&T
COMMUNICATIONS OF THE
MOUNTAIN STATES, INC. AND
U S WEST COMMUNICATIONS, INC.,
PURSUANT TO 47 U.S.C. SECTION
252

DOCKET NO. 96-411-TC

Findings Of Fact, Conclusions Of Law And Order

92. U S WEST also objected to the extent to which the Hatfield Model assumes that trenching is a cost shared with other utilities. Here too, AT&T has assumed that this cost is shared equally with two other utilities. Dr. Bowman argued that this was an unreasonable assumption based on TeleWest's experience in constructing a cable-telephony network in the United Kingdom. 10 Tr. 18-19

93. We find that 70 % is the appropriate sharing ratio for purposes of this arbitration. This ratio reflects that in newly developed areas, the developer often handles trenching. Fitzsimmons Direct Test., WLF-1, Change 1. Furthermore, the Hatfield Model presumes that all buried cable is placed in a trench. U S WEST's cost study illustrates that buried cable is often installed through plowing and that the cost of this activity is less than the cost of trenching. LIS-Link Cost Study, § 7 at 18. If the cost of trenching was not shared equally with two other utilities, the hypothetical entrant would likely plow some of the cable, a technique not considered in the Hatfield Model.

94. The Hatfield Model presumes that the cost of underground structural investment is shared equally with two other utilities. U S WEST argues that 100% of this cost should be assigned to telephone operations. Fitzsimmons Direct Test., WLF-1, Table 1. AT&T argues that underground conduit will be shared, if for no other reason, because city officials want to avoid construction on streets and sidewalks as much as possible. Zepp Direct Test., URI-2 at 35. Therefore, a value of 90% is reasonable for this cost input. We believe that the likelihood of sharing is lower than assumed by the Hatfield Model, but do not concur U S WEST's assertion that it will never occur.

95. U S WEST has argued that the line inputs to the Hatfield Model should be adjusted to reflect that non-switched digital special access lines are reported by the FCC at 64 kbs equivalents. We find this to be a reasonable adjustment. Based on the analysis presented by Dr. Fitzsimmons, we adjust the monthly cost of the loop upward by 93 cents. Fitzsimmons Direct Test. at Exhibit WLF-1, Table 2.

96. U S WEST has argued that the Hatfield Model "underestimates the quantity of distribution plant required to serve New Mexico customers." According to Dr. Bowman, the understatement occurs in urban areas. In rural areas, the model overstates the need of distribution facilities. Bowman Direct Test. at 36-38.

97. Dr. Fitzsimmons has attempted to correct for these errors by adding additional legs. The adjustments do not appear to be fully consistent with the testimony of Dr. Bowman. While Dr. Bowman has testified that the model overstates the need for cable in rural areas, Dr. Fitzsommons has proposed to add additional cables in this area. This is especially problematic since a majority of the distribution miles are in the two lowest density bands. Fitzsimmons Direct Test. at 9, and WLF-1, Table 5, and Document 5.1.

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE INTERCONNECTION CONTRACT NEGOTIATIONS BETWEEN AT&T COMMUNICATIONS OF THE MIDWEST, INC. AND U S WEST COMMUNICATIONS, INC. PURSUANT TO 47 U.S.C. SECTION 252	)	FINDINGS OF FACT AND CONCLUSIONS OF LAW; ORDER AND NOTICE OF ENTRY OF ORDER TC96-184

On November 20, 1996, the Public Utilities Commission (Commission) received a filing from AT&T Communications of the Midwest, Inc. (AT&T) pursuant to 47 U.S.C. § 252(b)(1) to arbitrate open issues related to its interconnection negotiations with U S WEST Communications, Inc. (U S WEST). U S WEST filed its response on December 16, 1996.

On January 10, 1997, the Commission issued an Amended Procedural Schedule; Order for and Notice of Hearing. In the Amended Procedural Schedule, the Commission scheduled a prehearing conference for January 13, 1997. The prehearing conference was held as scheduled

On January 17, 1997, the Commission received a Joint Procedural Agreement submitted by U S WEST. In the Joint Procedural Agreement, U S WEST stated that AT&T had approved of the Agreement and that AT&T and U S WEST requested that the Commission adopt the proposed Agreement. The Agreement set forth the dates various witnesses would testify and the issues they would address. By Order dated January 22, 1997, the Commission adopted the Joint Procedural Agreement.

The hearing was held as scheduled on February 3, 1997, through February 7, 1997, in Pierre, South Dakota.

On February 26, 1997, AT&T and U S WEST each filed a Post-Hearing Brief and a Matrix of unresolved issues. On March 5, 1997, each party filed a Rebuttal Brief and Findings of Fact and Conclusions of Law.

On March 17, 1997, the Commission rendered its oral decision on the unresolved issues in this docket.

The Commission having reviewed the evidence of record and being fully informed in the matter, makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. The Federal Telecommunications Act of 1996 (federal Act) provides for the development of competition in the telecommunications industry. The federal Act opens up local markets by imposing new obligations on incumbent local exchange carriers (LECs). Under the federal Act, an incumbent LEC has the duty to interconnect with other telecommunications carriers, must provide other carriers access to the incumbent LEC's network elements on an unbundled basis, and must provide its retail services to other carriers at wholesale rates. 47 U.S.C. § 251(c). The federal Act requires an incumbent LEC to negotiate terms and conditions of service with the requesting carrier 47 U.S.C. § 251(c)(1). If the parties are unable to reach a negotiated agreement on all areas, the federal Act provides for state Commissions to resolve any disputed issues. 47 U.S.C § 252(b)

lines 16-18. The first Hatfield model was used to produce estimates of the total service long run incremental cost of basic local exchange service to examine the cost of universal service. Id. at 7, lines 14-16. The second version, Hatfield Model 2.2, Release 1, estimated costs for unbundled network elements only. Id. at lines 16-17. The third version, Hatfield Model 2.2, Release 2, the version used in this docket, considers both unbundled elements and basic local exchange service. Id. at 7, lines 18-19 to 8, line 1. The Hatfield Model is publicly available and uses nonproprietary data obtained from publicly available sources. Id. at 10, lines 19-21 to 11, lines 1-3.

92. Under AT&T's Hatfield Model, the local loop is priced at $15.62 per month. Exhibit 76. U S WEST priced its loop at $29.83. Exhibit 77.

93. U S WEST did a sensitivity analysis by running the Hatfield Model with revised inputs and assumptions. Exhibit 37 at 2, lines 10-16. U S WEST's sensitivity analysis of the Hatfield Model produced a per line price of over $36.00 which was higher than U S WEST's TELRIC cost study using its Regional Loop Cost Analysis Program (RLCAP) to price the loop. Exhibit 37.

94. The Commission finds the Hatfield Model's assumptions on structure sharing are erroneous. The Hatfield Model assumes U S WEST would be responsible for paying only 33% of the cost to place aerial, underground, and buried facilities because the placement of these facilities would be shared with other utilities. AT&T also assumes that all currently existing utility facilities are scorched. Tr. at 714, line 24 to 715, line 2. However, under the scorched node concept, only telecommunications facilities should be assumed to be scorched. Tr. at 856, lines 11-12. By assuming all utility facilities are scorched, AT&T is able to assume other utilities would pay the other approximately 66% of plant costs. The Commission finds that AT&T's assumption that U S WEST will pay only 33% of aerial placement costs, buried placement costs, and underground placement costs is unreasonable.

95. The Commission finds that AT&T's Hatfield Model overcounts the number of lines. The model counts digital special access lines on a per channel basis so one DS-1 is counted as 24 access lines and one DS-3 is counted as 672 access lines. Exhibit 37 at 7, lines 11-12. However, the cost of placing a DS-1 would be considerably less than the cost of placing 24 separate basic access lines. The Commission finds that each DS-1 and DS-3 should be counted as one line.

96. The Commission finds AT&T's Hatfield Model underestimates the drop investment per line. The Hatfield Model estimates an average of 73 feet for a typical drop length; the estimate is from a Bellcore study. Exhibit 42 at 24, line 3, and footnote 2. The model assumes a half hour installation time for the drop and 15 minutes to one half hour installation for the Network Interface Device (NID) (Exhibit 42 at 24, lines 12-13) with a total investment of $70.00 (Id. at line 8) for a two pair drop (Id., attached Exhibit DRF-1 at 21). The Commission finds it is unreasonable to assume a drop and a NID can be installed in a range of 45 to 60 minutes with a total investment of $70.00.

97. The Commission finds the Hatfield Model understates the required distribution cable. Both parties agreed that the Hatfield Model overstates the number of distribution cables for some distribution groups and understates it for others. Exhibit 42 at 31, lines 2-3; Exhibit 29 at 39, lines 1-3, and 39, lines 31-34. AT&T states that the new revised version, Hatfield Model 2.2, Release 3, will attempt to address this issue. Exhibit 42 at 31, lines 11-13. Hatfield Model, 2.2, Release 3, will feature many enhancements and changes from the version used in this docket in order to correct its current flaws. Exhibit 60.

98. The Commission finds AT&T failed to show whether the additional costs of unbundling are included in the Hatfield Model. Tr. at 596, lines 4-6.

Change 4: Drop Length

Drop length (ft.)

Density Zone	HM5.2a Input	*WLF Input*
0-5	150	*300*
5-100	150	*300*
100-200	100	*200*
200-650	100	*200*
650-850	50	*100*
850-2550	50	*100*
2550-5000	50	*100*
5000-10,000	50	*100*
>10,000	50	*100*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$590**	**$13.14**
Output from this run of the model	**$609**	**$13.55**

Change 4: Drop Length

Drop costs in Release 5.2a of the HAI Model are based on unrealistic drop lengths. I revise the drop lengths to bring them in line with Qwest's experience. Specifically, I double the default HAI values.

Supporting Materials:

Document 4.1 summarizes the results of the drop length study by state and by lot type.

Document 4.2 explains the methodology of the drop length study completed by Qwest during the last round of model-based arbitrations, cost dockets, and universal service proceedings. Empirical evidence from a sample of over 7,000 drops across 7 states revealed an average drop length of approximately 150 feet.

Calculation of Multi-State Average Drop Lengths Based on Qwest Studies

Qwest gathered information on drop lengths in seven states. These drop length studies provide the following information for each observation: drop length, customer location, wire center name, lot type, and whether the drop is aerial or buried. There are three classifications of lot in the study: type 1 (approximately 100 by 100 feet), type 2 (multi-acre lot), and type 3 (rural, ranch or farm).

In calculating the average drop length, I excluded any observations without a lot type and with drop length equal to zero. Also, any observations with a drop length greater than 500 feet were substituted with a drop length of 500 feet. The statewide averages were computed as a simple average of the number of observations.

Summary of U S WEST Drop Length Studies

State	Lot Type	Number of Observations	Mean (Feet)	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Minnesota	1	658	134	127	141
	2	108	255	232	278
	3	67	389	359	420
	Total	**833**	**170**	**162**	**178**
Nebraska	1	1,035	100	96	103
	2	77	251	220	283
	3	69	381	347	416
	Total	**1,181**	**126**	**120**	**132**
New Mexico	1	610	115	107	122
	2	123	262	233	290
	3	74	285	246	325
	Total	**807**	**153**	**143**	**162**
North Dakota	1	571	148	140	156
	2	52	294	254	333
	3	151	360	334	385
	Total	**774**	**199**	**189**	**209**
Washington	1	1,227	121	117	125
	2	156	249	227	271
	3	116	366	338	394
	Total	**1,499**	**153**	**147**	**159**
Wyoming	1	439	102	95	109
	2	94	257	227	287
	3	49	294	244	344
	Total	**582**	**143**	**133**	**153**
Colorado	1	1,313	103	99	106
	2	186	265	242	288
	3	85	367	333	400
	Total	**1,584**	**136**	**130**	**142**

Note: All observations with drop lengths greater than 500 feet were included with a 500 foot drop length. All observations with a zero drop length were excluded.

Weighted Average **151**

Change 5: Plant Mix

Distribution[a]

Density Zone	HM5.2a Input			WLF Input		
	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	25%	75%	0%	*20%*	*80%*	*0%*
5-100	25%	75%	0%	*19%*	*80%*	*1%*
100-200	25%	75%	0%	*15%*	*83%*	*2%*
200-650	30%	70%	0%	*15%*	*81%*	*4%*
650-850	30%	70%	0%	*15%*	*77%*	*8%*
850-2550	30%	70%	0%	*15%*	*65%*	*20%*
2550-5000	30%	65%	5%	*15%*	*45%*	*40%*
5000-10,000	60%	35%	5%	*15%*	*25%*	*60%*
>10,000	85%	5%	10%	*5%*	*5%*	*90%*

Copper Feeder

Density Zone	HM5.2a Input			WLF Input		
	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	50%	45%	5%	*23%*	*72%*	*5%*
5-100	50%	45%	5%	*23%*	*72%*	*5%*
100-200	50%	45%	5%	*23%*	*72%*	*5%*
200-650	40%	40%	20%	*20%*	*60%*	*20%*
650-850	30%	30%	40%	*15%*	*45%*	*40%*
850-2550	20%	20%	60%	*8%*	*32%*	*60%*
2550-5000	15%	10%	75%	*5%*	*20%*	*75%*
5000-10,000	10%	5%	85%	*3%*	*7%*	*90%*
>10,000	5%	5%	90%	*3%*	*2%*	*95%*

Fiber Feeder[b]

Density Zone	HM5.2a Input			WLF Input		
	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	35%	60%	5%	*23%*	*72%*	*5%*
5-100	35%	60%	5%	*23%*	*72%*	*5%*
100-200	35%	60%	5%	*23%*	*72%*	*5%*
200-650	30%	60%	10%	*20%*	*60%*	*20%*
650-850	30%	30%	40%	*15%*	*45%*	*40%*
850-2550	20%	20%	60%	*8%*	*32%*	*60%*
2550-5000	15%	10%	75%	*5%*	*20%*	*75%*
5000-10,000	10%	5%	85%	*3%*	*7%*	*90%*
>10,000	5%	5%	90%	*3%*	*2%*	*95%*

Drop[c]

Density Zone	HM5.2a Input	WLF Input
	Buried	Buried
0-5	75%	*80%*
5-100	75%	*81%*
100-200	75%	*85%*
200-650	70%	*85%*
650-850	70%	*85%*
850-2550	70%	*85%*
2550-5000	70%	*85%*
5000-10,000	40%	*85%*
>10,000	15%	*95%*

[a] *In WLF sensitivity analysis run of the model, the input values for "Block/Building % of total" and "Fraction of Buried available for shift" were set to zero for all density zones.*

[b] *In WLF sensitivity analysis run of the model, the input values for "Fraction of Buried available for shift" were set to zero for all density zones.*

[c] *Buried drop fraction equals the sum of the buried and underground distribution fractions.*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$609**	**$13.55**
Output from this run of the model	**$742**	**$15.03**

Change 5: Plant Mix

Placement fractions in the HAI model are heavily weighted towards low cost aerial. I adjust these fractions to reflect actual aerial plant in Arizona.

Aerial
I use the FCC aerial fraction by density zone as the base. I adjust these values so that the weighted average aerial placement percentage is equal to Qwest's actual aerial percentage of 17.49% in Arizona.

Buried
Buried placement equals one – (aerial fraction + underground fraction) for each density zone.

Underground
For underground placement, I use the FCC's placement fractions.

I change the placement fractions for distribution, copper feeder, fiber feeder and drop.

Supporting Materials:

Document 5.1 shows how I adjust the FCC's aerial percentages in order to arrive at a weighted average aerial percentage equal to Qwest's actual experience. In short, I divide the actual aerial percentage by the FCC's weighted average aerial percentage. I then multiply the FCC aerial fractions by this ratio.

Document 5.2 is a table of Qwest's actual aerial percentages in Arizona as of August 2000 (CONFIDENTIAL).

Derivation of Aerial Percentage Inputs

	Distribution		
Density Zone	HM5.2a Distance	FCC Aerial %	Aerial Distance
0-5	33,607,541	40%	13,443,016
5-100	40,125,481	37%	14,846,428
100-200	5,569,891	30%	1,670,967
200-650	15,734,849	30%	4,720,455
650-850	4,840,511	30%	1,452,153
850-2550	22,797,230	30%	6,839,169
2550-5000	21,718,125	30%	6,515,437
5000-10,000	6,054,430	30%	1,816,329
>10,000	1,187,822	10%	118,782
Total	151,635,878		51,422,737

Adjusted Aerial Placement Fractions		
Distribution	Copper Feeder	Fiber Feeder
20%	23%	23%
19%	23%	23%
15%	23%	23%
15%	20%	20%
15%	15%	15%
15%	8%	8%
15%	5%	5%
15%	3%	3%
5%	3%	3%

The adjusted value equals the FCC aerial % times the adjustment ratio.

	Copper Feeder		
Density Zone	HM5.2a Distance	FCC Aerial %	Aerial Distance
0-5	10,945	45%	4,925
5-100	90,739	45%	40,832
100-200	54,703	45%	24,616
200-650	212,196	40%	84,878
650-850	79,143	30%	23,743
850-2550	485,820	15%	72,873
2550-5000	705,747	10%	70,575
5000-10,000	300,363	5%	15,018
>10,000	80,422	5%	4,021
Total	2,020,077		341,482

	Fiber Feeder		
Density Zone	HM5.2a Distance	FCC Aerial %	Aerial Distance
0-5	14,124,593	45%	6,356,067
5-100	9,445,307	45%	4,250,388
100-200	724,359	45%	325,962
200-650	1,411,676	40%	564,670
650-850	498,972	30%	149,692
850-2550	2,659,375	15%	398,906
2550-5000	2,799,589	10%	279,959
5000-10,000	1,123,754	5%	56,188
>10,000	231,913	5%	11,596
Total	33,019,538		12,393,427

Total Aerial	64,157,646
Total Plant	186,675,494
Aerial % of Total	34.37%
Target %	17.49%
Adjustment Ratio	0.509

"Target %" equals "Percent aerial of total cable" from MR7a report of August 2000.

Adjustment ratio equals "Target %" divided by "Overall %"

Source: Distances are obtained using HM5.2a with default inputs and MST off.

Change 6: Buried Placement Costs

AT&T and WorldCom introduced Hatfield 2.2.2 in the 1996 Arizona Cost Docket. In this earlier release of the HAI model, the weighted average placement cost for buried distribution facilities was almost $5.00 per foot. In the current model, HAI 5.2a, the weighted average placement cost in Arizona is $2.65 per foot. The buried placement cost inputs I use in my sensitivity analysis are based on Qwest's actual experience as represented in ICM.

Supporting Materials:

Document 6.1 shows buried placement costs for Hatfield 2.2.2, HAI 5.2a and my run of the HAI model by density zone (CONFIDENTIAL).

Document 6.2 is an explanation of the modifications I made to the ICM buried placement cost inputs to make them suitable for use in the HAI model.

Document 6.3 is a spreadsheet derived from the ICM model, showing the activity percentages and unit costs for buried placement activities (CONFIDENTIAL).

Document 6.4 is an explanation of the modifications I made to the HAI default inputs for buried and underground transport costs.

Document 6.5 shows how I calculated weighted average costs for buried and underground transport placement (CONFIDENTIAL).

Derivation of Buried Placement Cost Inputs

The buried placement cost inputs I use in my sensitivity analysis are based on Qwest's actual experience as represented in ICM. The table below shows how I mapped buried placement values from ICM's five density groups into the HAI nine density zones. As the ICM model uses only two inputs for buried feeder placement costs (urban and rural), I use the buried distribution placement costs as my inputs for buried feeder placement costs in the HAI model.

Mapping of ICM Density Groups to HAI Density Zones For Buried Placement Costs

HAI Density Zone	ICM Density Group
0	DG5
5	DG5
100	Average DG4 and DG5
200	DG4
650	DG4
850	Average DG3 and DG4
2550	DG3
5000	DG2
10000	DG1

Calculation of Transport Placement Costs

The transport module in the HAI model, unlike the feeder and distribution modules, does not break out placement costs by density zone when estimating transport costs. Instead, the transport module uses the lowest buried placement cost input from the feeder and distribution modules ($1.77) as the single cost for buried placement of transport cable. For underground placement, the transport module uses the single value of $16.40 per foot. This value corresponds with the HAI model's default input for underground placement costs in the 850 to 2550 lines-per-square-mile density zone.

I adjust the HAI default inputs in two ways. First, I calculate the weighted average (weighting by feeder distance in each density zone) of my buried feeder placement cost inputs. I use this value as the input for the cost of placing buried transport. For placing underground transport cable, I use the weighted average of the HAI default underground placement costs for feeder cable. Weighting by feeder distance is appropriate because the HAI model assumes that transport and feeder routes overlap 75% of the time. The transport network must therefore traverse areas with similar densities (and hence placement costs) as the feeder network. The transport calculations are shown in Document 4.2.

Change 7: Network Operations Factor

	HM5.2a Input	→	*WLF Input*
Forward-looking Network Operations Factor	50%		*100%*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$803**	**$16.40**
Output from this run of the model	**$803**	**$17.76**

Change 7: Network Operations Factor

The "forward-looking network operations factor" includes the expenses associated with the ARMIS accounts provisioning (6512), power (6531), network administration (6532), testing (6533), plant operations administration (6534), and engineering (6535). The HAI model's default value for this factor is set arbitrarily at 50 percent. I adjust this factor to 100 percent.

Supporting Materials:

This factor is created from ARMIS account 6530. Document 7.1 is an excerpt from the FCC documents that describes this account.

Document 7.2 is an excerpt of the declaration of Pacific Bell's witness Richard L. Scholl regarding the misinterpretation of his views on the network operations factor by AT&T witness, Robert Mercer.

Document 7.3 is the white paper by Paul Hansen, "First Draft - Network Operations Factor (.50)," submitted by AT&T as a Late-Filed Exhibit, Docket RPU-96-9, July 30, 1997. This paper underscores AT&T's acceptance of providing after-the-fact support for previously discredited inputs.

Document 7.1

NECA NATIONAL EXCHANGE CARRIER ASSOCIATION

Annotated FCC Rules

Revised as of August 1, 1996

USOA
(Part 32)

Separations
(Part 36)

Tariffs
(Part 61)

Miscellaneous
Rules Relating To
Common Carriers
(Part 64)

Rate of Return
(Part 65)

Access Charges
(Part 69)

§ 32.6512 Provisioning expense.

(a) This account shall include costs incurred in provisioning material and supplies, including office supplies. This includes receiving and stocking, filling requisitions from stock, monitoring and replenishing stock levels, delivery of material, storage, loading or unloading and administering the reuse or refurbishment of material. Also included are adjustments resulting from the annual or more frequent inventory of material and supplies.

(b) Credits shall be made to this account for amounts transferred to construction and/or to plant specific operations expense. These costs are to be cleared by adding to the cost of material and supplies a suitable loading charge. (See also § 32.5999(f)(5) of this subpart.)

§ 32.6530 Network operations expense.

This account number shall be used by Class A telephone companies to summarize for reporting purposes the contents of Accounts 6531 through 6535. Class B telephone companies shall use this account for expenses of the type and character required of Class A companies in Accounts 6531 through 6535.

§ 32.6531 Power expense.

This account shall include the cost of electrical power used to operate the telecommunications network.

§ 32.6532 Network administration expense.

This account shall include costs incurred in network administration. This includes such activities as controlling traffic flow, administering traffic measuring and monitoring devices, assigning equipment and load balancing, collecting and summarizing traffic data, administering trunking, and assigning interoffice facilities and circuit layout work.

§ 32.6533 Testing expense.

This account shall include costs incurred in testing telecommunications facilities from a testing facility (test desk or other testing system) to determine the condition of plant on either a routine basis or prior to assignment of the facilities; receiving, recording and analyzing trouble reports; testing to determine the nature and location of reported trouble condition; and dispatching repair persons or otherwise initiating corrective action. (Note also § 32.5999(b)(3) of this subpart.)

§ 32.6534 Plant operations administration expense.

(a) This account shall include costs incurred in the general administration of plant operations. This includes supervising plant operations (except as specified in § 32.5999(a)(3) of this subpart); planning, coordinating and monitoring plant operations; and performing staff work such as developing methods and procedures, preparing and conducting training (except on-the-job training) and coordinating safety programs.

(b) Credits shall be made to this account for amounts transferred to Construction accounts. These amounts shall be computed on the basis of direct labor hours. (See § 32.2000(c)(2)(ii) of Subpart C.)

§ 32.6535 Engineering expense.

(a) This account shall include costs incurred in the general engineering of the telecommunications plant which are not directly chargeable to an undertaking or project. This includes developing input to the fundamental planning process, performing preliminary work or advance planning in connection with potential undertakings, and performing special studies of an engineering nature.

(b) Credits shall be made to this account for amounts transferred to Construction accounts. These amounts shall be computed on the basis of direct labor hours. (See § 32.2000(c)(2)(ii) of Subpart C.)

§ 32.6540 Access expense.

(a) This account shall include amounts paid by interexchange carriers or other exchange carriers to another exchange carrier for the provision of carrier's carrier access. (R–6)

(b) Subsidiary record categories shall be maintained in order that the entity may separately report interstate and intrastate carrier's carrier expense. Such subsidiary record categories shall be reported as required by Part 43 of this Commission's Rules and Regulations. (R–6)

§ 32.6560 Depreciation and amortization expenses.

This account shall be used by Class A telephone companies to summarize for reporting purposes the contents of Accounts 6561 through 6565. Class B telephone companies shall use this account for expenses of the type and character required of Class A companies in Accounts 6561 through 6565.

§ 32.6561 Depreciation expense - telecommunications plant in service.

This account shall include the depreciation expense of capitalized costs in Accounts 2112 through 2441, inclusive.

DECLARATION OF RICHARD L. SCHOLL

My name is Richard L. Scholl and I declare the following:

1. I am employed by Pacific Bell as Director – Cost Analysis in the Product Profitability, Systems, and Analysis Department. I am responsible for the identification of the cost to Pacific of providing its services. I have had this general responsibility since April 1981. I have been Pacific's primary cost of service expert witness since 1984.

2. I have reviewed the documentation of the Hatfield Model Version 2.2.2 submitted in this proceeding by AT&T and MCI.

3. I supervised the production of Pacific Bell's TELRIC Study filed on January 13, 1997.

4. The purpose of my testimony is twofold. First I discuss the cost estimates produced by the Hatfield Model, which consistently understate the costs of providing network services in California. Second, I will describe changes to Pacific's TELRIC we propose to make.

The Hatfield Model uses embedded cost factors and incorrectly represents the results as an incremental study.

5. For most expenses, the Hatfield Model's basic structure is to estimate cash operating expenses by applying factors to incremental investments. Those factors are derived from relationships between embedded investments and current period expenses. This process is wrong for three reasons. First, using this factor approach is inherently flawed in an incremental cost model where the factors are applied against forward-looking equipment prices. This approach incorrectly calculates that operating expenses such as maintenance expenses will drop if an equipment vendor drops its equipment prices, or will rise if an equipment vendor raises its equipment prices. It requires no fewer technicians to repair a piece of equipment just because

Dr. Mercer misrepresented my universal service testimony, using a table of expenses out of context, in an attempt to substantiate a Hatfield model input which is incorrect.

16. Dr. Mercer characterized my testimony in the Commission's Universal Service proceeding (R. 95-01-020, I. 95-01-021, Exhibit 85, p. 11) as supporting "something more than a 50 percent reduction" in Pacific's forward looking estimates of network operations expenses (deposition, pp. 64-.) That is a misrepresentation of my testimony.

17. The citation he makes to my testimony is to a table that identifies the extent to which the Hatfield proxy model misstates the expenses Pacific incurs in providing basic residential service. While underestimating the total expenses of providing basic residential service by $1.3 billion, the Hatfield proxy model overestimated the network operations expenses caused by residential services by allocating too large a portion of Pacific's network operations expense to basic residential service.

18. The network elements which cause the majority of network operations expenses are interoffice transport and switching usage, elements only sparingly used in providing basic residential service. By allocating too large a portion of network operations expense to basic residential service, the Hatfield proxy model allocates too small a portion of network operations expenses to the other services which cause the majority of the network operations expenses.

19. Dr. Mercer has taken the fact that the Hatfield proxy model presented in the Commission's Universal Service proceeding overallocated a portion of network operating expenses to basic residential service, and twisted that fact into claiming that Pacific demonstrated that the Hatfield proxy model overestimated total network operating expenses. Dr. Mercer's claim is simply false.

FIRST DRAFT

NETWORK OPERATIONS EXPENSE FACTOR (.50)
WHITE PAPER by PAUL HANSEN

Introduction:

The Hatfield Model 3.1 utilizes a Network Operations Expense (NOE) factor of (.50). This was arrived at using the testimony of Richard L. Scholl in the California Public Utilities Commission's Universal Service proceeding (R. 95-01-020, I. 95-01-021, Exhibit 85, p.11). This testimony supported a 50% reduction in the Pacific Bell's NOE. In early versions of the Hatfield model, NOE for Pacific Bell as calculated by Hatfield was double that of Pacific Bell NOE from the California Proxy model. Hatfield Associates made the assumption that Pacific Bell's number represented "Best in Class" NOE. To incorporate this "Best in Class", Hatfield chose a conservative approach and utilized a (.70) factor for NOE in Hatfield Versions 2.1 and 2.2. This represented only a 30% reduction in NOE. In Hatfield Version 3.1, this factor was changed to (.50) increasing the reduction in NOE to 50%.

Problem

Pacific Bell provided a Declaration by Mr. Scholl in the California Public Utilities Commission proceeding (R.93-04-003, I.93-04-002 Appendix B, p. 7) in which he asserts that Hatfield's characterization of his testimony is a misrepresentation. Mr. Scholl states that Hatfield used a table that identifies the extent to which the Hatfield model misstates the expenses Pacific incurs in providing basic residential service. Mr. Scholl states: "While underestimating the total expenses of providing basic residential service by $1.3 billion, the Hatfield proxy model overestimated the network operations expenses caused by residential services by allocating too large a portion of Pacific's network operations expense to basic residential service. The network elements which cause the majority of network operations expenses are interoffice transport and switching usage, elements only sparingly used in providing basic residential service. By allocating too large a portion of network operations expense to basic residential service, the Hatfield proxy model allocates

too small a portion of network operations expenses to the other services which cause the majority of the network operations expenses. Dr. Mercer has taken the fact that the Hatfield proxy model presented in the Commission's Universal Service proceeding over allocated a portion of network operation expenses to basic residential service, and twisted that fact into claiming that Pacific demonstrated that the Hatfield proxy model overestimated total network operating expenses."

Solution

Find support for the 50% NOE factor other than testimony of Richard L. Scholl. There are three main areas that support a 50% reduction in NOE. 1) Avoidance of retail costs included in NOE 2) Observation of a downward trend in real dollar terms of RBOC NOE. 3) BCPM NOE of $1.33 compares favorably to HM of $1.67.

<u>Avoidance of retail costs</u> - ARMIS Plant Testing and Plant Administration Accounts; AT&T has identified the percent of cost avoided in the plant testing and plant administration sub-accounts of network operations. These avoided costs were used in support of a 20% reduction in both Plant Testing and Plant Administration expenses by AT&T's avoided cost witnesses in the various state arbitrations. Utilizing the 20% reduction in these accounts combined with the fact that these two accounts comprise 56% of NOE nationwide, the overall percentage NOE reduction due to avoided cost should be 11%. AT&T witnesses argued a portion of NOE would be considered avoidable costs when moving from an environment in which the ILECs provide retail services to a wholesale environment where CLECs are reselling ILEC services. When a customer calls in with trouble on the line, they must speak with a customer service representative sitting at a terminal. The costs associated with this activity are retail costs. According to AT&T avoidable cost witnesses Art Lerner and Jim Dionne, the retail costs such as call receiving, call recording, line isolation and testing, dispatch of repair order, customer follow-up and logging the event into a database are all work that would be done by CLEC personnel. The 20 percent estimate of retail costs contained in theses two accounts to perform these functions were developed from discussions with AT&T in-house people

with experience in AT&T's plant testing costs. Plant testing at AT&T is predominately self-initiated since we do not own the customer in most instances. Therefore, the 20% reduction based on AT&T data was recognized as being conservative. ILEC Plant Testing in response to customer inquiries is generally believed to be 40% or more of cost. However, it is generally viewed that much less than 20% of plant administration costs would be avoidable. In the initial analysis, a 20% reduction in Plant Administration was used in a 1 to 1 relationship with Plant Testing. Plant administration is common to all NOE and therefore only that portion relating to Plant Testing would be avoidable. The estimate for Plant Administration reductions for Plant Testing would be in the 5% to 7% range. The net effect of these weighting changes would produce about the same 20% reduction in the combined Plant Testing and Plant Administration accounts.

Downward Trend in NOE - An analysis of RBOC data for total NOE was done by Tom Nischwitz and Dave Hill. The analysis used RBOC NOE expense per line data for the years 1988 through 1996. This data and associated charts for the trend analysis can be found in Attachment A. The annual cost was adjusted for inflation using the CPI index with 1989 being 100%. The trends seen in Attachment A are summarized below:

Decline in NOE 1988 to 1996	
Ameritech	-55.0%
Bell Atlantic	-36.6%
BellSouth	-46.7%
NYNEX	-44.7%
Pacific Telesis	-55.7%
SW Bell	-48.6%
US West	-35.2%
Total RBOC *	-36.0%

* Note: Total RBOC growth rate is for 1989-1996

Data by state is available.

BCPM NOE S1.33 - Attachment B contains a chart comparing HM 2.2.2, HM 3.1 and BCPM network operations expense per line. BCPM is consistently lower than HM 3.1 and obviously less than HM 2.2.2. Hatfield 2.2.2 assumed a (.70) NOE factor while Hatfield 3.1 assumed a (.50) NOE factor. BCPM is a model whose purpose is to calculate USF requirements. The Hatfield model calculates USF requirements as well as UNE costs. The Hatfield model assumes NOE is identical for USF and UNE purposes. This tends to contradict the Scholl argument that Hatfield improperly "allocates" NOE between USF and UNE calculations.

Summary

A combination of Avoided Costs (-11%) and a long run reduction of NOE ranging from -35.2% to -55% seems to lend support to a factor of -50%. There are three reasons why AT&T and MCI believes that the 50% NOE factor is amply supported by information available in the public domain. These reasons are: 1) A portion of NOE is appropriate only in a retail environment, 2) The long term trends in NOE per line show significant declines and 3) BCPM assumes a number even lower than Hatfield both of which calculate USF requirements.

Change 8: General Support Allocators

	HM5.2a Input	→	WLF Input
Total Operations General Support Allocator	49.61%		100%
"Office Worker" General Support Alllocator	45.78%		100%

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$803**	**$17.76**
Output from this run of the model	**$803**	**$18.63**

Change 8: General Support Allocators

General Support costs include investment and expenses related to furniture, office equipment, general-purpose computers, motor vehicles, garage work equipment and other work equipment. As Qwest witness Ms. Gude explains, HAI 5.2a applies "Allocators" to General Support investment and expenses that have the effect of reducing these costs by 50 percent. The HAI proponents provide no support for this reduction. I change the Allocators to 1, which eliminates the arbitrary reduction.

Change 9: Corporate Overhead

	HM5.2a Input	→	*WLF Input*
Corporate Overhead Cost Factor	10.40%		*13%*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$803**	**$18.63**
Output from this run of the model	**$803**	**$19.07**

Change 9: Corporate Overhead

Corporate Overhead is a combination of attributed and common costs. Mr. Denney inappropriately uses an overhead factor of 10.4%. Qwest witness Ms. Gude shows that Qwest's overhead in 1999 and 2000 was 13.3 percent and 12.9 percent respectively. I replace Mr. Denney's 10.4% with 13.0 percent.

Supporting Material:

Document 9.1 is Appendix C to the Inputs Portfolio of HAI model 5.2a, which describes the derivation of the overhead percentage used by AT&T in this proceeding.

Document 9.2 describes the flaw in AT&T's calculations supporting the 10.4 percent overhead factor.

Document 9.3 is a data request response from AT&T witnesses Brian Pitkin confirming that the support for a 10.4% factor is based on irrelevant information.

HAI Model
Release 5.2a

Inputs Portfolio

HAI Consulting, Inc.

737 29th Street, Suite 200
Boulder, Colorado 80303

May 16, 2001

Explanation: Executive, Planning and General and Administrative costs
Data Origin: 2000 ARMIS 43-03

6711 Executive
6712 Planning
6721 Accounting & Finance
6722 External Relations
6723 Human Resources
6724 Information Management
6725 Legal
6726 Procurement
6727 Research & Development
6728 Other General & Administrative

Amount Determination: HAI estimates 10.4% multiplier based on AT&T public data.

		$Mill	Source
A	Rev. Net of Settlements	36,877	Form M 1994
B	Settlement Payout	4,238	Intl Traffic Data, 1994 data
C	Gross Revenues	41,115	A + B
D	Corporate Operations	3,879	Form M 1994
E	Revenue less Corp. Op.	37,236	C - D
F	Ratio	10.4%	D/E

Application: Cost is determined by multiplying the sum of all costs by 1.104.

Expense Group: Carrier-to-carrier Uncollectibles
Explanation: Revenues not realized associated with services provided (i.e., delinquency, fraud)
Data Origin: Company-specific ratio calculated from 2000 ARMIS 4304 Uncollectibles to 2000 ARMIS Access Revenues.
Amount Determination: Modeled costs are grossed up by the uncollectible rate.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs.

Q. WHAT COMMENTS DO YOU HAVE REGARDING AT&T'S OVERHEAD CALCULATIONS?

A. The AT&T input value of 10.4 percent is based on an estimation of AT&T's overhead. The calculation supporting the AT&T overhead value is flawed, because it includes the revenues from access charges. Access revenue is collected by AT&T and "passed through" directly to the local exchange carriers. There is very little overhead supporting this revenue. To see that this is true, assume that the FCC, as part of its universal service funding and access charge reform initiatives, cuts access charges in half. Assuming that AT&T passes the majority of this access charge reduction through to its customers in the form of lower prices, AT&T's total revenues will decrease, but there is little reason to expect that there will be a commensurate decrease in the overhead expenses.

To determine the potential amount that AT&T is understating its overhead percent, I removed the access charges from AT&T's revenue, and repeated AT&T's overhead calculation. As shown in Figure A, the resulting overhead factor would be 16.2 percent. I am not suggesting that there is no overhead associated with collecting access revenue and passing them through to the local exchange carriers. It is unreasonable to expect, however, that the relative amount of overhead supporting this process is commensurate with the more than $13 billion dollars of access revenue included in the denominator of the calculation of AT&T's overhead percent. It appears that a more reasonable treatment of access charges would result in an overhead percent for AT&T that exceeds U S WEST's value of 14.1 percent.

Figure A

COMPARISON OF OVERHEAD RATIOS UNDER DIFFERING ASSUMPTIONS

AT&T 1994 ($/M)	Overhead per AT&T	Overhead Adjusted for Access Charges
Revenue Net of Settlements	36,877	36,877
Access Expenses	-	13,359
Revenue Less Access	36,877	23,518
Settlement Payout	4,238	4,238
Gross Revenue (Less Access)	41,115	27,756
Corporate Operations	3,879	3,879
Revenue Less Corporate Operations	37,236	23,877
Ratio	**10.4%**	**16.2%**

Source: 1994 AT&T Form M and FCC Statistics of Common Carriers, 1994/95 Edition

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State Manager
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February 6, 1998

John Alke
Hughes, Kellner, Sullivan & Alke
406 Fuller Avenue
P.O. Box 1166
Helena, MT 59624

Re: Docket No. D97.9.167
USWC Data Requests

Dear Mr. Alke:

AT&T Communications of the Mountain States, Inc. ("AT&T") received the revised data requests USWC-001 through USWC-063 in Docket D97.9.167, on January 23, 1998. Per the procedural schedule, these data requests were originally due on January 16, 1998. However, U S WEST needed additional days to reformat the requests in order to comply with the Procedural Order, paragraph 8(b).

In the letter dated January 20, 1998, to Ms. Cheryl Gillespie, I stated that if AT&T received revised data requests by January 23, 1998, AT&T may still be able to respond to the requests by February 6, 1998. However, it has become clear that AT&T will not be able to respond to all of the data requests by February 6, 1998, and thus must avail itself of the seven days lost due to the need for U S WEST to comply with terms of the Procedural Order. However, AT&T has been able to answer a number of the requests, and responses to U S WEST's request numbers 1-10, 16-26, 33, 36-37, 41-42, 56-57 and 59-63 are enclosed.

Mr. Richard Wolters, attempted to contact you via telephone however, he was advised that you are out of the office until February 17, 1998. Therefore, please understand that AT&T will provide responses to the balance of the requests on or before February 13, 1998.

Very truly yours,

Becky Plaggemeyer

cc: Dennis Crawford, PSC
Cheryl Gillespie, USWC/cover letter only
Karen Hammel, PSC/cover letter only

AT&T COMMUNICATIONS
OF THE MOUNTAIN STATES, INC.

DOCKET NO. D97.9.167

Document 9.3

DATA REQUEST USWC-062

Re: Hatfield
Witness: B. F. Pitkin

Using the methodology to determine overhead supplied in Appendix C of the Hatfield Model Release 5 Inputs Portfolio (Ex. RAM-12) as a guide, please produce an overhead factor based on 1996 AT&T data. Specifically, please provide AT&T's own:

1. Net of Settlements;
2. Settlement Payout; and
3. Corporate Operations.

RESPONSE TO DATA REQUEST USWC-062

Submitted by:

AT&T objects to providing the requested information regarding AT&T's overhead factor because such information is not relevant to this proceeding and will not lead to the discovery of admissible evidence. Under TSLRIC principles, the pertinent costs should be based on forward-looking applications of currently available technology deployed by local exchange carriers, not the networks of new entrants such as AT&T. The FCC has also determined that the costs of new entrants are not relevant. See FCC First Report and Order at ¶155.

Change 10: NID, SAI, Drop Depreciation

	HM5.2a Input	→	*WLF Input*
NID, SAI, Drop Economic Life	N/A		*12.0*
NID, SAI, Drop Net Salvage Percent	N/A		*-0.07*
NID, SAI, Drop Adjusted Projection Life (yrs.)	19.00		*11.21*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$803**	**$19.07**
Output from this run of the model	**$803**	**$19.61**

Change 10: NID, SAI, Drop Depreciation

As described by Qwest witness Ms. Gude, the depreciation life that Mr. Denney uses for NIDs, SAIs, and drops is unsupported and much longer than lives for comparable classes of outside plant. In the sensitivity analysis, I use the depreciation life recommended by Ms. Gude.

Change 11: Sold Exchanges

Sold exchanges removed for this run of the model:

CLLI	Name
ASFKAZMA	ASHFORK
BISBAZMA	BISBEE
BNSNAZMA	BENSON
BNSNAZSD	ST DAVID
CRCYAZMA	CIRCLE CITY
DDVLAZNM	DUDLEYVILLE
DGLSAZMA	DOUGLAS
GLBNAZMA	GILA BEND
GLOBAZMA	GLOBE
GRCNAZMA	GRAND CANYON
HYDNAZMA	HAYDEN
JSCYAZMA	JOSEPH CITY
KRNYAZMA	KEARNY
MIAMAZMA	MIAMI
MMTHAZMA	MAMMOTH
MRCPAZMA	MARICOPA
PAGEAZMA	PAGE
PIMAAZMA	PIMA
PLMNAZMA	PALOMINAS
PTGNAZEL	ELGIN
PTGNAZMA	PATAGONIA
SFFRAZMA	SAFFORD
SMTNAZMA	SOMERTON
SPRRAZMA	SUPERIOR
STFDAZMA	STANFIELD
TCSNAZML	MT LEMMON
TMBSAZMA	TOMBSTONE
TNCKAZMA	TONTO CREEK
WCBGAZMA	WICKENBURG
WHTLAZMA	WHITLOW
WLCXAZMA	WILLCOX
WLMSAZMA	WILLIAMS
WLTNAZMA	WELLTON
WNSLAZMA	WINSLOW
YRNLAZMA	YARNELL
YUMAAZFT	FORTUNA
YUMAAZMA	YUMA MAIN
YUMAAZSE	YUMA SOUTHEAST

Impact of removing sold exchanges:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$803**	**$19.61**
Output from this run of the model	**$741**	**$18.43**

Exhibit WLF-3

Questions Concerning Inputs in Mr. Dunkel's Run of HAI 5.2a

Exhibit WLF-3

Module/ Table	Scenario Input	DUNKEL Scenario Value	FCC Scenario Value	HAI 5.2a Default Value	Comments
Distribution	Distribution Cable Fill - 0	0.5	0.5	0.75	
Distribution	Distribution Cable Fill - 5	0.55	0.55	0.75	
Distribution	Distribution Cable Fill - 100	0.55	0.55	0.75	
Distribution	Distribution Cable Fill - 200	0.6	0.6	0.75	
Distribution	Distribution Cable Fill - 650	0.65	0.7	0.75	No explanation for changing FCC input
Distribution	Distribution Cable Fill - 850	0.7	0.75	0.75	No explanation for changing FCC input
Distribution	Distribution Cable Fill - 2550	0.75	0.75	0.75	
Distribution	Distribution Cable Fill - 5000	0.75	0.75	0.75	
Distribution	Distribution Cable Fill - 10000	0.75	0.75	0.75	
Distribution	SAI Indoor Investment 1	9,656	21,708	21,708	Dunkel input = FCC Input * .445 with no explanation
Distribution	SAI Indoor Investment 2	7,392	16,618	16,618	" " "
Distribution	SAI Indoor Investment 3	4,928	11,079	11,079	" " "
Distribution	SAI Indoor Investment 4	3,352	7,536	7,536	" " "
Distribution	SAI Indoor Investment 5	2,464	5,539	5,539	" " "
Distribution	SAI Indoor Investment 6	1,776	3,993	3,993	" " "
Distribution	SAI Indoor Investment 7	1,232	2,770	2,770	" " "
Distribution	SAI Indoor Investment 8	888	1,996	1,996	" " "
Distribution	SAI Indoor Investment 9	592	1,331	1,331	" " "
Distribution	SAI Indoor Investment 10	296	665	665	" " "
Distribution	SAI Indoor Investment 11	148	333	333	" " "
Distribution	SAI Indoor Investment 12	98	220	220	" " "
Distribution	SAI Outdoor Investment 1	10,000	22,481	22,481	" " "
Distribution	SAI Outdoor Investment 2	8,200	18,434	18,434	" " "
Distribution	SAI Outdoor Investment 3	6,000	13,489	13,489	" " "
Distribution	SAI Outdoor Investment 4	4,300	9,667	9,667	" " "
Distribution	SAI Outdoor Investment 5	3,400	7,644	7,644	" " "
Distribution	SAI Outdoor Investment 6	2,400	5,395	5,395	" " "
Distribution	SAI Outdoor Investment 7	1,900	4,271	4,271	" " "
Distribution	SAI Outdoor Investment 8	1,400	3,147	3,147	" " "
Distribution	SAI Outdoor Investment 9	1,000	2,248	2,248	" " "
Distribution	SAI Outdoor Investment 10	600	1,349	1,349	" " "
Distribution	SAI Outdoor Investment 11	350	787	787	" " "
Distribution	SAI Outdoor Investment 12	250	562	562	" " "
Distribution	**Other distribution inputs:**				**Dunkel does not include the FCC inputs for:** Distribution plant mix Pole investment and labor Conduit investment per foot DLC investment

Questions Concerning Inputs in Mr. Dunkel's Run of HAI 5.2a

Module/ Table	Scenario Input	DUNKEL Scenario Value	FCC Scenario Value	HAI 5.2a Default Value	Comments
					Cable costs
Feeder	Fiber Feeder Investment per foot - 216	13.1		8.13	No explanation of source of Dunkel's input
Feeder	Fiber Feeder Investment per foot - 144	9.5	5.01	5.75	" "
Feeder	Fiber Feeder Investment per foot - 96	7.1	3.75	4.17	" "
Feeder	Fiber Feeder Investment per foot - 72	5.9	3.13	3.38	" "
Feeder	Fiber Feeder Investment per foot - 60	5.3	2.81	2.98	" "
Feeder	Fiber Feeder Investment per foot - 48	4.7	2.5	2.58	" "
Feeder	Fiber Feeder Investment per foot - 36	4.1	2.18	2.19	" "
Feeder	Fiber Feeder Investment per foot - 24	3.5	1.87	1.79	" "
Feeder	Fiber Feeder Investment per foot - 18	3.2	1.71	1.59	" "
Feeder	Fiber Feeder Investment per foot - 12	2.9	1.56	1.4	" "
Feeder	Fiber investment/strand - foot	0.1		0.054	" "
Feeder	**Other feeder inputs:**				**Dunkel did include FCC inputs for:** Feeder plant mix Copper feeder fill Manhole inputs Copper feeder cable costs Pole materials and labor Conduit investment per foot
Switching	Constant EO Switching Investment Term, small ICO	416.11	336,181 (a)	336,181	No explanation of source of Dunkel's input
Switching	End Office Amalgamated Switching Investment Constant Term	242.73	336,181 (a)	336,181	No explanation of source of Dunkel's input
UG/Buried Excavation and Restoration:					**It appears that Dunkel did not use any FCC values for placement costs and did not explain why**

Notes: (a) The FCC values for fixed switching investment are $486,700 for host switches and $161,800 for remotes. The HAI 5.2a Input Portfolio states that $336,181 is the weighted average of FCC remote and non-remote constant terms (p. 86).

Exhibit WLF–4

Exhibit WLF-4

BEFORE THE NEBRASKA PUBLIC UTILITIES COMMISSION

In the Matter of the Commission On Its Own Motion to Investigate U S WEST Communications, Inc.'s Cost Studies and to Establish Rates For Interconnection, Unbundled Elements, Transport and Termination And Resale Services	)))))))))	Application No. C-1415

SUPPLEMENTAL REBUTTAL TESTIMONY

IN RESPONSE TO COMMENTS BY COX COMMUNICATIONS

OF WILLIAM L. FITZSIMMONS

ON BEHALF OF U S WEST COMMUNICATIONS, INC.

OCTOBER 23, 1998

I. QUALIFICATIONS AND ORGANIZATION OF TESTIMONY

Q. PLEASE STATE YOUR NAME AND POSITION.

A. My name is William L. Fitzsimmons. I am a Director at LECG, Inc. My business address is 2000 Powell Street, Suite 600, Emeryville, CA 94608.

Q. ARE YOU THE SAME WILLIAM L. FITZSIMMONS WHO FILED REBUTTAL TESTIMONY ON BEHALF OF U S WEST IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Cox Communications submitted comments in this proceeding that include a critique of U S WEST's loop cost estimate. The core of the analysis is a cash flow spreadsheet, which Cox uses to estimate U S WEST's direct cost factors for buried metallic cable. Direct costs include depreciation, the cost of money, income and ad valorem taxes, and maintenance expenses. Cox attempts to use its cash flow spreadsheet to show that U S WEST's estimates of these costs are too high. Since direct costs are the first costs estimated in the Integrated Cost Model (ICM), changes in these costs have impacts on all of the downstream costs estimated in the model. Indeed, almost all of the reduction to U S WEST cost estimates claimed by Cox stem from lower estimates of direct costs. The purpose of my testimony is to describe the errors in Cox's analysis and to restate Cox's estimates after correcting the major flaws in its spreadsheet. When I correct a small number of glaring errors in the Cox cash flow spreadsheet and insert U S WEST's cost of

money input values, the Cox methodology produces cost estimates that are very similar to U S WEST's estimates.

My conclusion is that the Cox spreadsheet does not add to the informed debate on cost estimates in this proceeding. After correcting a small number of errors in the Cox spreadsheet, the only significant difference between the cost estimates from the spreadsheet and U S WEST's model stems from modifying the cost of money input values. Impacts from changing the cost of money input values can be examined directly in the ICM; it is not necessary to develop a separate spreadsheet for this purpose. Time spent correcting and considering this spreadsheet is time better spent on the substantive issues in this proceeding.

II. FLAWS IN THE COX ESTIMATE OF THE DIRECT COSTS FOR A $1,000 INVESTMENT IN BURIED METALLIC CABLE

Q. WHAT IS THE FRAMEWORK OF THE COX CASH FLOW MODEL FOR ESTIMATING DIRECT COST FACTORS?

A. When a firm such as U S WEST makes a network investment, it faces financial obligations that extend across the productive life of the investment. These include the obligations to meet the financial expectations of investors and pay income taxes. The costs associated with meeting these obligations for the productive life of the investment are called capital costs. Because of the multi-year nature of these costs, a cash flow approach is generally used to estimate the annual costs that these financial obligations impose on a firm. The amount of cash needed each year for the productive life of the investment to pay back investors, with interest and total returns, and pay income taxes is

equal to the annual capital cost for that investment. This cash requirement is called a "receipt" in the Cox spreadsheet, which this is something of a misnomer. The cash requirement is not revenue received; it is the cost associated with meeting the financial expectations of investors. For clear and correct cost modeling, it is important to maintain a clear distinction between cost and revenue concepts.

Like the well known cost models under consideration throughout U S WEST's region and the nation, Cox adopts the cash flow approach to estimating annual capital cost in its spreadsheet. Unlike the well known cost models, however, Cox attempts to extend the cash flow approach to all direct costs. Direct costs include capital costs plus the costs of paying ad valorem taxes and maintenance expenses; they are called direct costs because they are the costs directly associated with an asset. Cox complicates its spreadsheet unnecessarily by trying to estimate a single cost factor for all direct costs. Although there is nothing inherently wrong with this approach, Cox makes several significant errors in trying to implement the approach that render the Cox results inaccurate.

Q. WHAT IS THE MOST SIGNIFICANT FLAW IN THE COX SPREADSHEET?

A. Cox makes the mistake of inflating the stream of annual cash requirements that are necessary each year to satisfy investor expectations, pay income and ad valorem taxes, and pay for maintenance, even though these costs are not expected to increase. Cox compounds this error by trying to estimate all direct costs with one factor. Estimating all direct costs with one factor is an unnecessary complication, and Cox's inability to deal appropriately with this complication adds to the inaccuracy of the costs estimated in its spreadsheet.

Q. WHY ARE CAPITAL COSTS GENERALLY ESTIMATED WITH A CASH FLOW APPROACH, WHILE AD VALOREM AND MAINTENANCE COSTS ARE NOT?

A. Capital costs are the costs caused by the obligation to meet investor expectations and pay income taxes. Meeting these obligations for a specific asset, such as a $1,000 investment in buried metallic cable, requires paying back investors and paying income taxes over the expected life of the asset. Estimating the annual or monthly costs associated with these obligations, therefore, requires an analysis that spans the expected life of the asset. This is done in cost models with variants of a cash flow analysis across the number of years in an asset's depreciation life.

Ad valorem taxes (primarily property taxes) and maintenance expenses are incurred directly as annual or monthly expenses. It is not necessary to estimate costs that arise as annual costs with a multi-year cash flow approach. Changing the depreciation life, cost of money, and tax rate have no impact on maintenance costs that will be needed to support an asset. The estimated cost of maintaining the asset should, therefore, not change with any of these factors. It is not necessary to use cash flow analysis to estimate these fixed and declining costs. By estimating maintenance and ad valorem costs in the same cash flow as capital costs, Cox compounds the error caused by inappropriately growing expected cash receipts.

Q. WHAT IS COX'S REASON FOR INFLATING THE STREAM OF RECEIPTS IN ITS CASH FLOW ANALYSIS?

A. In its cash flow analysis, Cox takes the mistaken position that the cash needed to satisfy investor expectations, pay income and ad valorem taxes, and provide maintenance on the

network increases each year. In taking this position, which is contrary to the methodologies used in the ICM and HAI models, Cox takes a position that is also contrary to the history and expectations of costs in telecommunications. In a cash flow analysis designed to estimate costs, cash requirements ("receipts" in the Cox spreadsheet) should rise over time only if costs are expected to rise over time. In telecommunications, this is not the expectation. For a given amount of investment or output, overall (real and nominal) costs are expected to decline over time. To reflect this expectation, U S WEST assumes that cost savings related to expenses exceed the rate of inflation in its run of the ICM. Increasing the level of receipts each year that are required to cover a stream of costs that are not increasing distorts the cash flow analysis and understates the level of the current costs. The basic assumption in the Cox spreadsheet – that a larger share of the direct costs should be borne in the distant future than will be borne in the near term – is incorrect.

Cox is clearly aware of the fact that U S WEST assumes that cost savings exceed inflation. Indeed, in its spreadsheet Cox increases the differential between cost savings and the inflation rate, resulting in lower maintenance expense estimates than U S WEST's estimates in the ICM. It is inconsistent in a cash flow analysis designed to calculate cost factors to specify an increasing stream of receipts to capture costs that are expected to remain the same or decrease over time.

Q. DOES COX ALSO CONFUSE COST ISSUES WITH PRICE ISSUES?

A. Yes. ICM, HAI, and the Cox spreadsheet focus on the costs of providing an unbundled element. Cox states that its objectives "fulfill the fundamental requirements of the theory of competitive markets…that all outputs produced bear the same real prices." (p. 15) The

prices of network elements are irrelevant to the structure of a cost model. To the extent that expectations about prices influence the perception of the risks facing facilities providers, these expectations should be examined in the context of the cost of money inputs, not in the stream of receipts needed to cover costs. The purpose of determining a direct cost factor is to estimate costs related to paying back investors with interest and returns, paying income and ad valorem taxes, and paying for maintenance activities; it is not about a theory of competitive markets as it relates to prices, and it is not about determining costs as a function of real prices.

As a final point, if this Commission expects U S WEST's costs to increase by two percent each year, as Cox assumes, it would make sense to increase prices based on those cost by a similar amount.

Q. WOULD YOU PLEASE EXPLAIN THE EFFECT OF USING AN INFLATED STREAM OF "RECEIPTS" IN THE COX CASH FLOW ANALYSIS?

A. Inflating the stream of receipts in the Cox spreadsheet reduces Cox's estimate of current costs. The cash flow method that Cox uses is designed to determine the amount of money that is needed each year for the life of an asset to pay taxes and compensate the debt and equity investors for a $1,000 investment in buried metallic cable. Since we are estimating costs as a basis for setting current prices, the amount of money required in the first year of the cash flow analysis determines the annual cost factor associated with this investment. Due to the mechanics of the cash flow analysis used by Cox, inflating the flow of cash requirements results in a first year cash requirement that is too low.

The amount of costs for a given investment or output are not expected to increase each year, and, therefore, it is incorrect to increase the stream of cash requirements to recover these costs. In the spreadsheet used by Cox, when future receipts exceed future costs, current receipts are lower than otherwise; and it is current receipts in their spreadsheet that determine the cost factor and cost estimate. By inflating the stream of receipts each year, Cox understates the cost factor and the associated capital costs incurred by U S WEST to meet the expectations of their investors. An examination of Cox's treatment of ad valorem and maintenance costs illustrates the impact of this error in the Cox analysis.

Q. WOULD YOU PLEASE EXPLAIN THE ERROR IN TREATMENT OF AD VALOREM TAXES IN THE COX ANALYSIS?

A. The annual amount of ad valorem taxes included in the Cox spreadsheet is a constant $7.11 per year. This is based on U S WEST's cost factor for ad valorem taxes (0.07109 * $1,000 = $7.11). No matter how these taxes are counted in a cost model, ad valorem taxes associated with a $1,000 dollar investment should equal $7.11 each year. Because of a logic flaw in the Cox spreadsheet, in the Cox analysis, a portion of the $7.11 disappears from current costs. This is because Cox counts ad valorem taxes as a constant $7.11 per year, but recovers this cost with a stream of receipts that Cox assumes will increase each year.

To demonstrate that the Cox approach decreases the cost estimate for ad valorem taxes, it is only necessary to look at what happens within the Cox spreadsheet when ad valorem costs are counted separately. Since ad valorem taxes are a constant $7.11 each year, adding (removing) these costs into (from) the Cox spreadsheet should increase (decrease)

the annual cost estimate by $7.11. It does not. After removing ad valorem taxes, the Cox spreadsheet estimates that the sum of the remaining direct costs equal $173.81 for a $1,000 investment. When ad valorem taxes are added back into the Cox spreadsheet, the direct costs estimated for a $1,000 investment are $180.03, an increase of only $6.22. This result indicates that U S WEST would somehow incur 89 cents less ad valorem taxes when these costs are combined in the Cox spreadsheet than they would otherwise. This is nonsensical.

The disappearance of a portion of the ad valorem taxes in the first year of the spreadsheet is caused by Cox's inflation of cash receipts. As shown in Figure 1, when inflation is removed from the receipts in the Cox spreadsheet, the cost estimate changes by exactly $7.11 when ad valorem taxes are added or removed.

FIGURE 1:

INFLATING RECEIPTS LOWERS THE CURRENT CASH REQUIREMENT BELOW THE AMOUNT NEEDED TO PAY AD VALOREM TAXES

	Annual cost w/o receipt inflation	**Annual cost with receipt inflation**
Cox cost without ad valorem	$198.65	$173.81
Cox cost with ad valorem	$205.76	$180.03
Difference (with - w/o ad val)	$7.11	$6.22
Understatement of current cost	**$0.00**	**$0.89**

Note: Values are based on Cox base inputs as specified in Cox's Exhibit 3.

The impact of the logic flaw in the Cox spreadsheet is only 89 cents per year for ad valorem taxes; the impact of the flaw in the Cox's spreadsheet is much greater for maintenance expenses.

Q. WOULD YOU PLEASE EXPLAIN THE ERROR IN TREATMENT OF MAINTENANCE EXPENSES IN THE COX SPREADSHEET?

A. Cox's treatment of maintenance expenses is even more nonsensical than its treatment of ad valorem taxes. Cox specifies a stream of maintenance expenses that decline by 2.2 percent each year, but specifies that these expenses are "recovered" with a stream of receipts that increase by 2 percent each year. Cox estimates that the cost factor for maintenance of buried metallic cable is 0.07995, which translates into an expense of $79.95 per year on an investment of $1,000 in the first year of the spreadsheet. When maintenance expenses are removed from the Cox spreadsheet, the estimate of the remaining direct costs is $116.52. When maintenance is included, the estimate of direct costs equals $180.03, a difference of only $63.51. This result indicates that U S WEST could somehow reduce its current maintenance expense by over $16 simply by combining these expenses with other capital costs. Again, this does not make sense.

FIGURE 2:

IN THE COX SPREADSHEET CURRENT MAINTENANCE COSTS ARE UNDERSTATED BY $16.44

	Annual cost, per $1,000 investment
Cox cost without maintenance	$116.52
Cox cost with maintenance	$180.03
Difference (with - w/o maintenance)	$63.51
Maintenance expense from Cox spreadsheet	$79.95
Understatement of current cost	**$16.44**

Note: Values are based on Cox base inputs as specified in Cox's Exhibit 3.

To further illustrate the flaw in the Cox's treatment of maintenance expenses, in Figure 3, I present a simple example of the impact of using the Cox methodology to estimate the maintenance cost for an investment with a ten year life. In this example, I use the Cox assumptions that cash requirements increase by 2.0 percent each year, while maintenance expenses decrease by 2.2 percent each year. In the first year of the asset's life, the maintenance cost in this example is $1.00. As is done in the Cox spreadsheet, I solve for the cash requirement in the first year, such that the sum of the present values of cash requirements less maintenance expenses equals zero for the ten year period. "Solving" the spreadsheet in this manner guarantees that the sum of the present values of cash requirements equals the sum of present values of the expenses. From a present value perspective maintenance expenses are, therefore, covered by the cash requirements estimated in the spreadsheet. This does not mean, however, that current maintenance costs are covered by the current cash requirement estimated in the spreadsheet. In fact, the spreadsheet understates current cash requirements by 14 percent.

Maintenance expenses occur each year, and a total element long run incremental cost (TELRIC) model needs to accurately estimate the current cost for maintenance, since TELRIC costs will form the basis for current prices. In the Cox methodology, the current cost estimate, that would be used in the TELRIC estimate, is the cash requirement in year one. In this example, the Cox methodology estimates that the current maintenance cost is $0.86, even when we know ahead of time that the accurate current cost is $1.00. The Cox methodology, therefore understates maintenance costs by 14 percent in this example.

FIGURE 3:

A SIMPLIFIED EXAMPLE OF COX'S TREATMENT OF MAINTENANCE EXPENSES

Year (1)	Cash Req. "Receipts" (2)	Maint. (3)	Receipts - Maint. (2) - (3) (4)	Cum Disc Factor (5)	PV Receipts less Maint. (4) / (5) (6)
1	$0.86	$1.00	-$0.14	1.00	-$0.14
2	$0.88	$0.98	-$0.10	1.11	-$0.09
3	$0.89	$0.96	-$0.06	1.24	-$0.05
4	$0.91	$0.94	-$0.02	1.38	-$0.02
5	$0.93	$0.91	$0.01	1.53	$0.01
6	$0.95	$0.89	$0.05	1.70	$0.03
7	$0.97	$0.88	$0.09	1.90	$0.05
8	$0.99	$0.86	$0.13	2.11	$0.06
9	$1.01	$0.84	$0.17	2.35	$0.07
10	$1.03	$0.82	$0.21	2.61	$0.08
				TOTAL	$0.00

Note: Cost of money used in this example is 11.25%. With no differential between receipt inflation and the trajectory of maintenance expenses, COM is irrelevant

Recall that a "receipt" in the Cox lexicon represents the cash requirement needed to cover an expense. In the Cox methodology, therefore, a receipt represents a cost. It is clearly inconsistent to specify a cash requirement that increases by 2 percent each year to estimate the cost of maintenance that is specified in the same analysis to decrease by 2.2 percent each year. This only serves to understate the current cost estimate, and it make no sense. By adding constant (ad valorem) and declining (maintenance) costs into a cash flow analysis, and recovering them with a stream of receipts that increases each year, Cox makes a logic error that lowers its estimate of current costs.

Q. IS INFLATING THE STREAM OF RECEIPTS IN THE COX CASH FLOW ANALYSIS CONSISTENT WITH THE ICM AND HAI MODELS?

A. No. The capital cost module in ICM is based on the Bellcore CAPCOST model that has received intense scrutiny in a large number of regulatory proceedings at the state and federal level. Inflating the stream of receipts required to meet investor expectations is inconsistent with this model. It is also inconsistent with the estimation of capital cost factors in the HAI model. As shown in Figure 4, when the Cox methodology is restated without inflation in the stream of receipt, it produces a current capital cost estimate that is very similar to the estimates from the ICM and the HAI model. To the contrary, when receipts are inflated in the Cox spreadsheet, the cost factor and the monthly cost estimate drop well below the estimates from the ICM and HAI model, even when all other inputs are the similar.

FIGURE 4:

COMPARISON OF FACTOR AND COST ESTIMATES FROM HAI, ICM, AND THE COX METHODOLOGY (For a $1,000 investment in buried metallic cable)

	45C Factors	Monthly direct cost for a $1,000 investment
HAI	0.16720	$13.93
ICM	0.16770	$13.98
Cox without inflation	0.16440	$13.70
Cox with inflation	0.14579	$12.15

Note: All values are based on a 20-year life, 0% salvage value, straight-line depreciation, and U S WEST capital cost factors. They do not include maintenance or ad valorem costs. On a $1,000 investment, a factor of 0.16720 equals an annual direct cost of $167.20, which equals a monthly cost of $13.93 ($167.20/12 = $13.93)

III. CORRECTION AND RESTATEMENT OF COX SPREADSHEET

Q. WHAT MODIFICATIONS DID YOU MAKE TO THE COX SPREADSHEET OF DIRECT COSTS?

A. I corrected the Cox cash flow analysis to remove some of the more obvious and meaningful flaws. Cox's purpose for submitting its spreadsheet was to prove that the direct costs estimated by the ICM are overstated. The purpose of my examination of the Cox spreadsheet was to ascertain whether it provides meaningful new information regarding direct cost estimates. My conclusion is that it does not provide any meaningful new information. With corrections of a small number of flaws, the spreadsheet produces estimates of direct costs that are similar to the estimates produced by the ICM when run with U S WEST's cost of money inputs. There are flaws in the Cox spreadsheet that I did not attempt to correct. It is not my purpose to "fix" the Cox spreadsheet or put forth an alternative methodology of estimating capital costs. We already have the ICM on the record, with a carefully crafted capital cost methodology, and the HAI model, with a simpler methodology for estimating capital costs.

My modifications to Cox's cash flow analysis of the direct costs for the buried metallic cable account are listed below. I restated the Cox spreadsheet with:

1. A 20-year life and a $130 salvage expense;
2. No inflation in the stream of receipts;
3. Maintenance added outside of the cash flow (using Cox maintenance factor);
4. U S WEST's maintenance factor;
5. The FCC cost of money components; and
6. U S WEST's cost of money components.

Q. WHAT ARE THE RESULTS OF YOUR MODIFICATIONS TO THE COX SPREADSHEET?

A. When some of the more glaring errors in the Cox analysis are corrected and the spreadsheet is run with U S WEST's cost of money input values, the cash flow approach advocated by Cox produces an estimate of total direct costs that is similar to U S WEST's estimate. The results of my modifications to the Cox analysis are presented below. Impacts of my modifications to the Cox spreadsheet build upon one another in a logical sequence. For example, I make the necessary changes for depreciation lives prior to removing the inflation of cash flow receipts. The results of my modifications to the Cox spreadsheet are presented in Figure 5 below. I also provide an electronic version of the restated Cox spreadsheet.

FIGURE 5:

RESTATED COX SPREADSHEET ANNUAL CHARGE FACTOR AND MONTHLY DIRECT COSTS WITH MODIFIED INPUTS
(For a $1,000 investment in buried metallic cable)

Modifications by category	Annual Charge Factors	Monthly direct cost for a $1,000 investment	Incremental change in Monthly direct cost
Cox values	**0.18003**	**$15.00**	--
1. 20-yr depreciation, $130 salvage expense	0.18303	$15.25	$0.25
2. No inflation of receipts	0.20831	$17.36	$2.11
3. Maintenance calculated separately	0.21562	$17.97	$0.61
4. U S WEST Maintenance factor	0.21786	$18.16	$0.19
5. FCC cost of capital	0.23871	$19.89	$1.73
6. U S WEST cost of capital	**0.24682**	**$20.57**	$0.68
ICM values *	**0.24840**	**$20.70**	--

Note: The ICM value, as calculated in CAPCOST, was based on a 20-yr life and a 13-percent net salvage expense.

Q. DID YOU RESTATE THE COX ANALYSIS BASED ON THE COMMISSIONS RECENT DEPRECIATION ORDER?

A. Yes. Cox uses a 21-year depreciation schedule with a $150 salvage expense, rather than the 20-year life and $130 salvage expense specified by this Commission in a recent depreciation proceeding. I restated the cash flow analysis on the basis of a 20-year depreciation life and a $130 salvage expense, rather than the 21-year life and the $150 salvage expense used in the Cox analysis. Depreciation lives and salvage values were decided recently by the Nebraska Commission, and there is little to be gained at this time by running a cash flow analysis that is contrary to the decision, especially without

supporting validation and certainly not for such small differences. Since the Cox cash flow extends over the life of the asset, this decreases all cash flows by one year. Because this modification changes the number of years for all cash flows, I made this my first change to the Cox spreadsheet. In itself, this change does not have a large impact; by restating the analysis to account for the recent Commission decision, the direct cost factor increased from 0.18003 to 0.18303, a difference of 25 cents per month, based on a $1,000 investment in buried metallic cable.

Q. WHAT IS THE IMPACT OF REMOVING THE INFLATION FROM THE COX SPREADSHEET?

A. Removing the inflation from the receipts in Cox spreadsheet increases the direct cost factor by 0.02528, a difference of $2.11 per month, based on a $1,000 investment in buried metallic cable.

Q. AFTER REMOVING INFLATION FROM THE RECEIPTS IN THE SPREADSHEET, WAS IT NECESSARY TO CHANGE TREATMENT OF AD VALOREM TAXES AND MAINTENANCE EXPENSES?

A. With no inflation, it makes no difference if ad valorem taxes are included in the cash flow analysis or left separate. It is necessary, however, to separate the maintenance expense from the Cox analysis. This increases the sum of the direct cost factors by 0.00731, a difference of $0.61 per month, based on a $1,000 investment in buried metallic cable. To calculate the sum of the factors, I use the cost factor from the Cox spreadsheet with the annual maintenance factor estimated separately by Cox. This follows the methodology in the ICM and HAI model.

Q. DID COX ALSO SPECIFY A DIFFERENT MAINTENANCE FACTOR THAN U S WEST'S VALUE?

A. Yes. Apparently with the use of different cost savings and/or inflation assumptions, Cox specifies a buried metallic cable maintenance factor of 0.079947 rather than U S WEST's factor of 0.082192. The difference in these factors is due to the use of an annual inflation of 2.2 percent, rather than the 3.5 percent used by U S WEST. Cox does not identify the source of their inflation input. As explained by U S WEST witness, Bob Brigham, U S WEST's inflation percent is based on the best available information and is a measure of the changing costs for telecommunications wages and salaries. Reverting to U S WEST's maintenance factor for buried metallic cable increases the direct cost estimate from the Cox methodology by 19 cents per month on an investment of $1,000.

Q. DOES COX CHANGE INPUTS FOR THE COST OF CAPITAL?

A. Yes. Cox recommends a value of 9.11 percent (Direct Comments, Exhibit 2, p.1). The appropriate inputs for cost of capital are discussed in the testimony of U S WEST witnesses Peter Cummings.

Q. WHAT WAS THE FIRST CHANGE THAT YOU MADE TO THE COST OF CAPITAL INPUTS TO THE COX SPREADSHEET?

A. After addressing the logic errors in the Cox cash flow spreadsheet, I increased the cost of money input values in two steps. First, I increased the cost of money inputs (cost of debt, cost of equity, and debt ratio) to equal the interstate cost of money of 11.25 percent, as specified by the FCC. This is the cost of money that I used in my runs of the HAI model presented in my rebuttal testimony, and it is the cost of money ordered by this Commission in the USF proceeding. Increasing the cost of money to 11.25 percent

increased the sum of the direct cost factors from 0.21786 to 0.23871, which corresponds to a difference of $1.73 per month, based on a $1,000 investment in buried metallic cable.

Q. WHAT WAS THE SECOND CHANGE THAT YOU MADE TO THE COST OF CAPITAL INPUTS TO THE COX SPREADSHEET?

A. I increased the cost of money to the U S WEST economic cost of money of 11.4 percent. This increased the sum of the direct cost factors from 0.23871 to 0.24682, or $0.68 per month, based on a $1,000 investment in buried metallic cable. After this change, the spreadsheet estimates a monthly direct cost of $20.57, compared with $20.70 estimated in the ICM.

Q. ARE THERE OTHER ERRORS IN THE COX SPREADSHEET THAT YOU DID NOT FIX?

A. Yes. There are additional flaws in the Cox spreadsheet that I did not attempt to correct. For example, the Cox spreadsheet uses the accelerated tax depreciation schedule from the ICM but treats the salvage expense in a manner that is inconsistent with the ICM tax depreciation schedule. The Cox spreadsheet also has an inconsistent treatment of the timing of its cash flow components, and my analysis reveals that the calculations in the Cox spreadsheet do not match the equations that were provided for the spreadsheet in Cox's Exhibit 3. For maintenance expense and remaining balance of debt, the Cox analysis either incorrectly designates the cash flow's timing or incorrectly implements the timing decision in their spreadsheet. It was not my purpose to "fix" all of the flaws in the Cox spreadsheet, and I did not do so. The remaining errors have little impact on cost estimates, and there is little to be gained by spending additional time repairing a spreadsheet that does not contribute any meaningful new information.

IV. OVERALL LOOP COST ESTIMATE

Q. WHAT OTHER CHANGES DID COX MAKE TO U S WEST'S LOOP COST ESTIMATE?

A. Other than changing the direct cost factors in ICM, Cox reduced the loop investment estimate by increasing fill factors and with minor reductions to the factors for directly attributable, directly assigned, and common costs from the ICM. U S WEST witnesses, Dick Buckley and Jeff Hubbard, describe why the fill factor adjustment made by Cox is inappropriate. Below, I show that Cox's changes to non-direct factors have very little impact on the loop cost estimate.

Q. ARE THE COX CHANGES TO NON-DIRECT FACTORS SIGNIFICANT?

A. No. In the prior section I discussed problems with the Cox treatment of direct costs – depreciation, cost of money, income tax, ad valorem, and maintenance costs. Cox also puts forth changes to non-direct cost factors. The stand-alone impacts of the Cox changes to non-direct costs factors are inconsequential. To demonstrate this point, in Figure 6, I restate the overall loop cost estimate from Exhibit 1 of Cox's comments assuming no difference in direct costs. Figure 6 shows that, when starting from the same level of direct costs, the remaining changes to factors specified by Cox make only a nine cent difference to the estimated cost of an unbundled loop.

FIGURE 6:

THE IMPACTS OF THE COX CHANGES TO NON-DIRECT COST FACTORS ARE MINIMAL
(Total Unbundled Loop Cost)

	US West Proposed	Cox factors
U S WEST Investment Subtotal	**$19.34**	**$19.34**
Directly Assigned	$0.86	$0.85
Directly Attributed	$5.44	$5.41
Common	$2.13	$2.09
TOTAL	**$27.78**	**$27.69**

Q. WOULD YOU PLEASE SUMMARIZE YOUR ANALYSIS OF THE COX CHANGES TO U S WEST'S LOOP COST ESTIMATES?

A. My overall conclusion, from my analysis of the Cox changes to U S WEST's loop cost estimate, is that Cox has put forth a collection of unsubstantiated input changes and a flawed cash flow spreadsheet for estimating direct costs. When some of the glaring flaws in the spreadsheet are corrected and the spreadsheet is populated with U S WEST's cost of money input values, the Cox spreadsheet provides a direct cost estimate that is similar to U S WEST's estimate. The only significant difference in the results from the corrected spreadsheet comes from Cox's changes to the cost of money inputs. If Cox wants to examine the impacts of changing the cost of money input values, it can do so in the ICM model directly. Putting forth a flawed spreadsheet in an effort to discredit the ICM does nothing more than distract time and effort from the consideration of the important and appropriate issues in this proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

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EDUCATION

Ph.D., Resource Economics, UNIVERSITY OF MASSACHUSETTS, Amherst, MA, 1986

Emphasis: econometrics, natural resource economics, microeconomics, project evaluation, and industrial organization

M.S., Resource Economics, UNIVERSITY OF MASSACHUSETTS, Amherst, MA, 1981

Emphasis: project evaluation, and economics of forestry

B.S., Economics, STATE UNIVERSITY OF NEW YORK AT STONY BROOK, NY, 1975

PRESENT POSITION

LECG, LLC, Emeryville, CA, December 1993 – present
Managing Director, Global Telecommunications Practice, July 2000 – present
Principal, January 1998 – June 2000
Senior Managing Economist, January 1997 – December 1997
Managing Economist, December 1993 – December 1996

- Construct financial simulation models for the analysis of telecommunications issues, including interconnection policies and competitive entry into the local exchange
- Analyze domestic and international telecommunications issues and provide expert witness testimony for regulatory proceedings and litigation
- Work with telecommunications clients to develop and improve cost models
- Assess impacts to telecommunications firms and competition from uneconomic or unlawful policies and practices
- Analyze and estimate costs related to use of the public rights of way by telecommunications firms

PROFESSIONAL EXPERIENCE

BELLSOUTH CORPORATION, Atlanta, GA, January 1988 - December 1993
Senior Economist, April 1992 - December 1993
Corporate Economist, January 1988 - April 1992

- Applied the tools of economic, financial and quantitative analysis to the identification and solution of a broad range of business problems, and developed recommendations for use by senior management in making policy decisions

- Key role in building model of the telephone company that interconnects behavioral equations for capital spending, expenses, real revenues, regulation, and a production function
- Based on model output, formulated and presented policy recommendations and contingency plans to meet expected changes in BellSouth's business environment, such as more severe competition, alternative regulation, and investment in multimedia
- Assessment of potential impacts of wireless on traditional wireline and cellular services
- Analyzed corporate level impacts of prospective mergers and acquisitions
- Derived econometric model that is used to create capital spending targets for the Telco and explore network investment options
- Analyzed corporation's advertising and publishing business to assist with derivation of a new pricing strategy
- Estimated the financial impacts of proposed permutations of interstate price caps
- Provided financial modeling analysis for the tender and bid process for international investments

AT&T, Bedminster, New Jersey, June 1986 - January 1988
Market Analysis and Forecasting

- Developed econometric forecasting models for telecommunication services; identified direction and financial implications of customer migration among private line services; wrote principal components regression software; presented technical and theoretical papers and seminars

PAPERS AND REPORTS FILED WITH REGULATORY AGENCIES

"Year 2000 Competition Report Using the Diagnostic Method for Assessing Competition;" delivered to the Staff of the Public Utilities Commission of Ohio; performed analysis and drafted report with Lori Lent on behalf of Ameritech Ohio, April 2, 2001.

"Competition Report Using the Diagnostic Method for Assessing Competition;" delivered to the Staff of the Public Utilities Commission of Ohio; performed analysis and drafted report with Lori Lent on behalf of Ameritech Ohio, January 6, 2000.

Paper prepared for Telecom New Zealand titled "Review of Network Costing Model Used in Todd Telecommunications Consortium Report," by George Barker, William L. Fitzsimmons, Kieran Murray & Graham Scott dated December 2, 1998

"LECG Financial Simulation Model of Effects of FCC Policies on Large Local Exchange Carriers," by Dr. William Fitzsimmons, Dr. Robert Crandall, Professor Robert G. Harris, and Professor Leonard Waverman, Paper filed with FCC, August 1996

PRESENTATIONS, REGULATORY AND LITIGATION PROCEEDINGS

Declaration on behalf of Qwest in the US District Court, Northern District of California in support of motion for preliminary injunction related to right-of-way fees levied by the City of Berkeley, January 2001 (Case No. C01-0663 SI)

Expert written testimony filed on behalf of U S WEST in line sharing price-setting proceedings in 2001.

Colorado (Docket No. 99A-577T),

Arizona (Docket No. T-00000A-00-0194, Phase II), and

Utah (Docket No. 00-049-105)

Declaration on behalf of Qwest in the US District Court for the District of New Mexico related to right-of-way fees levied by the City of Santa Fe, October 2000 (Case No. CIV 00-795).

Presentation on "Status and Measurement of Competition," National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Telecommunications, 2000 Annual Convention, San Diego, California, November 11, 2000.

Expert written testimony and cross-examination on behalf of U S WEST in line sharing price-setting proceedings in 2000.

Minnesota (Docket No. OAH 12-2500-12631-2 and MPUC P-421/CI-99-1665), and

Washington (Docket No. UT-003013, Part A)

Expert written testimony and cross-examination on behalf of SBC in line sharing price-setting proceedings in 2000.

Ohio (Docket No. 96-922-TP-UNC), and

Texas (Docket No. 22469)

Ex Parte with the FCC on behalf of Ameritech to discuss LECG's analysis of the FCC's Synthesis Model and proposed input values, July 13, 1999.

Joint reply affidavit with Debra Aron and Robert G. Harris on behalf of Ameritech filed with the FCC in the matter of implementation of the local competition provisions in the Telecommunications Act of 1996 (CC Docket No. 96-98); filed June 10, 1999

Expert affidavit on behalf of Ameritech filed with the FCC in the matter of implementation of the local competition provisions in the Telecommunications Act of 1996 (CC Docket No. 96-98); filed May 26, 1999

Expert written testimony and cross-examination on behalf of U S WEST in interconnection arbitration proceedings in 1997

South Dakota (Docket No. TC96-184),

Montana (Docket No. D96.11.200),

Wyoming (Docket Nos. 72000-TS-96-95 and 70000-TS-96-319),

New Mexico (Docket No. 96-411-TC),

North Dakota (Docket No. PU-453-96-497),

Idaho (Docket Nos. USW-T-96-15 and ATT-T-96-2), and

Colorado (Docket No. 96S-331T)

Participated in cost workshops on behalf of U S WEST with the Utah Division of Public Utilities and Minnesota Commission in 1996, 1997, and 1998

Expert written testimony and cross-examination on behalf of U S WEST in consolidated cost dockets in

Arizona (Docket Nos. U-3021-96-448, 1996),

Iowa (Docket No. RPU-96-9, 1997),

New Mexico (Docket Nos. 96-310-TC and 97-334-TC, 1998),

Minnesota (Docket Nos. P-442, 5321, 3167, 466, 421/CI-96-1540, 1998), and

Utah (Docket No. 94-999-01, Phase III, Part C, 1998)

Expert testimony and cross-examination in universal service proceedings on behalf of U S WEST in 1997 and 1998

New Mexico (Docket Nos. 96-310-TC, 97-334-TC),

Minnesota (MPUC Docket No. P-999/M-97-909),

Wyoming (General Order No. 81),

Idaho (Case No. GNR-T-97-22), and

Nebraska (Application No. C-1633)

Expert declarations in support of motions for summary judgment by U S WEST in Iowa (June 1997) and Washington (January 1998)

Presentation on "TELRIC Concepts and Applications," Basics of Regulation Conference, New Mexico State University Center for Public Utilities and the National Association of Regulatory Commissioners, Albuquerque, New Mexico, September 18, 1996

April 2001

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Table A

Loop Investment and Monthly Loop Cost, HAI 5.2a with Modified Inputs and Assumptions

Modification	Loop investment (per line)	Monthly Loop Cost	Cost Incremental Change
HAI 5.2a, Denney run	$442	$10.10	N/A
1. MST Off	$473	$10.86	$0.76
2. Lines Adjustment	$489	$11.28	$0.42
Investments			
3. Structure Sharing	$590	$13.14	$1.86
4. Drop Length	$609	$13.55	$0.41
5. Plant Mix	$742	$15.03	$1.48
6. Buried Placement Costs	$803	$16.40	$1.37
Operating and Overhead Factors			
7. Network Operations Factor	$803	$17.76	$1.36
8. General Support Allocators	$803	$18.63	$0.87
9. Corporate Overhead	$803	$19.07	$0.44
Capital Costs			
10. NID, SAI, Drop Depreciation	$803	$19.61	$0.54
Sold Exchanges			
11. Remove Sold Exchanges	$741	$18.43	($1.18)

Change 1: MST Off

	HM5.2a Input	→	*WLF Input*
MST off	MST on		*MST off*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$442**	**$10.10**
Output from this run of the model	**$473**	**$10.86**

MST Off

The minimum spanning tree (MST) is a theoretical lower limit on the distances that are required to reach a number of points. It is an estimate of the distances required to connect customer locations as if they were dots on a blank page. As such, it is a useful diagnostic tool to assess a distribution design, but it is not an appropriate method of designing a telecommunications network. With the MST function turned off, the HAI model adopts a distribution design that at least attempts to simulate a real world network. When the MST function in the HAI model is on, it replaces the HAI model's distribution design with a connect the dots design described by the MST. This is inappropriate.

Supporting Materials

Document 1.1 contains excerpts from a cost proceeding in Minnesota in which Stopwatch Maps estimated that an efficient real world network would require 200 percent more cable than would be provided by the minimum spanning tree in a higher density area (Marshall) and 20 percent more in a low density area (Montevideo).[1]

Document 1.2 is an excerpt from the "Inputs Portfolio" for the 5.2 release of the HAI model. This document, dated March 2000, shows the default input of turning the MST "off." As support, the document states: "Setting the switch 'off' is consistent with the HM 5.2 developers' strong reservations about the usefulness of the MST as an indicator of what the DRD should be. Turning it on, however, would be consistent with the FCC finding that the strand distance is an indicator of the correct DRD value." These statements support turning the MST off because at worst it is not useful and at best it is only an indicator of the correct distance, not an appropriate network design.

---

[1] Supplemental Direct Testimony of Richard D. Emmerson and Kevin T. Duffy-Deno, *In the Matter of the Commission's Generic Investigation of US WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements*, Before the Minnesota Public Utilities Commission, Docket No. P-442, 5321, 3167, 466, 421/CI-96-1540, June 16, 1998, Exhibit EDD-4.

Document 1.1

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Edward Garvey	Chair
Joel Jacobs	Commissioner
Marshall Johnson	Commissioner
LeRoy Koppendrayer	Commissioner
Gregory Scott	Commissioner

In the Matter of the Commission's Generic Investigation of U S WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements	))))))	Docket No. P-442, 5321, 3167, 466, 421/CI-96-1540

SUPPLEMENTAL DIRECT TESTIMONY OF

RICHARD D. EMMERSON
AND
KEVIN T. DUFFY-DENO

JUNE 16, 1998

Supplemental Direct Testimony of
Richard D. Emmerson and Kevin T. Duffy-Deno
Exhibit EDD-4

Two In-Town Areas in Marshall, MN

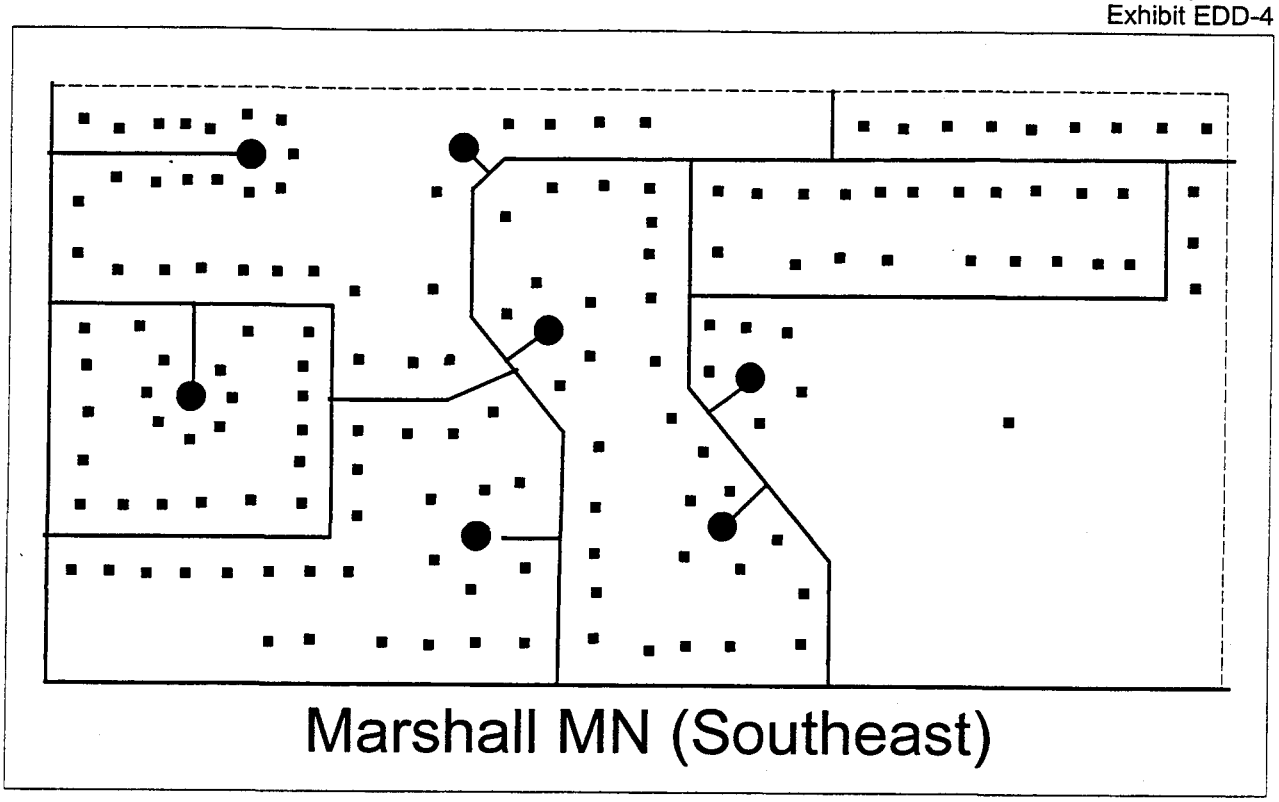
In order to get a handle on a realistic ratio between the length of a Minimum Spanning Tree and actual distribution-plus-drop cabling, we have examined two randomly chosen areas from within the town of Marshall, MN (Lyon County).

We used high resolution aerial photographs of each area and anchored each to an existing electronic map. We hand placed the individual subscriber points onto the electronic map, using the aerial photographs as source, and we determined the Minimum Spanning Tree of those subscriber points.

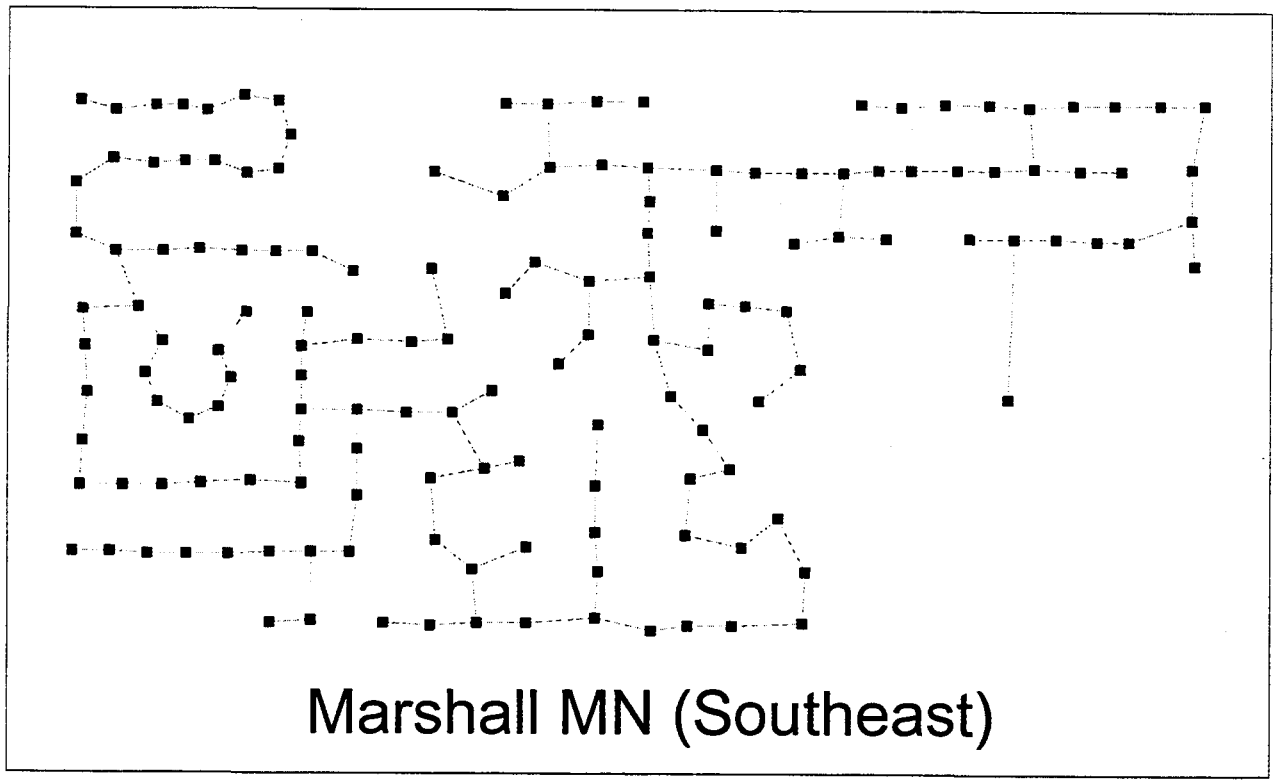
We then used another paper map of telephone easements, indicating the actual run of distribution cable, and transcribed these runs to the same electronic map. We measured the length of the distribution cable.

Because we hand placed each of the subscriber points, we knew that our freehand work would cause the drop lengths to be imprecise. Therefore, instead of measuring drop lengths from our own placement of subscribers, we used for our measurement the average drop length for the density zone as proposed by the DPS, and also the drop length proposed in the direct testimony of Bill Fitzsimmons. Because both of the areas studied have a density in the 850-2550 per square mile zone, each drop length is considered to be 90 feet (using the DPS number) or 107 feet (using Bill Fitzsimmons' number). We calculate both ways.

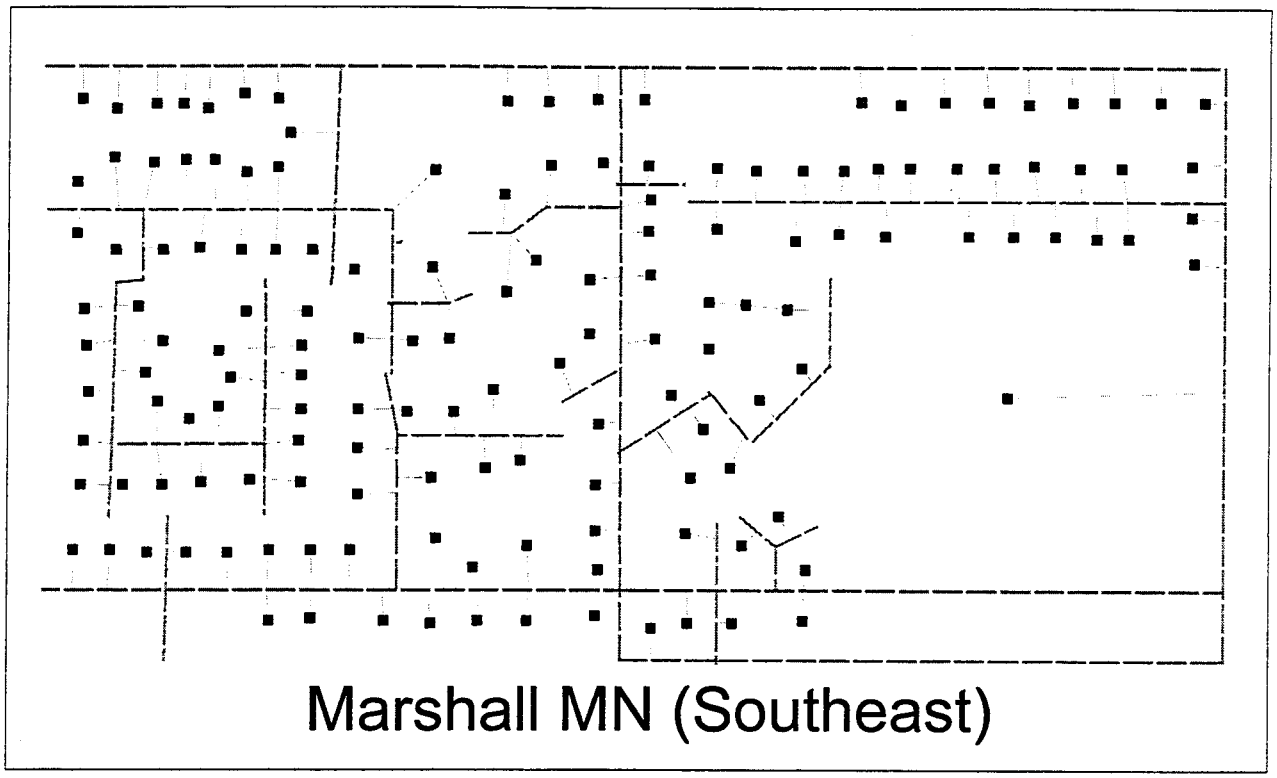
Let us first look at an area in the southeast of Marshall. It has 151 subscriber locations, for a density of 1,716 per square mile of area covered.



We determine the Minimum Spanning Tree and calculate its length as 15,706 feet.



We then lay in the distribution (heavier broken line) and drop (lighter line) cables.

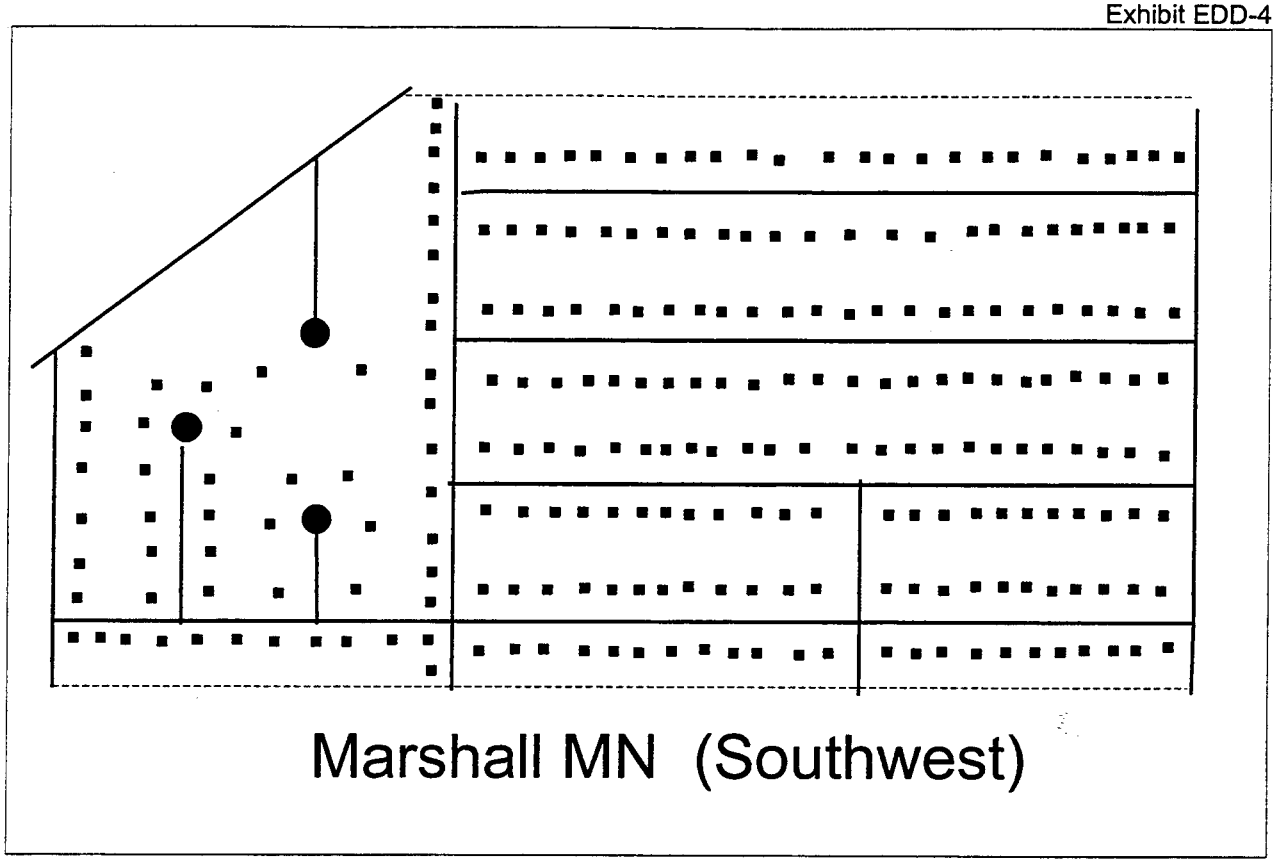


We measure the distribution cable length and find it to be 17,236 feet. Drops for 151 subscriber locations are 13,590 feet (DPS: 90 x 151) or 16,157 feet (Fitzsimmons: 107 x 151).
The comparisons of cable length to Minimum Spanning Tree, then, would be as follows (the first column uses the DPS drop length, the second the Fitzsimmons drop length):

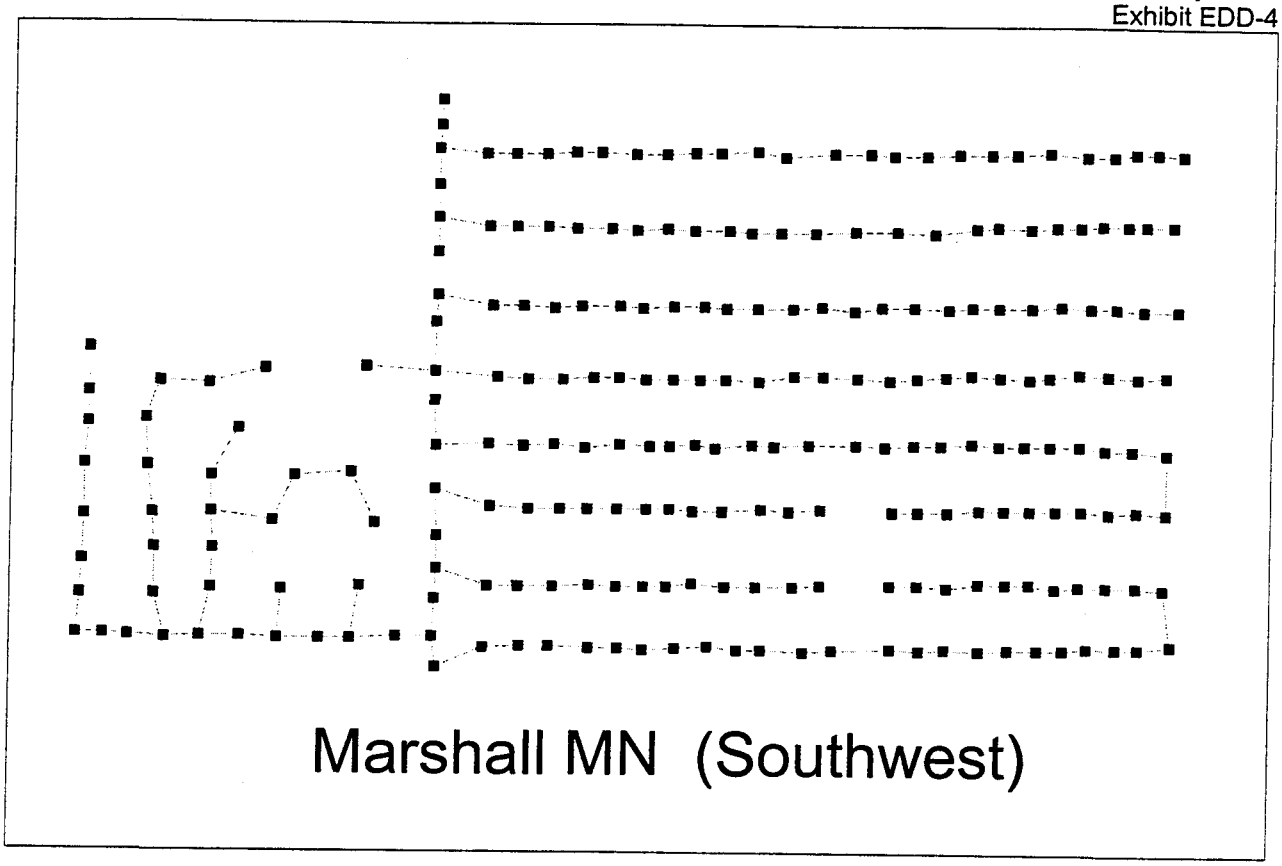
Minimum Spanning Tree	15,706 ft.	15,706 ft.
Distribution Cable	17,236 ft.	17,236 ft.
Drops	13,590 ft.	16,157 ft.
	---	---
Distribution plus drops	30,826 ft.	33,393 ft.
Actual-to-MST Multiplier	1.96	2.13

We should not be surprised that the multiplier approaches (or even exceeds) 2 ... in urban areas there are more man-made restrictions in the routing of cable than in rural areas.

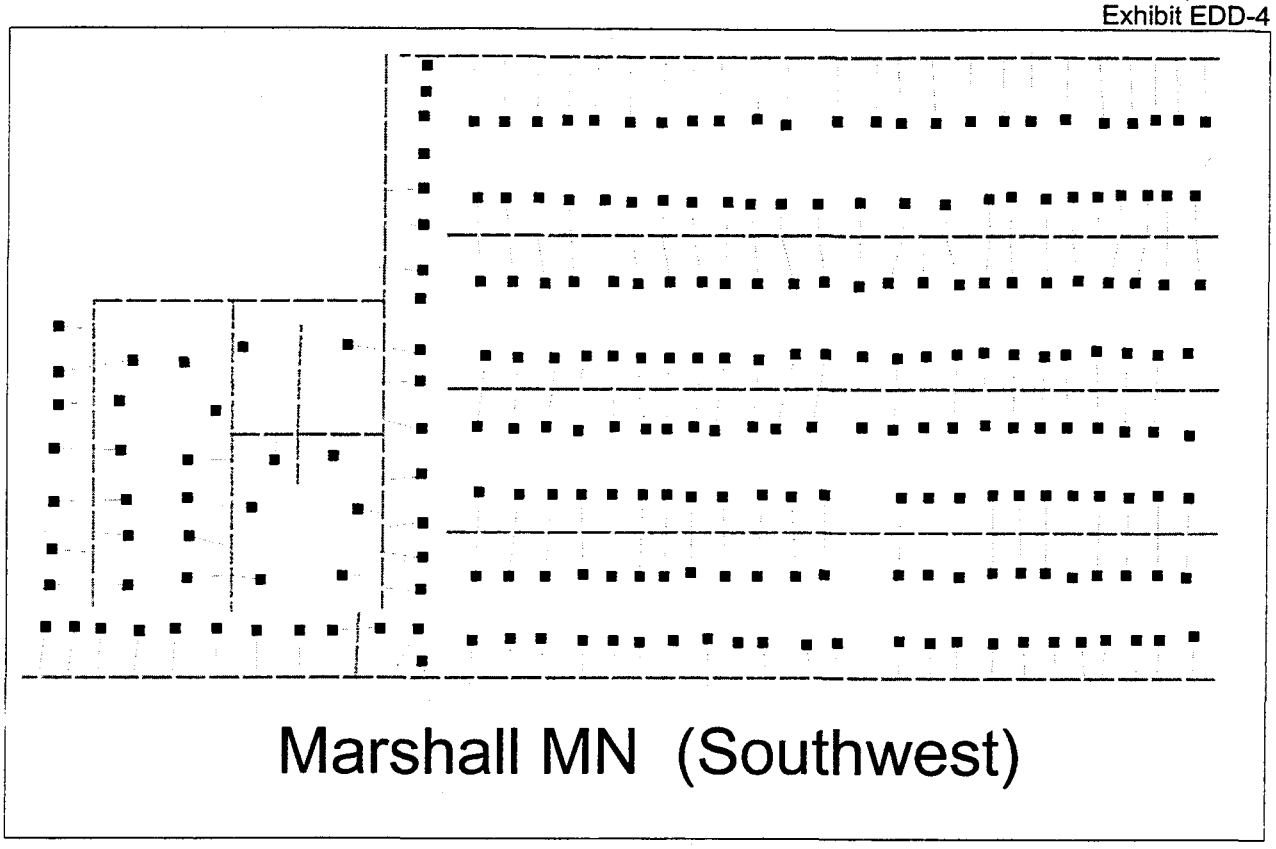
We now look at an even denser area in the southwest part of Marshall. This area has 255 subscriber points, with a density of 2,390 per square mile of area covered.



First, we determine the Minimum Spanning Tree of this set of points, and find that to be 18,114 feet.



We then lay distribution cable per map of easements, and find that distribution length to be 13,167 feet. Drops for 255 subscriber locations are 22,950 feet (DPS: 90 x 255) or 27,285 feet (Fitzsimmons: 107 x 255).



Once again we summarize the comparisons numerically (the first column uses the DPS drop length, the second the Fitzsimmons drop length):

Minimum Spanning Tree	18,114 ft.	18,114 ft.
Distribution Cable	13,167 ft.	13,167 ft.
Drops	22,950 ft.	27,285 ft.
	---	---
Distribution plus drops	36,117 ft.	40,452 ft.
Actual-to-MST Multiplier	1.99	2.23

Once again, a settled in-town area yields an approximately 2-times-MST actual cable length.

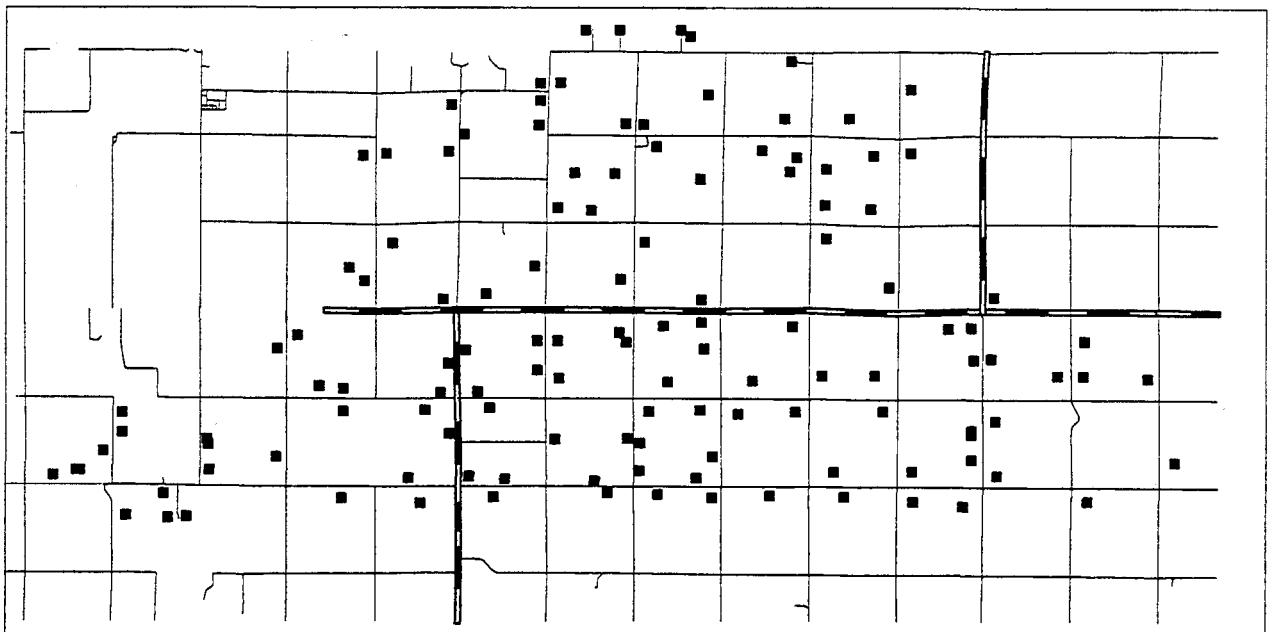
Minimum Spanning Tree and Cabling in a Rural Area

We now cite an example of a rural distribution area, specifically the area north of Montevideo, MN (Chippewa County). As with our urban examples, this area was chosen at random, the only requisite for selection being that maps were available for analysis.

The area in question is a single rural distribution area of about 52 square miles with 129 subscribers ... thus, the density is about 2.5 per square mile. The RAI is located 8 miles due north of Montevideo.

We calculate total cable length using two different measures for average drop length. For the 0-5 per square mile density zone, the DPS specifies an average drop of 250 feet. In his direct testimony, Bill Fitzsimmons specifies an average drop length of 498 feet. Inspection of the maps of this area indicate quite long drops. We calculate total cable length using both numbers.

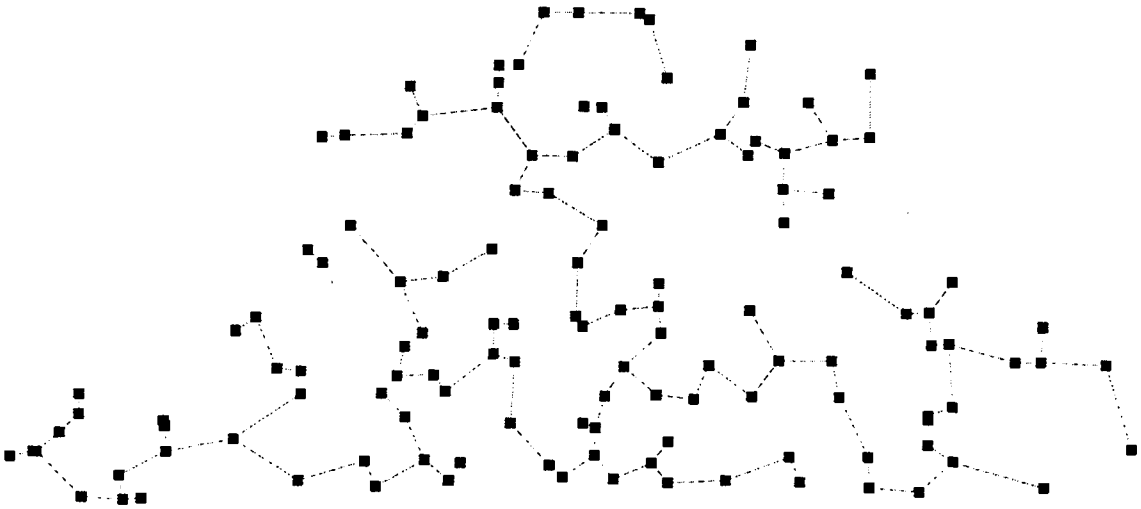
Here is the layout of the subscribers along roads:



Rural Area North of Montevideo MN

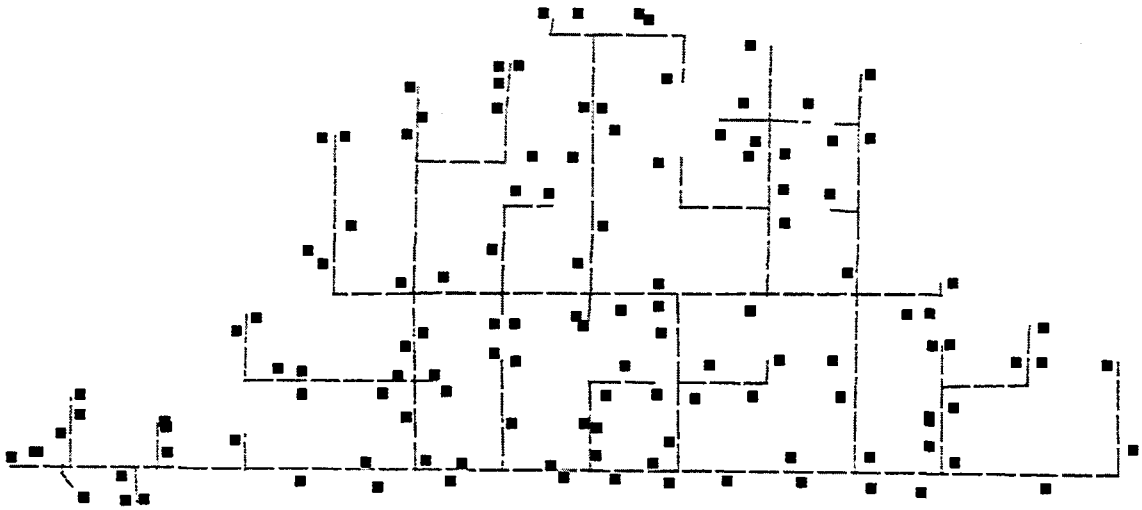
The layout of roads is typical of the township/range/section layout to be found throughout Minnesota. In this case, the area is significantly wider (about 13 miles at its widest point) than it is tall (about 6 miles), which actually reduces the dispersion of the subscriber points.

When we calculate the Minimum Spanning Tree of those 129 points, we find it to be 306,314 feet.



Minimum Spanning Tree of Subscriber Points

When we map the actual distribution cable for this area (which, we would point out, is laid out in a near-optimum fashion), we find that the length of the distribution cable is 325,718 feet ... as we would have expected, the distribution cable alone – in a rural area – is longer than the Minimum Spanning Tree.



Actual Distribution Cabling for Subscribers

The drops add 32,250 feet (DPS: 250 x 129) or 64,242 feet (Fitzsimmons: 498 x 129). We summarize the numbers below (the first column uses the DPS drop length, the second the Fitzsimmons drop length):

Minimum Spanning Tree	306,314 ft.	306,314 ft.
Distribution Cable	325,718 ft.	325,718 ft.
Drops	32,250 ft.	64,242 ft.
	---	---
Distribution plus drops	357,968 ft.	389,960 ft.
Actual-to-MST Multiplier	1.17	1.27

HAI Model
Release 5.2

Inputs Portfolio

HAI Consulting, Inc.

737 29th Street, Suite 200
Boulder, Colorado 80303

March 1, 2000

Support: Drop structure requirements are tailored to include rate of occupancy by housing type and density zone. Occupancy rates are determined using 1990 Census data. Occupancy is calculated using the specified number of occupied and vacant housing units reported for each Census Block Group (CBG) and Housing Type. Each CBG is assigned a density zone, consistent with the assignment approach used throughout the Model. CBGs are then aggregated to density zone and occupancy is calculated by dividing occupied housing by the sum of occupied and vacant housing

2.13. DISTRIBUTION ROUTE DISTANCE ADJUSTMENTS

2.13.1 Strand Adjustment Factors

Definition: Two parameters that together provide the optional ability of normalizing the distribution route distance (DRD) produced by the model to a function of the calculated strand distance. The two parameters can be set independently for each density zone.

The first parameter, called the *Strand Adjustment Switch*, is a logical "on-off switch" that determines if the strand distance provided as part of the cluster information database is to be used in that density zone. The second, called the *Initial Strand Multiplier*, is a multiplier of the strand distance that can be used to correct any systematic bias in the strand distance.

These parameters are used as follows (see Section 6.3.4 of the HAI Model Release 5.2 Description ["HM 5.2 Description"] for more detail] . If the switch is off, no adjustment is made to the DRD. If it is on, the strand distance for the cluster, provided in the cluster data record, is multiplied by the Initial Strand Multiplier. The DRD is then "normalized" to the revised strand distance by multiplying all the components of the DRD by the ratio of the revised strand distance to the DRD.

Default Values:

Strand Adjustment Factors		
Density Zone	Strand Adjustment Switch	Initial Strand Multiplier
0-5	0	-999
5-100	0	-999
100-200	0	-999
200-650	0	-999
650-850	0	-999
850-2,550	0	-999
2,550-5,000	0	-999
5,000-10,000	0	-999
10,000+	0	-999

Support:

In default mode, the switch is "off," and the Initial Strand Multiplier is -999.[18] . . Setting the switch "off" is consistent with the HM 5.2 developers strong reservations about the usefulness of the MST as an indicator of what the DRD should be. Turning it on, however, would be consistent with the FCC finding that the strand distance is an indicator of the correct DRD value

The Model calculates the Initial Strand Multiplier by density zone. The built in calculation produces a value of 1.0 at 0% geocoding, and increases it linearly to 1.27 at 100% geocoding. As explained in the HM 5.2 Model Description, Section 6.3.4, this reflects the offsetting effect of 1) a conservatively-high dispersion, and hence strand distance, associated with geocoding, on the one hand; and 2) the fact that the strand distance is based on "beeline" routing and may be appropriately adjusted upward by a route-air multiplier. Setting the Initial Strand Multiplier value to -999 in a given density zone causes the Model to use the built-in calculation, using the geocoded rates by density zone for the state in question (see Section 2.13.2). Alternatively, setting the value of this parameter to a positive value overrides the built-in calculation and causes the Model to use the specified value instead. The HM 5.2 developers believe the built-in calculation of the multiplier yields the most appropriate value.

2.13.2 Manual Distribution Design Adjustment

Definition: The percentage of customer locations that are successfully geocoded in each density zone.

Default Values:

Manual Distribution Design Adjustment	
Density Zone	**Geocoded Rate**
0-5	-999
5-100	-999
100-200	-999
200-650	-999
650-850	-999
850-2,550	-999
2,550-5,000	-999
5,000-10,000	-999
10,000+	-999

Support: Referring to Section 2.13.1, the built-in calculation of the Initial Strand Multiplier requires the geocode success rate by density zone as one of its parameters. The database provided with the model contains the geocode success rate by density zone by state. Inserting the value of -999 in the Geocoded Rate causes the Model to use the database values for the success rate in each density zone appropriate to the state in question. Inserting a positive value in the Geocoded Rate in any density zone will cause the inserted value to override the database value. Given that the current cluster data in the database is based on geocoding information whose corresponding geocode success rate is specified in the database, consistency dictates that using the success rates from the database is appropriate. Thus the default values have been set to -999.

[18] Of course, with the switch off, the other parameter is not used; however, a default value is still needed in case the user turns the switch "on."

Change 2: Lines Adjustment

	HM5.2a Input	→	*WLF Input*
Total Lines Adjustment	3,173,116		2,952,642
Non-switched Special Access Lines	213,325		155,120
Business Lines	867,847		705,578

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$473**	**$10.86**
Output from this run of the model	**$489**	**$11.28**

Change 2: Lines Adjustment

1. Non-switched Special Access Lines

The inclusion of non-switched special access lines on a channel equivalent basis is inconsistent with using the HAI model to estimate the cost of providing narrowband unbundled loops. Document 2.2 provides by wire center the physical line counts associated with special access lines. I substitute these values into the HAI model.

2. Digital Business Lines

Mr. Denney's run of the HAI 5.2a model for Arizona uses business and residential lines by wire center from the Qwest ICONN database. These values are consistent with data reported in ARMIS, and like ARMIS, Business Digital Lines reported in ICONN are shown in 64 kbps equivalents. For purposes of cost modeling, the relevant count is physical lines, therefore, Business Digital Lines should be adjusted to reflect the underlying physical lines.

Document 2.2 shows the number of business digital line channel equivalents running over DS1 facilities by wire center as of March 31, 2001. It also shows the number of DS1 facilities that underlie the channel equivalents. Since a DS1 uses two physical lines, I multiply the number of DS1 facilities by two. I adjust the Business Digital Lines in the HAI by subtracting the channel equivalents and adding back physical lines. The adjustment is made by wire center.

The adjustments made to the Special Access and Business Digital Lines are summarized in the following table.

Summary of Line Count Adjustment
(Denney Run vs. WLF Run)

Line Type	HAI Data (Denny Run)	Line Adjustment	WLF Run
Business	867,847	-162,269	705,578
Residence	2,063,326	0	2,063,326
Special Access	213,325	-58,205	155,120
Public	28,618	0	28,618
Total	**3,173,116**	**-220,474**	**2,952,642**

Supporting Materials

Document 2.1 contains excerpts from decisions from the Colorado, Iowa, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming Commissions affirming that counting non-switched special access lines on a channel-equivalent basis is not appropriate

Document 2.2 shows physical line counts to non-switched access lines and Business Digital Lines by wire center (CONFIDENTIAL).

Decision No. C97-739

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

DOCKET NO. 96A-331T

RE: THE INVESTIGATION AND SUSPENSION OF TARIFF SHEETS FILED BY U S WEST COMMUNICATIONS, INC. WITH ADVICE LETTER NO. 2617, REGARDING TARIFFS FOR INTERCONNECTION, LOCAL TERMINATION, UNBUNDLING AND RESALE OF SERVICES.

COMMISSION ORDER

Mailed Date: July 28, 1997
Adopted Date: July 16, 1997

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cost is based upon an assumed loop investment requirement of about $555 per loop. USWC also introduced various comparisons to recent construction costs and an analysis of embedded cost. Although USWC maintained that recent construction costs per loop were in the range of $1,100-1,200, AT&T claimed that this number was more likely about $700.[39] While the embedded cost analysis of USWC claimed an investment level of about $1,000 per line, we note that the outside plant value was about $670 and about $900 when including all allocated central office investment.

2. As for the cost model assumptions of USWC, we find that the placement cost, in terms of the percentage of cable requiring boring, is too high and the fill factor assumption used by USWC is too low. Rather than using an assumption of 50% boring and fill factors in the range of 63%, we believe a boring ratio of 25% and 80% fill factors are more appropriate. (The latter adjustment is particularly reasonable relative to the 5-year horizon used by USWC in designing its cost models.) Overall, these adjustments could provide a downward adjustment in the range of 10-15% in the USWC recurring loop cost through lowering the expected investment base. We also find that the depreciation and capital cost expenses used by the Company are overstated. Assuming a 10.4% cost of money and depreciation expenses more consistent with the 1995 FCC represcription, it appears that the recurring loop cost estimate of the Company could be reduced in the range of 15-20%. We also believe that the forward-looking costs of maintaining the network should decrease as advocated by AT&T.[40] We find that this could reduce the loop cost estimates in the range of five plus percent. We also agree with numerous parties that the overhead estimates used by USWC are quite liberal in assuming additional costs to be added to that of costs of the physical plant. An adjustment in the range of 10% of the loop cost for this factor would appear reasonable and warranted.

3. As for the cost model assumptions of AT&T, we believe that several adjustments to the calculation of the investment base for the recurring loop cost of the Hatfield model are warranted. First, the assumed level of structure sharing is too high. We find that sharing in the range of 20-30% would be more reasonable. Adjusting the calculations of USWC witness Fitzsimmons for this assumption, it appears an upwards adjustment in

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38 *See* Exhibit 4, pp. 60-61 and Exhibit 8, pp. 8-20.

39 *See* Transcript V. 1, pp. 380-81.

40 We also note that USWC has, in the past, advised this Commission that significant loop investments under the Rural Facilities Improvement Program ("RFIP") have dramatically lowered trouble report rates in affected wire centers.

147.

the Hatfield base of about 19% is reasonable. As determined by Mr. Fitzsimmons, additional upward adjustments for the drop investment (about 45%) for the assumption of the percentage of aerial plant (5-10%) and the inclusion of DS1/DS3 facilities (10-15%) are found reasonable.

4. Based on these determinations, it appears that a range of reasonableness of the cost of the loop, without inclusion of the central office multiplexing cost assumptions of USWC, is in the range of $16.50-$19.00 on an equivalent investment base.[41] We find that a statewide average cost of $18.00 per loop is a reasonable determination within this range. To this, when appropriate, we add a monthly cost of $2.65 to account for a statewide average of the cost to demultiplex loops into an analog two wire circuit at the USWC central office. Based on this review, the Commission will establish $20.65 as the unbundled loop cost. (This figure is also essentially the USWC 1995 embedded cost per loop in Colorado determined in Mr. Armstrong's exhibits.)

5. Additionally, the Commission finds that a CLEC shall continue to have the ability to access loops at the digital cross-connect as was ordered by this Commission in Docket No. 96S-233T.[42] This would include situations when integrated digital loop carrier ("IDLC") is used and is serving sufficient numbers of loops for CLEC customers, to allow direct access from multiplexing equipment as described by AT&T witness Lynott.[43] However, as described by USWC witness Schmidt, access by this means would be subject to the technical capabilities of the available USWC equipment and any additional costs associated with facilities not normally used for providing loop facilities. USWC shall also include language in its tariff that it will cooperate with CLECs to aggregate CLEC served loops into DS1s where CLECs have obtained sufficient customers to aggregate in this fashion.

Q. Deaveraging of the Statewide Loop Costs

1. USWC

a. As stated by USWC witness Hatzenbuehler[44], the Company does not favor geographic deaveraging of

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41 For the loop, this would be approximately $730-775.

42 *See* Decision No. C96-655, pp. 65-66.

43 *See* Exhibit 32.

44 *See* Exhibit 19, pp. 29-30.

STATE OF IOWA

DEPARTMENT OF COMMERCE

UTILITIES BOARD

IN RE: U S WEST COMMUNICATIONS, INC.	DOCKET NO. RPU-96-9

FINAL DECISION AND ORDER

(Issued April 23, 1998)

SYNOPSIS[1]

On July 5, 1996, U S West Communications, Inc., a local exchange carrier, filed a tariff with the Utilities Board making interconnection available to competitive local exchange carriers (CLECs) pursuant to federal and state law. U S West's tariff described the services, network elements, and prices it proposed to make available to allow CLECs to offer local exchange service to their own end-user customers. The Board rejects this tariff, but describes the corrections to the tariff that are necessary for U S West to provide unbundled network elements and wholesale service to requesting telecommunications carriers. U S West is ordered to file a tariff containing these corrections and making the unbundled network elements and retail services available to requesting telecommunications carriers at specific prices.

Federal and state law requires prices for network elements to be cost-based. The Board adopts incremental costs as a pricing principle for unbundled network elements. Costs for unbundled network elements are set using the Hatfield Model version 3.1 as a pricing tool. The Board elects to establish an average price for unbundled network elements rather than pricing according to density zones. The Board's decision requires U S West to undertake some additional unbundling. The Board's decision also makes mechanical corrections to the pricing model and adopts specific inputs to be used in running the model to compute unbundled network element prices.

Federal law requires the wholesale discount to be established on the basis of costs U S West will avoid in providing retail services at wholesale. Avoided costs are

[1]The purpose of this synopsis is to provide readers a brief summary of the decision. While the synopsis reflects the order, it shall not be considered to limit, define, amend, or otherwise affect in any manner the body of the order including the findings of fact and conclusions of law.

47 C.F.R. § 51.615 (1997) also requires U S West to continue to provide grandfathered services to end-user customers now subscribing to those services, either directly or at wholesale rates through a reseller. In its proposed Iowa Tariff 5, Section 9, U S West excludes from resale "Grandfathered/Obsolete products and services (except to existing customers of the Grandfathered/Obsolete product or service)." This tariff provision is ambiguous because it could be read either to allow customers of grandfathered services to transfer to a CLEC and continue to receive those services, or it could be read to authorize U S West to deny providing the service to a customer who transfers. However, U S West must interpret this provision consistent with the FCC's rule and continue to provide grandfathered services to customers receiving the services from a reseller.

IV. FINDINGS OF FACT

Based on a thorough review of the entire record in these proceedings, the Board makes the following findings of fact:

1. It is reasonable to establish prices for network elements that will promote competition in the local exchange by being nondiscriminatory and by reflecting the incremental costs an incumbent local exchange carrier can actually expect to incur (assuming a reasonable profit) in providing the network element.

2. It is reasonable to determine unbundled network element costs using the Hatfield Model version 3.1, making the mechanical corrections proposed by U S West for the algorithm which omits subfeeder in some census blocks groups and for the omission of part of the trenching costs for underground and buried cable. With

the use of assumptions and inputs which realistically reflect U S West's costs and existing local exchange network, the Hatfield Model may be used to estimate incremental costs rather than long run incremental costs using TELRIC principles.

3. It is reasonable to use the Hatfield Model default input for property taxes and a composite federal and state income tax rate of 41.57 percent.

4. It is reasonable to apply a sales tax rate of 5.42 percent to the input items as identified in Attachment 1, appended to this order.

5. It is reasonable to use an input for depreciation plant lives which reflects the settlement approved by the Board on April 11, 1997, in Docket No. DPU-96-1, as found in Attachment 2, appended to this order.

6. It is reasonable to use an input of ten percent for the cost of money which reflects a capital structure for U S West of 42.4 percent debt and 57.8 percent equity, a 7.08 percent cost of debt, and a 12.08 percent cost of equity.

7. It is reasonable to use a 90 percent input for the network operations factor.

8. It is reasonable to use a 13.6 percent input for the variable overhead factor.

9. It is reasonable to use structure sharing inputs of 50 percent for aerial cable placement costs, 70 percent for buried cable placement costs, and 75 percent for underground cable placement costs.

10. It is reasonable to adjust line count inputs to count each digital special access line as one line. It is also reasonable to include all of U S West's foreign exchange and tie lines in the line count.

11. It is reasonable to use an input for drop investment which matches Board scenario 3 in Attachment 3 appended to this order.

12. It is reasonable to use inputs for cable mix which correspond to the percentages noted in Attachment 4, appended to this order.

13. It is reasonable to use Hatfield Model defaults for cable placement costs which includes the default regional adjustment factor for Iowa.

14. It is reasonable to adopt the Hatfield Model fill factor defaults as shown on Attachment 5, appended to this order.

15. It is reasonable to use a copper/fiber crossover input of 18,000 feet for unloaded copper loops.

16. It is unreasonable to include demultiplexing costs in loop costs.

17. It is reasonable to establish averaged rates for unbundled network elements rather than adopt multiple deaveraged rates.

18. It is reasonable to require requesting telecommunications carriers to pay for nonrecurring costs incurred by U S West as one-time charges, less the shared and common costs stated in the U S West cost study.

19. It is reasonable for U S West to state a uniform nonrecurring charge for each loop to perform basic installation, installation with conformance testing, and coordinated installation with testing.

Service Date: March 20, 1997

DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

* * * * *

IN THE MATTER OF The Petition of AT&T Communications of the Mountain States, Inc. Pursuant to 47 U.S.C. Section 252(b) for Arbitration of Rates, Terms, and Conditions of Interconnection With U S WEST Communications, Inc.	))))))	UTILITY DIVISION DOCKET NO. D96.11.200 ORDER NO. 5961b

ARBITRATION DECISION AND ORDER

Signaling Links, Signaling Transfer Points, Signal Control Points/Databases, Collocation and Local Service Provider Change Charge ($5.00 as originally proposed).

Loop Rates--As stated above, both U S WEST and AT&T have strongly argued against the use of each other's models in favor of their own model to calculate U S WEST's loop costs and rates. The parties provided fairly extensive testimony regarding the plausibility of various inputs into the loop cost studies. We conclude the Hatfield Model, with revised inputs, can provide reasonable rates for interim purposes. The Commission requested that AT&T rerun its model with the following revisions: (1) a change in the corporate overhead factor from 10 percent to 14 percent; (2) changing the structure sharing assumptions for buried and underground feeder and distribution cable from 33 percent to 66 percent; (3) an increase in the number of distribution cables per census block density group; (4) an increase of the network operations factor from 70 percent to 85 percent; and (5) a decrease in the number of special access lines. As a result of these changes, the Hatfield Model calculates the following monthly aggregate loop and sub-loop prices: 1) the total loop price (including the NID) = $27.41; 2) the loop distribution price (including the NID) = $20/40; 3) the loop concentration price = $2.35; and 4) the loop feeder price = $4.65. The Commission adopts these revised prices for interim purposes.

Collocation Rates--AT&T did not perform any cost studies to determine collocation prices in this proceeding, but instead recommended the Commission adopt the physical collocation prices proposed by the Oregon PUC staff in an Oregon PUC proceeding, and the virtual collocation prices ordered by the Oregon PUC in the same proceeding. U S WEST has proposed it own collocation prices that it explains were developed in compliance with the FCC's TELRIC pricing rules. U S WEST also provided a comparison of interstate collocation prices of seven local exchange companies, on an aggregate, per DS1 price basis. The comparison indicated that U S WEST's price proposals was reasonable.

The Commission adopts U S WEST's proposed collocation prices, for interim purposes, until it conducts an investigation of collocation costing/pricing practices and policies. The Commission finds that these interim prices shall be subject to a true-up once permanent rates are determined.

BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION

In the Matter of AT&T Communications of the Midwest, Inc. of Denver, Colorado, Petitioning for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to establish an Interconnection Agreement with US West Communications, Inc.	Application No. C-1385 Interconnection Agreement Approved as Modified Entered: July 1, 1997

APPEARANCES:

For AT&T:
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For the Commission Staff:
Deanne Bruning
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BY THE COMMISSION:

AT&T Communications of the Midwest, Inc. (AT&T) requested to negotiate an interconnection agreement with US West Communications, Inc. (USW) on March 1, 1996. Pursuant to Section 252(b)(1) of the Act, AT&T filed a petition for arbitration with the Commission on July 26, 1996. On August 6, 1996, AT&T amended their petition for arbitration. USW filed its reply to the petition on September 3, 1996.

On August 8, 1996, the Federal Communications Commission (FCC) issued Order 96-325 promulgating rules regarding Sections 251 and 252 of the Act. On October 15, 1996, pursuant to Iowa Utilities Board, et. al. v. Federal Communications Commission, et. al., Case No. 96-3321, et. seq., the U.S. Court of Appeals, Eighth Circuit stayed the implementation of the FCC rules relating to pricing and the "pick and choose" provisions. On November 12, 1996, the United Supreme States Court issued a decision declining to set aside the stay. As of the date of this order, the stay remains in effect.

On August 27, 1996, the Commission entered Progression Order No. 3 in Docket C-1128

unconstitutionally take either parties' property without just compensation. We further believe that a retroactive true-up should be implemented after the conclusion of C-1415 to correct any pricing errors. Since Docket C-1415 is pending at this time and we cannot accurately predict a completion date, we find it reasonable to limit the period to "true-up" rates in this proceeding retroactively to one year.

We disagree with the Arbitrator's recommended decision regarding the compilation of digital special access lines. Specifically, we reject the recommended decision and the Hatfield Model treatment of DS-1 and DS-3. We find that such lines should not be counted as the number of voice frequency channels but rather counted as the actual number of subscriber loops used to provide the service. For example, DS1 service provided over two copper pairs would be counted as two subscriber loops not twenty four (24) loops. The pricing model should be rerun accordingly. We will review this issue and the remainder of the Arbitrator's recommendation concerning pricing in Docket C-1415.

Issue I. The pricing standard found in Part VI of the proposed agreement at section 49.4 is at odds with the Arbitrator's December 2, 1996, preliminary decision. See resolution made in USW "Issue H" above.

Issue J. The wholesale discount rates the Arbitrator has preliminarily adopted would prevent USW from recovering its costs and violates the Act. See resolution made in USW "Issue H" above.

Issue K. The Act requires that the interconnection agreement not allow sham unbundling. While we are sympathetic to USW's concerns regarding sham unbundling, we do not find the Arbitrator's recommendation to violate state or federal law. The opportunity for AT&T to repackage unbundled network elements at a price less than the wholesale discount certainly exists in the business market. However, the retail prices of residential and business services are controlled by USW and sham unbundling can be remedied under Nebraska's statutes with rate changes. We do recommend that any retail price changes made by USW be implemented over time and be phased in slowly to minimize rate shock to consumers. The Arbitrator's decision is consistent with the federal act and the recommended decision is upheld.

Issue L. AT&T must be required to pay USW for all additional facilities and services that USW must provide. We agree with USW and find that AT&T should be obligated to pay the incremental costs associated with constructing additional facilities that it requests. Such costs should be spread across all competing local exchange carriers that utilize the additional facilities in a competitively neutral manner as described in USW "Issue G" above. The agreement should be modified accordingly.

Issue M. USW should not have to finance collocation costs requested by AT&T. We agree with USW. USW is entitled to recover the costs it incurs in providing collocation at the Total

STATE CORPORATION COMMISSION
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BEFORE THE NEW MEXICO STATE CORPORATION COMMISSION

IN THE MATTER OF THE
INTERCONNECTION CONTRACT
BETWEEN AT&T
COMMUNICATIONS OF THE
MOUNTAIN STATES, INC. AND
U S WEST COMMUNICATIONS, INC.,
PURSUANT TO 47 U.S.C. SECTION
252

DOCKET NO. 96-411-TC

Findings Of Fact, Conclusions Of Law And Order

92. U S WEST also objected to the extent to which the Hatfield Model assumes that trenching is a cost shared with other utilities. Here too, AT&T has assumed that this cost is shared equally with two other utilities. Dr. Bowman argued that this was an unreasonable assumption based on TeleWest's experience in constructing a cable-telephony network in the United Kingdom. 10 Tr. 18-19

93. We find that 70 % is the appropriate sharing ratio for purposes of this arbitration. This ratio reflects that in newly developed areas, the developer often handles trenching. Fitzsimmons Direct Test., WLF-1, Change 1. Furthermore, the Hatfield Model presumes that all buried cable is placed in a trench. U S WEST's cost study illustrates that buried cable is often installed through plowing and that the cost of this activity is less than the cost of trenching. LIS-Link Cost Study, § 7 at 18. If the cost of trenching was not shared equally with two other utilities, the hypothetical entrant would likely plow some of the cable, a technique not considered in the Hatfield Model.

94. The Hatfield Model presumes that the cost of underground structural investment is shared equally with two other utilities. U S WEST argues that 100% of this cost should be assigned to telephone operations. Fitzsimmons Direct Test., WLF-1, Table 1. AT&T argues that underground conduit will be shared, if for no other reason, because city officials want to avoid construction on streets and sidewalks as much as possible. Zepp Direct Test., URI-2 at 35. Therefore, a value of 90% is reasonable for this cost input. We believe that the likelihood of sharing is lower than assumed by the Hatfield Model, but do not concur U S WEST's assertion that it will never occur.

95. U S WEST has argued that the line inputs to the Hatfield Model should be adjusted to reflect that non-switched digital special access lines are reported by the FCC at 64 kbs equivalents. We find this to be a reasonable adjustment. Based on the analysis presented by Dr. Fitzsimmons, we adjust the monthly cost of the loop upward by 93 cents. Fitzsimmons Direct Test. at Exhibit WLF-1, Table 2.

96. U S WEST has argued that the Hatfield Model "underestimates the quantity of distribution plant required to serve New Mexico customers." According to Dr. Bowman, the understatement occurs in urban areas. In rural areas, the model overstates the need of distribution facilities. Bowman Direct Test. at 36-38.

97. Dr. Fitzsimmons has attempted to correct for these errors by adding additional legs. The adjustments do not appear to be fully consistent with the testimony of Dr. Bowman. While Dr. Bowman has testified that the model overstates the need for cable in rural areas, Dr. Fitzsommons has proposed to add additional cables in this area. This is especially problematic since a majority of the distribution miles are in the two lowest density bands. Fitzsimmons Direct Test. at 9, and WLF-1, Table 5, and Document 5.1.

State of North Dakota
Public Service Commission

AT&T Communications of the Midwest Inc.
Interconnection Arbitration
Application

Case No. PU-453-96-497

JAMES K. SHARPE
ARBITRATOR

Arbitrator's Decision

On November 22, 1996 AT&T Communications of the Midwest, Inc. ("AT&T") filed a Petition for Arbitration pursuant to 47 U.S.C. Section 252 with the North Dakota Public Service Commission ("Commission")to establish an interconnection agreement with U S WEST Communications, Inc. ("U S WEST"). Written testimony and position papers were provided by AT&T in its initial filing. On December 16, 1996 U S WEST responded to AT&T's Petition on each of the issues.

Pursuant to the Commission's Procedural Order dated November 27, 1996, the Arbitrator on January 3, 1997 issued a Procedural Order identifying the issues that would be addressed in this proceeding and establishing a schedule for the proceeding. On January 13, 1997 U S WEST filed testimony and position papers responding to AT&T's prefiled testimony and position papers. On February 14, 1997 AT&T filed rebuttal testimony.

Hearings were conducted at the Commission offices in the State Capital Building on February 24, 25, 26, 27, and 28, 1997. Direct testimony, cross-examination, and rebuttal testimony were provided by witnesses of both parties at the hearing. All outstanding information requests were responded to by the parties in a timely manner.

On March 8, 1997, AT&T and U S WEST filed final briefs. Also on March 8, 1997,

adjusted to reflect changes in specific assumptions that affect the costs. U S WEST, in this proceeding, identified and adjusted some of the key drivers behind the HM to determine the differences between its estimates and those of RLCAP. The Arbitrator will use AT&T's HM cost estimates for the base line and adjust these estimates using certain U S WEST assumptions for inputs in the HM that the Arbitrator believes are appropriate. The Arbitrator is of the opinion that the HM meets the requirements listed in the Act Sections 252(b)(4)(B); 252(d)(1), and (2). HM is based on long run, forward-looking, incremental costs and can appropriately serve as a basis for developing interim prices in this proceeding.

U S WEST identified the following problems with the HM model: sharing, inappropriate DS1 and DS3 line factors, inappropriate depreciation rates, incorrect cost of capital, incorrect NID price, incorrect tax factor, incorrect network operations factor, and distribution lines. The Arbitrator will require AT&T to recalulate the HM using U S WEST's assumptions for cost of capital, tax factor, NID price, and DS1 and DS3 line factor adjustments. The Arbitrator finds the use of the sharing factor proposed by U S WEST to be inappropriate since it is not North Dakota specific. It will not be used. Further, the Arbitrator recognizes that the depreciation rates should be forward looking; however, sufficient questions were raised concerning the treatment of copper plant and other accounts that additional study will be required before adopting U S WEST's proposed depreciation rates. The remainder of the adjustments proposed by U S WEST involve differences in how the various models work or estimates on what the future cost factors should be. At this point there is no reason to accept the projections provided by U S WEST.

The Arbitrator will require AT&T to recalculate HM and provide the results to U S WEST, the Commission and the Arbitrator on or before March 27, 1997. The results of this study

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE INTERCONNECTION CONTRACT NEGOTIATIONS BETWEEN AT&T COMMUNICATIONS OF THE MIDWEST, INC. AND U S WEST COMMUNICATIONS, INC. PURSUANT TO 47 U.S.C. SECTION 252	)	FINDINGS OF FACT AND CONCLUSIONS OF LAW; ORDER AND NOTICE OF ENTRY OF ORDER TC96-184

On November 20, 1996, the Public Utilities Commission (Commission) received a filing from AT&T Communications of the Midwest, Inc. (AT&T) pursuant to 47 U.S.C. § 252(b)(1) to arbitrate open issues related to its interconnection negotiations with U S WEST Communications, Inc. (U S WEST). U S WEST filed its response on December 16, 1996.

On January 10, 1997, the Commission issued an Amended Procedural Schedule; Order for and Notice of Hearing. In the Amended Procedural Schedule, the Commission scheduled a prehearing conference for January 13, 1997. The prehearing conference was held as scheduled

On January 17, 1997, the Commission received a Joint Procedural Agreement submitted by U S WEST. In the Joint Procedural Agreement, U S WEST stated that AT&T had approved of the Agreement and that AT&T and U S WEST requested that the Commission adopt the proposed Agreement. The Agreement set forth the dates various witnesses would testify and the issues they would address. By Order dated January 22, 1997, the Commission adopted the Joint Procedural Agreement.

The hearing was held as scheduled on February 3, 1997, through February 7, 1997, in Pierre, South Dakota.

On February 26, 1997, AT&T and U S WEST each filed a Post-Hearing Brief and a Matrix of unresolved issues. On March 5, 1997, each party filed a Rebuttal Brief and Findings of Fact and Conclusions of Law.

On March 17, 1997, the Commission rendered its oral decision on the unresolved issues in this docket.

The Commission having reviewed the evidence of record and being fully informed in the matter, makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. The Federal Telecommunications Act of 1996 (federal Act) provides for the development of competition in the telecommunications industry. The federal Act opens up local markets by imposing new obligations on incumbent local exchange carriers (LECs). Under the federal Act, an incumbent LEC has the duty to interconnect with other telecommunications carriers, must provide other carriers access to the incumbent LEC's network elements on an unbundled basis, and must provide its retail services to other carriers at wholesale rates. 47 U.S.C. § 251(c). The federal Act requires an incumbent LEC to negotiate terms and conditions of service with the requesting carrier. 47 U.S.C. § 251(c)(1). If the parties are unable to reach a negotiated agreement on all areas, the federal Act provides for state Commissions to resolve any disputed issues. 47 U.S.C. § 252(b)

lines 16-18. The first Hatfield model was used to produce estimates of the total service long run incremental cost of basic local exchange service to examine the cost of universal service. Id. at 7, lines 14-16. The second version, Hatfield Model 2.2, Release 1, estimated costs for unbundled network elements only. Id. at lines 16-17. The third version, Hatfield Model 2.2, Release 2, the version used in this docket, considers both unbundled elements and basic local exchange service. Id. at 7, lines 18-19 to 8, line 1. The Hatfield Model is publicly available and uses nonproprietary data obtained from publicly available sources. Id. at 10, lines 19-21 to 11, lines 1-3.

92. Under AT&T's Hatfield Model, the local loop is priced at $15.62 per month. Exhibit 76. U S WEST priced its loop at $29.83. Exhibit 77.

93. U S WEST did a sensitivity analysis by running the Hatfield Model with revised inputs and assumptions. Exhibit 37 at 2, lines 10-16. U S WEST's sensitivity analysis of the Hatfield Model produced a per line price of over $36.00 which was higher than U S WEST's TELRIC cost study using its Regional Loop Cost Analysis Program (RLCAP) to price the loop. Exhibit 37.

94. The Commission finds the Hatfield Model's assumptions on structure sharing are erroneous. The Hatfield Model assumes U S WEST would be responsible for paying only 33% of the cost to place aerial, underground, and buried facilities because the placement of these facilities would be shared with other utilities. AT&T also assumes that all currently existing utility facilities are scorched. Tr. at 714, line 24 to 715, line 2. However, under the scorched node concept, only telecommunications facilities should be assumed to be scorched. Tr. at 856, lines 11-12. By assuming all utility facilities are scorched, AT&T is able to assume other utilities would pay the other approximately 66% of plant costs. The Commission finds that AT&T's assumption that U S WEST will pay only 33% of aerial placement costs, buried placement costs, and underground placement costs is unreasonable.

95. The Commission finds that AT&T's Hatfield Model overcounts the number of lines. The model counts digital special access lines on a per channel basis so one DS-1 is counted as 24 access lines and one DS-3 is counted as 672 access lines. Exhibit 37 at 7, lines 11-12. However, the cost of placing a DS-1 would be considerably less than the cost of placing 24 separate basic access lines. The Commission finds that each DS-1 and DS-3 should be counted as one line.

96. The Commission finds AT&T's Hatfield Model underestimates the drop investment per line. The Hatfield Model estimates an average of 73 feet for a typical drop length; the estimate is from a Bellcore study. Exhibit 42 at 24, line 3, and footnote 2. The model assumes a half hour installation time for the drop and 15 minutes to one half hour installation for the Network Interface Device (NID) (Exhibit 42 at 24, lines 12-13) with a total investment of $70.00 (Id. at line 8) for a two pair drop (Id., attached Exhibit DRF-1 at 21). The Commission finds it is unreasonable to assume a drop and a NID can be installed in a range of 45 to 60 minutes with a total investment of $70.00.

97. The Commission finds the Hatfield Model understates the required distribution cable. Both parties agreed that the Hatfield Model overstates the number of distribution cables for some distribution groups and understates it for others. Exhibit 42 at 31, lines 2-3; Exhibit 29 at 39, lines 1-3, and 39, lines 31-34. AT&T states that the new revised version, Hatfield Model 2.2, Release 3, will attempt to address this issue. Exhibit 42 at 31, lines 11-13. Hatfield Model, 2.2, Release 3, will feature many enhancements and changes from the version used in this docket in order to correct its current flaws. Exhibit 60.

98. The Commission finds AT&T failed to show whether the additional costs of unbundling are included in the Hatfield Model. Tr. at 596, lines 4-6.

BEFORE THE PUBLIC SERVICE COMMISSION OF WYOMING

IN THE MATTER OF THE APPLICATION OF U S WEST COMMUNICATIONS, INC., FOR AUTHORITY TO IMPLEMENT PHASE II OF ITS PROPOSED WYOMING PRICE REGULATION PLAN FOR ESSENTIAL AND NONCOMPETITIVE TELECOMMUNICATIONS SERVICES	)	Docket No. 70000-TR-96-323

APPEARANCES

For the Applicant, U S WEST Communications, Inc. (U S WEST):
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For Intervenor, AT&T Communications of the Mountain States, Inc. (AT&T):
ALAN B. MINIER, Rothgerber, Appel, Powers & Johnson, Cheyenne, Wyoming; MICHEL L. SINGER, AT&T, Denver, Colorado; and TUCKER K. TRAUTMAN, Ireland, Stapleton, Pryor & Pascoe, Denver, Colorado.

For Intervenors, Dubois Telephone Exchange, Inc., All West Communications, Inc., Range Telephone Cooperative, Inc., Chugwater Telephone Company, RT Communications, Inc., TCT West, Inc., Tri County Telephone Association, Inc., and Union Telephone Company (collectively, the Independent Companies):
BRUCE S. ASAY and KEITH S. BURRON, Associated Legal Group, LLC, Cheyenne, Wyoming.

For Intervenor, Consumer Advocate Staff of the Wyoming Public Service Commission (Consumer Advocate Staff):
IVAN H. WILLIAMS, Cheyenne, Wyoming.

For Intervenor, MCI Communications Corp. (MCI):
MICHAEL B. ROSENTHAL, Hathaway, Speight & Kunz, Cheyenne, Wyoming.

For Intervenor, Sprint/United Telephone Company of the West, Inc. (Sprint/United):
BARRY A. COUNTS, Manager of Governmental Affairs, Sprint, St. Paul, Minnesota.

For Intervenor, The City of Kemmerer, Wyoming (Kemmerer):
The Honorable JAMES CARROLL, Mayor, Kemmerer, Wyoming.

117. However, the mathematical implications of the treatment of drops remains a real concern. At one extreme, where the entire drop is costed in one pair, the second and third pair are "free." At the other extreme is the concept that U S WEST places a three pair drop and none of the pairs are used, thus generating risk for U S WEST. In view of this, the Commission will not require U S WEST to change its plant engineering practices by changing its three pairs per drop standard, but will require U S WEST to modify its model input formulae to more explicitly determine the costs for each pair in the drop. Therefore, unless U S WEST can fully support an alternate calculation, the denominator will reflect the Commission ordered 75% distribution fill factor times 3 (for a three pair drop) and times two (for a two pair drop). $\frac{3}{3 \cdot .75} = 1.33$

118. Labor Rate input factor. AT&T testified that cost models should always use as base factors, where possible and where needed, Wyoming-specific values and data as the input. From National Construction Estimate labor statistics and facts developed in talking to Wyoming contractors, AT&T determined that Wyoming's labor rate should be approximately 6/10ths of the Hatfield Model base factor of 1 (basically the New York labor rate). (Tr., Vol. VI, p. 245; and AT&T Ex. L, pp. 18-19.) The Hatfield Model's ".6" labor rate input which adjusts to properly reflect a Wyoming-specific rate, equates to $33 per hour. (AT&T Ex. L, p. 19.) U S WEST did not provide testimony on this issue beyond stating that labor rates are a component of its RLCAP cost model. The Commission finds that a factor developed specifically for Wyoming is the best factor to be used in cost models. U S WEST shall be directed to utilize a labor rate of $33 per hour in the rerun of the RLCAP model. AT&T should use a labor factor of .6 in its Hatfield reruns, as long as that ratio continues to reflect a rate of $33 per hour.

119. Access Line Count. There is no question that line counts are an input factor in the cost models. Mr. Siwek confirms that: "But at any rate, in the Hatfield Model the total element that we are talking about here is operational, defined as the total demand for narrow-band voice-grade lines currently served by U S WEST. We use state-specific 1995 line counts for Wyoming as reported by U S WEST. And that's one of the basic inputs of the model, which doesn't show up on Exhibit J, because it is a building block, so to speak, of the model." (Tr., Vol. VI, p. 12.)

120. AT&T used a total of 243,849 access lines for cost modeling purposes and for many purposes in various exhibits. This access line total used by AT&T was taken from U S WEST ARMIS data for 1995. (*See*, e.g., Testimony of Siwek, Tr., Vol. VI, p. 99; and AT&T Exhibit I, and many others.) Included in this total were 23,012 special access and private lines which properly should be excluded from the total of switched access lines available for providing basic residential and business service. Doing so leaves a total of 220,837 lines.

Change 3: Structure Sharing

Distribution

Density Zone	HM5.2a Input			WLF Input		
	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	50%	33%	100%	*50%*	*100%*	*100%*
5-100	33%	33%	50%	*50%*	*100%*	*100%*
100-200	25%	33%	50%	*50%*	*85%*	*85%*
200-650	25%	33%	50%	*50%*	*80%*	*80%*
650-850	25%	33%	40%	*50%*	*80%*	*80%*
850-2550	25%	33%	33%	*50%*	*80%*	*80%*
2550-5000	25%	33%	33%	*35%*	*80%*	*80%*
5000-10,000	25%	33%	33%	*35%*	*80%*	*80%*
>10,000	25%	33%	33%	*35%*	*80%*	*80%*

Drop

Density Zone	HM5.2a Input	WLF Input
	Buried	Buried
0-5	50%	*100%*
5-100	50%	*100%*
100-200	50%	*85%*
200-650	50%	*80%*
650-850	50%	*80%*
850-2550	50%	*80%*
2550-5000	50%	*80%*
5000-10,000	50%	*80%*
>10,000	50%	*80%*

Feeder

Density Zone	HM5.2a Input			WLF Input		
	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	50%	40%	50%	*50%*	*100%*	*100%*
5-100	33%	40%	50%	*50%*	*100%*	*100%*
100-200	25%	40%	40%	*50%*	*85%*	*85%*
200-650	25%	40%	33%	*50%*	*80%*	*80%*
650-850	25%	40%	33%	*50%*	*80%*	*80%*
850-2550	25%	40%	33%	*50%*	*80%*	*80%*
2550-5000	25%	40%	33%	*35%*	*80%*	*80%*
5000-10,000	25%	40%	33%	*35%*	*80%*	*80%*
>10,000	25%	40%	33%	*35%*	*80%*	*80%*

Transport

HM5.2a Input			WLF Input		
Aerial	Buried	Underground	Aerial	Buried	Underground
33%	33%	33%	*49%*	*97%*	*83%*

Impact of using the WLF inputs:

	Loop investment (per line)	Monthly Loop Cost
Output from previous run of the model	**$489**	**$11.28**
Output from this run of the model	**$590**	**$13.14**

Change 3: Structure Sharing

In my sensitivity analysis, I adjust sharing percentages for distribution, feeder, transport, and drop portions of the network. I adopt the FCC's sharing percentages for aerial structure in all density zones and for buried and underground structure in the three lowest density zones. Evidence from actual placement activities, however, does not support the FCC's values for buried and underground sharing in the higher density zones. In these density zones, I fix the portion that Qwest would pay in a forward-looking environment at 80 percent.

Supporting Materials:

Document 3.1 is an excerpt from testimony transcript of Robert Mercer before the Colorado Public Utilities Commission, Docket No. 96A-345T, September 19, 1996, pp. 86-87.

Document 3.2 is an excerpt from the Washington Costing/Pricing Workshop, UT-960369, February 14, 1997, including comments by Mr. Donovan on sharing.

Document 3.3 is an excerpt from Appendix B of the HAI Model Inputs Portfolio, where AT&T tries to support its structure sharing assumptions by pointing to sharing opportunities that will develop when competitive phone companies enter the market.

Document 3.4 is an excerpt from AT&T witness John C. Klick's presentation before the Public Service Commission of Wyoming in Docket No. 70000-TS-96-319 on September 29, 1997.

Document 3.5 is an excerpt from the deposition of Kirk Kaalberg of McLeod USA taken from the Iowa Cost Proceeding RPU-96-9, May 20, 1997.

Document 3.6 includes excerpts from Mark Schmidt's and Richard Gosselin's testimonies in North Dakota (Case No. PU-314-97-12, December 22, 1997) regarding sharing with other facilities providers.

Document 3.7 includes excerpts from the FCC Federal-State Joint Board on Universal Service and decisions from the Colorado, Iowa, Montana, New Mexico and South Dakota Commissions supporting adjustments to the HAI model's structure sharing inputs.

1

2 BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO
3
Case No. 96-A-345T
4

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5 VIDEO DEPOSITION OF ROBERT MERCER September 19,
1996

6
IN THE MATTER OF THE INTERCONNECTION CONTRACT
7 NEGOTIATIONS BETWEEN AT&T COMMUNICATIONS OF
THE MOUNTAIN STATES, INC., AND U S WEST
8 COMMUNICATIONS, INC., PURSUANT TO 47 U.S.C.
SECTION 252.
9

---

10 APPEARANCES:

11 SUSAN D. PROCTOR, ESQ.
AT&T
12 1875 Lawrence Street, Room 1575
Denver, Colorado 80202
13 Appearing on behalf of AT&T
Communications of the Mountain
14 States, Inc.

15 KATHRYN E. SHEFFIELD, ESQ.
WILLIAM J. OJILE, JR., ESQ.
16 NORTON CUTLER, ESQ.
U S West Communications, Inc.
17 1801 California Street, Suite 5100
Denver, Colorado 80202
18 and
PERKINS COIE
19 By Robert L. Deitz, Esq.
607 - 14th Street, N.W.
20 Washington, D.C. 20005-2011
Appearing on behalf of U S West
21 Communications, Inc.

22 Also Present: Jack Keenan, CLVS
Peter Copeland
23

24

25

1 Pursuant to Notice and the Colorado Rules
2 of Civil Procedure, the video deposition of ROBERT
3 MERCER, called by U S West Communications, Inc., was
4 taken on Thursday, September 19, 1996, commencing at
5 1:39 p.m., at 1801 California Street, Suite 5100,
6 Denver, Colorado, before Laurie A. Wilcox, Registered
7 Professional Reporter and Notary Public within and for
8 the State of Colorado.

9

10

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1 A Number of lines per business location we
2 assumed to be four. And that was just a reasonability
3 assessment of businesses that we're familiar with, both
4 large and small. We used, actually, a smaller number
5 than I believe is used in BCM, which I believe assumes
6 10 per business, but we weren't necessarily guided by
7 BCM but just by way of comparison.
8 Q (By Ms. Sheffield) How would that
9 calculation, your average lines per business location,
10 affect the density calculation?
11 A It wouldn't.
12 Q Are drops and NIDs used to determine
13 service to business locations?
14 A Yes. And in the model, that's correct.
15 Q Can you tell me what data source you used
16 to determine the percent of structure assigned to
17 telephone?
18 A I'm sorry.
19 Q In your model you have a split of your
20 structure costs between telephone, I believe electric,
21 and some other utility.
22 A Yes. That's correct. I understand now.
23 That was, again, a matter of observation that quite
24 typically telephone poles are shared by electric
25 utility, telephone and cable. You might also have the

1 presence of competitive access providers or even, in
2 some cases, poles shared by, for instance, an
3 interexchange carrier that might happen to be able to
4 take advantage of a pole line. I've done some work
5 with electric utilities in places and understand from
6 that work that conduit is similarly shared between
7 multiple providers in cities where conduit is
8 installed. So that's -- I'd answer that as it's an
9 observational question, observational on our part.
10 Q So it was -- how exactly did you arrive at
11 the three different utilities that would typically
12 share those types of structures?
13 A I went telephone, cable, electric and saw
14 that that was three, basically, and said that there
15 were more that could be on there as well of the type
16 that I enumerated, but I said it seems reasonable on
17 the average that the number 3 is the right number to
18 use. And .33 is 1 over 3.
19 Q Did you do any study to determine whether
20 there would be additional costs by virtue of sharing
21 structures versus fewer costs for sharing structures?
22 A I'm sorry. I lost your question.
23 Q You assumed in your model that the fact
24 that phone companies, electric utilities and -- I'm
25 sorry -- cable companies might share structures, your

1 model assumes, then, that the costs for, for instance,
2 the phone company would be decreased by two-thirds,
3 doesn't it?
4 A That's correct, yes.
5 Q Did you do any study to address an issue of
6 whether or not the costs for the phone company might
7 actually increase by virtue of sharing facilities with
8 other utilities?
9 A No, it would not increase by -- as a result
10 of sharing facilities.
11 Q To the best of your knowledge, do telephone
12 utilities or other utilities, are they required to pay
13 costs for easements or those sorts of items to attach
14 to another utilities structures?
15 A Yes. In both the cases that I'm most
16 familiar with, cable television does pay a pole
17 attachment fee that's significant, and in the case of
18 these electric utilities that I mentioned, the
19 competitive users in the electric industry, for
20 instance, Metropolitan Fiber Systems or another
21 competitive access provider uses conduit. They pay on

22 a per-pole basis. They pay quite a bit.
23 Q And if companies such as U S West were to
24 attach to an electric utilities poles, for instance, to
25 the best of your knowledge, would they have to pay a

1 fee for that?
2 A They would have to pay a fee for that,
3 yes. But on the other hand, they would not make the
4 investment in that pole. So what happens is, in
5 effect, if you believe that those rentals are based on
6 something like the costs, it makes little difference,
7 basically, whether you're renting space or you're
8 putting in a third of that pole, you would get a
9 similar answer.
10 Q How do you know that? Did you do a study
11 to that effect?
12 A No, I just used the possibility argument
13 that I just used that said that if rentals are linked
14 to investments, if a telephone company is paying for
15 attachment to a pole, it's not investing in a pole and
16 it's paying something like its share of the cost of
17 that pole.
18 Q To the best of your knowledge, did Hatfield
19 Model 2.2, Version -- or Release No. 1 assign a
20 structure cost to other entities?
21 A It did not.
22 Q Does the benchmark cost model assign
23 structure costs to other entities?
24 A I don't know directly. Actually, when I
25 think in either case, I'm not sure whether the

1 structure cost assumed in BCM might have taken into
2 account the fact that some of those costs are being
3 paid by others. It's certainly not explicit in the
4 model.
5 MS. SHEFFIELD: I think we'll take a break
6 here because I think we're running out of tape, and
7 we'll come back in about five minutes.
8 THE VIDEOGRAPHER: This is the end of Tape
9 No. 1. The time is approximately 3:47.
10 (Recess from 3:47 p.m. to 3:58 p.m.)
11 THE VIDEOGRAPHER: This is the beginning of
12 Tape No. 2. It is the continuation of the deposition
13 of Robert Mercer. Today is September 19, 1996. The
14 time is approximately 3:58.
15 Q (By Ms. Sheffield) Dr. Mercer, we were
16 discussing figures on Dialog 5 which I have now
17 forgotten what it's been marked.
18 MS. PROCTOR: 6.
19 Q (By Ms. Sheffield) Exhibit No. 6. Do you
20 have that in front of you, still?
21 A I probably will in a second. I've got
22 Exhibit 5. Okay. I've got it.
23 Q Are you familiar with TELRIC principles as
24 set forth in the FCC's order?
25 A I am, yes.

1 Q What do TELRIC principles say about
2 assigning forward costs to other entities?
3 A It's silent on the subject.
4 Q And in the Hatfield model that had been
5 reviewed by William Baumol -- I'm not sure how to
6 pronounce many of those names -- Robert Willig -- that
7 you had, at least, in your original version of your
8 testimony. First of all, what version of the Hatfield
9 model did they review?
10 A I believe that their original comments
11 pertained to Release 1, but I also believe that they
12 have subsequently studied Release 2.
13 Q Have they commented on the assignment of
14 forward-looking structure costs to other entities?
15 A No, they have not.
16 Q What is the data source for your serving
17 area interface investment?

1 BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION
2 COMMISSION

3 In the Matter of the Pricing)
Proceeding for Interconnection,)DOCKET NO. UT-960369
4 Unbundled Elements, Transport and)
Termination, and Resale)
5 ----------)
)
6 In the Matter of the Pricing)
Proceeding for Interconnection,)DOCKET NO. UT-960370
7 Unbundled Elements, Transport and)
Termination, and Resale for)
8 U S WEST COMMUNICATIONS, INC.)
----------)
9)
In the Matter of the Pricing)
10 Proceeding for Interconnection,)DOCKET NO. UT-960371
Unbundled Elements, Transport and)
11 Termination, and Resale for)
GTE NORTHWEST INCORPORATED)
12 ----------)

14 A workshop in the above matter was held at
15 9:15 a.m. on February 14, 1997, at 1300 South
16 Evergreen Park Drive Southwest, Olympia, Washington.
17
18
19
20
21
22
23
24 Cheryl Macdonald, CSR
25 Court Reporter

1 P R O C E E D I N G S
2 MR. PAYNE: My name is Jeff Payne, and I am
3 with the Commission staff. We are here today in the
4 continuing saga of UT-960369, and this is the costing/
5 pricing workshop where we're discussing methodologies
6 for coming up with proper costing/pricing techniques
7 for unbundled elements, and also for avoided costs
8 which we addressed in the last workshop. Today, we
9 have Jim Dunbar here on behalf of Sprint and others
10 discussing the BCPM, and this is a model that has not
11 been presented before so we're going to have that go
12 first. We encourage a lot of Q and A. After that we
13 will have John Donovan and Bob Mercer presenting
14 changes to the Hatfield model in its most recent
15 version, 3.0.
16 With that I would like to introduce Jim
17 Dunbar, and we will get started. We will have a mid-
18 morning break, hopefully a break for lunch, and wrap
19 up sometime in the afternoon and get you folks out of
20 here.
21 MR. LUBIN: I just have a question. I
22 noticed a stenographer taking a record. Is there an
23 intent to make this a part of the record or is that
24 just for some other purpose?
25 MR. PAYNE: Mr. Potter.

1 MR. POTTER: It's just for note taking
2 purposes. One of our attorneys had a conversation
3 with Tom Wilson the other day and the idea was of
4 having a court reporter supplement the tape
5 recordings, so we volunteered to make the arrangements
6 so anybody that wants to get a copy can deal directly
7 with the court reporter.
8 MR. LUBIN: So just for note taking?
9 MR. PAYNE: We attempted to tape it last
10 time and with the questions coming from the back
11 sometimes they weren't repeated and you couldn't
12 hear it on the tape. I do encourage speakers when
13 questions come in to repeat the questions clearly and,
14 again, these transcripts are going to be available for
15 everyone, so whoever would like one please contact the
16 court reporter. Mr. Dunbar.
17 MR. DUNBAR: What I'm going to try to do
18 this morning, and many of the things that we will go
19 through with the BCPM some of you are familiar with
20 the BCM2 or CPM models, BCM2 which was jointly
21 sponsored earlier by Sprint and U S WEST, and the CPM
22 which was sponsored by Pacific Bell in different
23 federal proceedings and in their respective states in
24 some cases. If you're familiar with that you will see
25 some common entities here.

1 One of the things in looking at the models,
2 as this particular version was built, there was a
3 decision between at least Pacific Bell, U S WEST and
4 Sprint that we would not try on a going forward basis
5 to have competing models, that we would take the best
6 out of both and originally this model was called the
7 best breed or BOB, and a lot of people didn't
8 understand it or whatever, so the BCPM really is just
9 a composite of BCM and CPM in terms of the naming of
10 it.
11 What you will find as we go through it is
12 most of the, if not really all, the engineering logic
13 that was in BCM2 carried forward into BCPM. I will go
14 through what the changes were as we go through. Most
15 of it deals with additional inputs or additional
16 outputs. The basic engineering that's in it did not
17 change. The engineering went forward, like I say,
18 from BCM2 to BCPM and then the expense detail and the
19 level of expenses which was in much greater detail in
20 CPM, was carried forward into this model. So you will
21 see a lot of expanded inputs, a lot of expanded
22 outputs from many of the two versions, if you're
23 familiar with them from before.
24 The other thing you will see a lot more
25 reporting that will come out of it so let me just get

1 answer is yes, it assumes that the trenching is
2 shared.
3 MR. DUNKEL: What do you assume as far as
4 growth? Are you cutting roads or are you there before
5 the roads existed?
6 MR. DONOVAN: We assume that for buried
7 cable most of the time you're not cutting -- you're
8 certainly not going down the middle of roads, that you
9 certainly are going to have to either cut or push pipe
10 under some roads, just as the natural consequence of
11 crossing those barriers, but that if you are in fact
12 involved in running cables under long lengths of
13 pavement that that's where you should have underground
14 structure. You spend so much money in breaking open
15 the pavement and wanting to in the future perhaps
16 restore it or maintain it that that's the ideal place
17 that you would use an underground system, not buried,
18 so does that answer your question?
19 MR. DUNKEL: Sort of. Have you assumed
20 more or less a green field concept or are you building
21 after the city is already there?
22 MR. DONOVAN: We're assuming that the
23 cities exist as they are today. There has been -- as
24 a matter of fact, I was questioned in Arizona on a
25 statement that was misunderstood in a comment I made

1 about building structures and it was -- I don't know
2 how a court reporter can capture the emphasis of
3 saying building structures or building structures,
4 structures being cables, I mean being poles and being
5 conduits, but that's what I meant, that we weren't
6 building the buildings all over again. What we were
7 doing is we were building the telephone company
8 structures was the emphasis I had given in my actual
9 deposition in Texas.
10 MR. CARNALL: On buried cable, a good deal
11 of that is done by plowing and you reconcile plowing,
12 and how do you reconcile plowing and sharing?
13 MR. DONOVAN: That's an excellent question.
14 You can plow more than one cable, but I couldn't see
15 two utilities getting that coordinated, although we
16 would like to think of this as the most economic
17 model, so it's for that reason that we assume
18 trenching at least for the placement of cable. I
19 think that plowing is very common for individual drop
20 wires, however. Using a vibrating plow is very common
21 method of putting drops in.
22 MR. CARNALL: You assume all buried is by
23 trenching outside of drops?
24 MR. DONOVAN: Yes.
25 MR. FLEMING: Does the model identify how

1 much is plowed, how much is trenched, how much is
2 caught or (inaudible).
3 MR. DONOVAN: The question was does the
4 model break out the amount of plowing versus the
5 amount of trenching and the amount of pavement restore
6 and things of that nature. In the actual items
7 identified in defaults that they are not identified
8 separately there but they were identified in our work
9 papers, those were considered the major reason why you
10 see a radical increase in costs in your high density
11 zones.
12 MR. STEELE: Are there depth distances in
13 the trenching for the sharing? Are there different
14 depths that you're using as standard in the model?
15 MR. DONOVAN: No, they are not. What we
16 found in getting actual bids there were pennies
17 difference, whether we asked for a bid of 24 or 36
18 inches that there's very little difference. In one
19 case it was very small. Literally pennies. As long
20 as they're out there with the backhoe they don't
21 really care if they're digging 24 or 36 inches, they
22 just dig.
23 MR. STEELE: It doesn't make much
24 difference if they have to come back and throw dirt on
25 the first utility -- not on the utility itself.

1 MR. DONOVAN: I understand. In this model
2 we assume forward-looking technology with efficient
3 firms and we assume that co-occupants will be just as
4 efficient as we are in this model, so although that
5 does wash away some difficulties in coordination we
6 assumed that whether it's through mechanized databases
7 or good coordination meetings that if cable TV, the
8 power company, local telephone company and even
9 another provider want to use the same valuable
10 structure that they will operate efficiently and be
11 out there at the same time and not hold each other up.
12 MR. POTTER: So in effect you're assuming
13 that the cities are as they exist today but all of the
14 utilities are building their respective networks anew
15 at the same time.
16 MR. DONOVAN: Yes.
17 MR. FLEMING: Are the work papers for like
18 the cost of everything and the amount of plowing and
19 trenching, are those all available if we ask for it?
20 MR. DONOVAN: Sure. It's just a matter of
21 whether you want to tie up a piece of the database to
22 show them. They're very straightforward. They're on
23 another Excel spreadsheet.
24 MR. CARNALL: I want to be sure that you
25 are clear that you're assuming that all the utilities

1 are building at the same time?
2 MR. DONOVAN: That's correct.
3 MR. CARNALL: So this is scorched everybody
4 not just scorched telephone?
5 MR. DONOVAN: Correct.
6 MR. HARTWELL: Any basis for that
7 assumption?
8 MR. DONOVAN: The basis for that assumption
9 is that this is an economic model, that as I
10 understand it as definitely not an economist, and I've
11 met some of the most brilliant ones being on this
12 project on all sides, but my understanding some of
13 what we're trying to do is reflect the economies of
14 scale and scope that the incumbent carriers have seen
15 over a large number of decades. Going to the NID, I
16 covered that.
17 MR. ROBBINS: Do you assume a six pair NID
18 in all cases?
19 MR. DONOVAN: As far as the plastic case,
20 yes. But we only put one protector in.
21 MR. ROBBINS: But you divide it?
22 MR. DUNKEL: (Inaudible) subdivision is
23 already there with (inaudible) you have to work around
24 or do you --
25 MR. DONOVAN: The question was in housing

1 developments do we assume that the housing
2 developments are under development or are they already
3 there with streets, driveways, sidewalks. We assume
4 whatever is there today is there today and have not
5 captured the economies of developments under
6 construction because, as I understand this model, we
7 are to instantly rebuild the entire telecommunications
8 network.
9 MR. MERCER: Let me clarify that, because
10 I've heard that and Jim this morning and now I've
11 heard John say it, and I don't know if it's a matter
12 of semantics, but it strikes me somewhat differently.
13 In an economic cost model like this you are capturing
14 the average situation the telephone company faces.
15 Yes, the telephone companies sometimes have to go in
16 an existing neighborhood and have to replace. Yes,
17 they often, if they have foresight, are going out and
18 putting that kind of thing in first, and I believe the
19 appropriate treatment in a total service cost study
20 like this is to capture it.
21 And it's much like the discussion of fill
22 factors and the view of what you have the fill factor
23 represent. You're capturing the average situation so
24 when you -- and, John, please disagree with me if you
25 think I'm wrong, but when you say you capture the

1 existing situation, when I heard that this morning I
2 read that as saying, yes, the existing situation is
3 whatever sort of the average situation the telephone
4 company encountered in installing plant. It doesn't
5 mean that you suddenly burned everything using the
6 infamous neutron bomb, which is not what destroys
7 property. It came up here or somewhere else during
8 cross-examination of the neutron bomb. It's not like
9 you destroyed it all and started over. It's like
10 you're trying to capture what the telephone company
11 faces as an average situation.
12 MR. DONOVAN: That's fair.
13 MR. MERCER: And I have the feeling that
14 there's been both this morning and this afternoon and
15 some other cases where we've talked like there's been
16 sort of a semantics issue about whether it's today's
17 network, today's situation or not, and that's my
18 perspective on what we're trying to do.
19 MR. DONOVAN: What the model does not
20 capture is what could be described as the free
21 existence of trenches opened by developers at
22 absolutely zero cost to the utilities. We don't take
23 advantage of that in this model.
24 MR. STEELE: I am appreciative of that, but
25 can you help me a little bit more on the data?

1 MR. DUNKEL: (Inaudible) still under
2 existing driveways, sidewalks, something like that.
3 MR. MERCER: Again, my answer to that would
4 be if you on the average you think that every time you
5 do a new neighborhood you would have to go under
6 driveways and the like you would have to do that, but
7 I don't think that's the situation you typically
8 encounter, because in many cases you're installing
9 plant in a neighborhood that's already there.
10 MR. STEELE: And I just want to understand
11 how you do that in the implicit inputs of the model.
12 Is that through some estimates of frequency of that?
13 When you talk to your contractors and your experts you
14 said like 20 percent of the time we're going to have
15 to bore, or how did it roll into the numbers that went
16 into the model? That's what I'm interested in.
17 MR. DONOVAN: It rolled into the model
18 because we explained to these contractors the variety
19 that they would encounter in different density areas.
20 In rural areas actually the comment that came back was
21 that you will probably have to push pipe a lot less
22 frequently than you think if you're in a low density
23 area, and if you're in the higher density area then
24 the costs are more, and that's why in the higher
25 density areas we do show an incremental increase

HAI Model
Release 5.2a

Inputs Portfolio

HAI Consulting, Inc.

737 29th Street, Suite 200
Boulder, Colorado 80303

May 16, 2001

APPENDIX B

Structure Shares Assigned to Incumbent Local Telephone Companies

B.1. Overview

Due to their legacy as rate-of-return regulated monopolies, LECs and other utilities have heretofore had little incentive to share their outside plant structure with other users. To share would have simply reduced the "ratebase" upon which their regulated returns were computed. But today and going forward, LECs and other utilities face far stronger economic and institutional incentives to share outside plant structure whenever it is technically feasible. There are two main reasons. First, because utilities are now more likely to either face competition or to be regulated on the basis of their prices (e.g., price caps) rather than their costs (e.g., ratebase), a LEC's own economic incentive is to share use of its investment in outside plant structure. Such arrangements permit the LEC to save substantially on its outside plant costs by spreading these costs across other utilities or users. Second, many localities now strongly encourage joint pole usage or trenching operations for conduit and buried facilities as a means of minimizing the unsightliness and/or right-of-way congestion occasioned by multiple poles, or disruptions associated with multiple trenching activities.

Because of these economic and legal incentives, not only has structure sharing recently become more common, but its incidence is likely to accelerate in the future – especially given the Federal Telecommunications Act's requirements for nondiscriminatory access to structure at economic prices.

The degree to which a LEC can benefit from structure sharing arrangements varies with the type of facility under consideration. Sharing opportunities are most limited for multiple use of the actual conduits (e.g., PVC pipe) through which cables are pulled that comprise a portion of underground structure. Because of safety concerns, excess ILEC capacity within a conduit that carries telephone cables can generally be shared only with other low-voltage users, such as cable companies, other telecommunications companies, or with municipalities or private network operators. Although the introduction of fiber optic technology has resulted in slimmer cables that have freed up extra space within existing conduits, and thus enlarged actual sharing opportunities, the HAI Model does not assume that conduit is shared because as a forward-looking model of efficient supply, it assumes that a LEC will not overbuild its conduit so as to carry excess capacity available for sharing.

Trenching costs of conduit, however, account for most of the costs associated with underground facilities – and LECs can readily share these costs with other telecommunications companies, cable companies, electric, gas or water utilities, particularly when new construction is involved. Increased CATV penetration rates and accelerated facilities based entry by CLECs into local telecommunications markets will expand further future opportunities for underground structure sharing. In addition, in high density urban areas, use of existing underground conduit is a much more economic alternative than excavating established streets and other paved areas.

Sharing of trenches used for buried cable is already the norm, especially in new housing subdivisions. In the typical case, power companies, cable companies and LECs simply place their facilities in a common trench, and share equally in the costs of trenching, backfilling and surface repair. Gas, water and sewer companies may also occupy the trench in some localities. Economic and regulatory factors are likely to increase further incentives for LECs to schedule and perform joint trenching operations in an efficient manner.

Aerial facilities offer the most extensive opportunities for sharing. The practice of sharing poles through joint ownership or monthly lease arrangements is already widespread. Indeed, the typical pole carries the facilities of at least three potential users – power companies, telephone companies and cable companies. Power companies and LECs typically share the ownership of poles through either cross-lease or condominium arrangements, or through other arrangements such as one where the telephone company and

power company each own every other pole. Cable companies have commonly leased a portion of the pole space available for low voltage applications from either the telephone company or the power company. Methods of setting purchase prices and of calculating pole attachment rates generally are prescribed by federal and state regulatory authorities.

The number of parties wishing to participate in pole sharing arrangements should only increase with the advent of competition in local telecommunications markets. Economic and institutional factors strongly support reliance on pole sharing arrangements. It makes economic sense for power companies, cable companies and telephone companies to share pole space because they are all serving the same customer. Moreover, most local authorities restrict sharply the number of poles that can be placed on any particular right-of-way, thus rendering pole space a scarce resource. The Federal Telecommunications Act reinforces and regulates the market for pole space by prescribing nondiscriminatory access to poles (as well as to conduit and other rights-of-way) for any service provider that seeks access. The aerial distribution share factors displayed below capture a forward-looking view of the importance of these arrangements in an increasingly competitive local market.

B.2. Structure Sharing Parameters

The HAI Model captures the effects of structure sharing arrangements through the use of user-adjustable structure sharing parameters. These define the fraction of total required investment that will be borne by the LEC for distribution and feeder poles, and for trenching used as structure to support buried and underground telephone cables. Since best forward looking practice indicates that structure will be shared among LECs, IXCs, CAPs, cable companies, and other utilities, default structure sharing parameters are assumed to be less than one. Incumbent telephone companies, then, should be expected to bear only a portion of the forward-looking costs of placing structure, with the remainder to be assumed by other users of this structure.

The default LEC structure share percentages displayed below reflect most likely, technically feasible structure sharing arrangements. For both distribution and feeder facilities, structure share percentages vary by facility type to reflect differences in the degree to which structure associated with aerial, buried or underground facilities can reasonably be shared. Structure share parameters for aerial and underground facilities also vary by density zone to reflect the presence of more extensive sharing opportunities in urban and suburban areas. In addition, LEC shares of buried feeder structure are larger than buried distribution structure shares because a LEC's ability to share buried feeder structure with power companies is less over the relatively longer routes that differentiate feeder runs from distribution runs. This is because power companies generally do not share trenches with telephone facilities over distances exceeding 2500 ft.[70]

[70] A LEC's sharing of trenches with power companies, using random separation between cables for distances greater than 2,500 feet requires that either the telecommunications cable have no metallic components (i.e., fiber cable), or that both companies follow "Multi-Grounded Neutral" practices (use the same connection to earth ground at least every 2,500 feet).

Default Values in HM 5.2a

Structure Percent Assigned to Telephone Company						
	Distribution			Feeder		
Density Zone	Aerial	Buried	Under-ground	Aerial	Buried	Under-ground
0-5	.50	.33	1.00	.50	.40	.50
5-100	.33	.33	.50	.33	.40	.50
100-200	.25	.33	.50	.25	.40	.40
200-650	.25	.33	.50	.25	.40	.33
650-850	.25	.33	.40	.25	.40	.33
850-2,550	.25	.33	.33	.25	.40	.33
2,550-5,000	.25	.33	.33	.25	.40	.33
5,000-10,000	.25	.33	.33	.25	.40	.33
10,000+	.25	.33	.33	.25	.40	.33

B.3. Support

Actual values for the default structure sharing parameters were determined through forward-looking analysis as well as assessment of the existing evidence of structure sharing arrangements. Information concerning present structure sharing practices is available through a variety of sources, as indicated in the references to this section. The HM 5.2a estimates of best forward-looking structure shares have been developed by combining this information with expert judgments regarding the technical feasibility of various sharing arrangements, and the relative strength of economic incentives to share facilities in an increasingly competitive local market. The reasoning behind the HAI Model's default structure sharing parameters is described below.

Aerial Facilities:

As noted in the overview to this section, aerial facilities (poles) are already a frequently shared form of structure, a fact that can readily be established through direct observation. For all but the two lowest density zones, the HAI Model uses default aerial structure sharing percentages that assign 25 percent of aerial structure costs to the incumbent telephone company. This assignment reflects a conservative assessment of current pole ownership patterns, the actual division of structure responsibility between high voltage (electric utility) applications and low voltage applications, and the likelihood that incumbent telephone companies will share the available low voltage space on their poles with additional attachers.[71]

ILECs and Power Companies generally have preferred to operate under "joint use," "shared use," or "joint ownership" agreements whereby responsibility for poles is divided between the ILEC and the power company, both of whom may benefit from the presence of third party attachers. New York Telephone reports, for example, that almost 63 percent of its pole inventory is jointly owned,[72] while, in the same proceeding, Niagara Mohawk Power Company reported that 58 percent of its pole inventory was jointly

[71] This sharing may be either of unused direct attachment space on the pole, or via co-lashing of other users' low voltage cables to the LEC's aerial cables. See, Direct Panel Testimony of Richard Wolf, Clay T. Whitehead, Donald Fiscella, David Peacock and Dr. Miles Bidwell on Behalf of the Electric Utilities, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

[72] New York Telephone's Response to Interrogatory of January 22, 1997, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

Presentation of John C. Klick

Before the Public Service Commission of Wyoming

September 30, 1997

Document 3.4

U S WEST Mischaracterizes AT&T's Position on Structure Sharing

- We are not contending that additional local exchange companies would be available
- We are not arguing that other utilities are scorched
- We do not contend that sharing opportunities are induced by competition
- We do not contend that sharing requires perfect timing with other utilities

Document 3.4

00001

CONFIDENTIAL
STATE OF IOWA
DEPARTMENT OF COMMERCE
UTILITIES BOARD

----------x

IN RE: :
:
U S WEST COMMUNICATIONS, INC., : Docket No.: RPU-96-9

----------x

Washington, D.C.

Tuesday, May 20, 1997

The telephonic deposition of KIRK E. KAALBERG, called for examination by counsel for U S West in the above-entitled matter, pursuant to Notice, in the offices of Suite 700, 607 14th Street, N.W., Washington, D.C., convened at 9:40 p.m., before Cathy Jardim, a notary public in and for the District of Columbia, when were present on behalf of the parties:

00002

APPEARANCES:

On behalf of the U S West:
JOHN DEVANEY, ESQ.
Perkins Coie
607 14th Street, N.W.
Washington, D.C.

On behalf of The Witness:
DAVID CONN, ESQ.
Associate General Counsel
McLeod, Inc.
McLeod USA Technology Park
6400 C Street, S.W.
P.O. Box 377
Cedar Rapids, Iowa 52406-3177

CONTENTS

WITNESS	EXAMINATION BY COUNSEL FOR U S West
KIRK E. KAALBERG	3

EXHIBITS

NONE.

18 you are installing is primarily fiber.
19 A. Exclusively fiber.
20 Q. What I would like to ask you about now is
21 the placement of aerial, buried and what I call
22 underground, I think you call conduit, I have heard
00022
1 referred to as underground cable. Plowed I tend to
2 call buried, so I will use that terminology.
3 With respect to aerial placement, can you
4 describe for me the extent to which McLeod shares
5 placement costs with other utilities?
6 A. Is it just with other utilities? Because
7 we also share costs with other entities during
8 initial construction.
9 Q. That is fine, too. I would like to know
10 all of the cost-sharing you experience with respect
11 to the placement of aerial facilities.
12 A. Whenever -- we try to design our routes
13 far enough in advance so that we have time to seek
14 out partners to share in the construction costs.
15 And from our perspective, that is really what we
16 have done with the Part 3 contract with the State of
17 Iowa. So we have the State of Iowa, Part 3
18 contractor is one scenario; and the second is we are
19 sharing the sheath with the Iowa National Guard
20 during a portion of our -- through a portion of our
21 network.
22 We are also, in a different portion of
00023
1 the network, sharing construction costs with Galaxy
2 Cablevision. We also, every time we are on IES or
3 Mid-American's poles, we are providing capacity in
4 exchange for their right-of-way. So that is another
5 way that we are sharing our construction costs.
6 So generally speaking, we look very
7 aggressively for partners to share our construction
8 costs and I would say that we are successful in -- I
9 would say 70 to 80 percent of our miles are
10 constructed with a partner who is sharing our
11 construction costs.
12 Q. With respect to aerial, what percentage
13 of the construction placement costs do you believe
14 McLeod has actually paid as a result of this --
15 these cost-sharing arrangements you have described?
16 A. Do you mean how much have we -- how much
17 have we -- if the total is 100 percent, how much
18 have we paid?
19 Q. Exactly.
20 A. I would say it is in the -- probably in
21 the 65 to 70 percent range.
22 Q. And that is for aerial placement?
00024
1 A. Yes, and -- I don't have a set of numbers
2 in front of me, John, that says, yes, it is 65. So

3 that is to the best of my understanding.
4 Q. I understand.
5 And so, the remaining, roughly, 35
6 percent or so, has been shared with one or more
7 other utilities or companies?
8 A. Right.
9 Q. Of the three types of placement that I
10 have described, aerial, buried and underground, have
11 you found that sharing is more feasible with respect
12 to one than with respect to the other two?
13 A. I think it is -- as a by-product, where
14 we are -- where the cable is located, the
15 underground is the most frequently shared. The duct
16 tends to always be in downtown areas of the
17 communities that we are constructing and that is the
18 most densely populated, there is the most
19 telecommunications use, and consequently, that is
20 where there are the most entities desirous of
21 additional capacity.
22 So not because of the construction
00025
1 technique, but simply because of where the duct
2 space is located, the underground is the most often
3 shared.
4 Q. Are you able to estimate for me the
5 percentage of what I will call underground
6 placement, duct placement, conduit placement, that
7 you have been able to share?
8 A. Yes, I think that is probably in -- 90
9 percent of the time or 90 percent of the distance
10 that is in duct, we are sharing with another entity.
11 Q. And again, of those placement costs for
12 duct, what percentage of the placement costs has
13 McLeod incurred?
14 A. Probably more than 60 percent. It is a
15 little bit less. Our costs are a little bits less
16 to place in duct. So usually it is -- I would say
17 it is a little -- a lower percentage.
18 Q. So if you assume $1 to place duct, you
19 are incurring 60 cents of that dollar --
20 A. Yes, I think that is probably pretty
21 close, John.
22 MR. DEVANEY: My secretary just walked in
00026
1 with the fax. Let me put you on hold for a second.
2 If you want to take a break, get a cup of coffee or
3 whatever, please do.
4 (Discussion off the record.)
5 BY MR. DEVANEY:
6 Q. Mr. Kaalberg, going back to an answer you
7 gave a little earlier, when you talked about sharing
8 the costs of conduit placement, I assume that is
9 what you are referring to when you said "duct,"
10 conduit placement?

11 A. No. I am sorry. When we are pulling –
12 there are two different things. One is where we
13 place the conduit, where we place the conduit and
14 pull the fiber through. I was referring to a
15 scenario where the duct space is already in
16 existence.
17 Q. Okay. I see.
18 So when you said that McLeod incurs 60
19 percent of the placement costs, you were referring
20 to ducts that are already in place?
21 A. Yes.
22 Q. And you are pulling –
00027
1 A. Let me just expand to make sure I was
2 clear.
3 Q. Okay.
4 A. The reason that the percentage cost for
5 McLeod – that McLeod pays is less is because that
6 duct exists in more densely populated, or tends to
7 be in the center of the business community.
8 Q. Right.
9 A. There is a larger need for
10 telecommunication services, which in turn means that
11 businesses tend to – or utility companies are more
12 desirous of using the cable that we are pulling
13 through that duct. So we increased the chances that
14 somebody wants to share.
15 Q. I understand. So then, a separate
16 scenario would be where you are placing conduit in
17 the ground?
18 A. Right.
19 Q. And in that situation, can you tell me to
20 what extent you are able to share placement costs?
21 A. I would say it is back more consistent
22 with aerial, more in the 65 to 70 percent – 65 to
00028
1 70 percent of it is borne by us.
2 Q. So, if you again take my $1 example, you
3 would be paying 65 or 70 cents on the dollar for
4 placement of conduit?
5 A. Yes.
6 Q. And the remainder would be shared with
7 one or more utilities or other companies with whom
8 you are sharing trenching costs, for example?
9 A. Yes.
10 Q. Is McLeod's ability to share related or
11 aided at all by its relationship with the companies
12 you identified earlier, such as IES?
13 A. Yes, not in a specific way, but in a
14 general way. IES and Mid-American and virtually all
15 the utility companies are desirous of minimizing the
16 number of different cables on their poles. So when
17 companies come to them with a request to be on their
18 poles, they will ask that company to talk with us if

12 A. I understand the question now. Within
13 the cable there are individual fiber optic strands,
14 and we will jointly own the cable, and if we were
15 doing it together, you might own eight and I might
16 own eight of the fiber optic strands. So, in other
17 words, the ownership is defined at the fiber optic
18 strands level, not at the sheath or outside covering
19 level.
20 Q. So it may be just one cable you are
21 putting into the ground, but there are individually
22 owned strands within the cable?
00034
1 A. Yes.
2 Q. I understand.
3 And to quantify your cost-sharing with
4 direct buried or plowed, I think you said it was
5 similar to aerial. So that would mean roughly 70 to
6 75 percent of the costs in rural areas is carried by
7 McLeod and something a little bit less than that in
8 urban areas?
9 A. Yes.
10 Q. I am going to put you on hold for a
11 couple of minutes while I go through my outline.
12 Okay?
13 A. Sure.
14 (Discussion off the record.)
15 BY MR. DEVANEY:
16 Q. I think we have roughly something on the
17 order of 20 to 30 minutes left, maybe less, but we
18 will see.
19 A. Okay.
20 Q. Mr. Kaalberg, are you able to quantify
21 for me the per-foot costs that McLeod has incurred
22 on average to install aerial cable in Iowa?
00035
1 A. Yes. Generally we are in the, I would
2 say, 2.50 to $3 a foot range. Is that too broad a
3 range?
4 Q. No, that is fine.
5 Could you describe for me what might
6 cause the figure to vary, what might cause it to be
7 2.50 versus $3?
8 A. The primary variable is the amount of
9 what we call makeready work that has to be done to
10 the pole line. As an example, if the electrical
11 lines are too close to the ground for our cable to
12 be installed below that --
13 Q. Right.
14 A. We have to pay to have those electrical
15 lines raised or we have to pay to have an extension
16 put on the pole so that we have a greater horizontal
17 distance from the pole to maintain the clearance.
18 So it is really -- there is a certain amount that --
19 if we are going cross the river or something like

Document 3.6

STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

U S WEST Communications, Inc.	)	
Interconnection/Wholesale Price	)	Case No. PU-314-97-12
Investigation	)	

DIRECT TESTIMONY OF MARK D. SCHMIDT

U S WEST COMMUNICATIONS, INC.

DECEMBER 22, 1997

- When placing facilities in the same trench as the power company, the power company prefers a buffer space between the two cables of 10 to 12 inches. The power company's cables vary in depth from 24 to 40 inches. TCI's fiber optic cable is placed at a depth of at least 36 inches.
- The TCI rebuild in North Dakota included approximately 220 miles of buried cable. Of that, it is estimated that about 5 miles was shared with the electric company.

Buried Placement Methods

- Boring was used to place about one-half of the 220 miles of buried cable in North Dakota.
- The contractors hired to do the work generally used pneumatic boring when boring was required.
- Most of the remaining 50% of the buried cable was placed using small vibratory plows.
- The contractors used plowing where there was access for the equipment.
- The TCI project in North Dakota did not use very much trenching of its buried cable.

Drop Lengths

- Drop lengths in suburban areas, such as Bismarck, are typically 100 to 120 feet in length.
- Drop lengths in less dense areas average about 200 feet in length.

Q. WHAT WOULD BE THE RESULT OF CHANGING THE INPUT ASSUMPTION FOR DIRECTIONAL BORING TO A LOWER AMOUNT?

A. First, the construction of a TELRIC network is fictitious and the result of any input assumption will never be realized. However, that does not imply that the inputs should not be accurate -- in fact, the inputs should be very accurate in order to reflect the true costs to rebuild a telephone network.

If the engineering input assumption for directional boring is lowered, then the input for some other method of buried cable construction must be raised. In developed areas of the network, it would not be correct to lower the input for directional boring and raise the input for trenching, for example. The definition of a developed area does not, and cannot, change

U S WEST then changed its construction methods to include the use of directional boring in the placement of its buried cable system. By using directional boring, it was able to place its cable infrastructure under streets, sidewalks, driveways and customers' landscaping without the disruptions and destruction that it previously encountered. Hence, U S WEST has used these types of assumptions in its TELRIC cost model.

Q. ARE YOU AWARE OF ANY OTHER COMPANIES THAT HAVE SIMILAR EXPERIENCES SUCH AS YOU DESCRIBED WITH U S WEST IN OMAHA, NEBRASKA?

A. Yes. I spoke with three TCI employees who were involved with the rebuilding of its facilities in Bismarck, North Dakota. They experienced the need to use construction methods very similar to those used by U S WEST in Omaha, Nebraska.

Q. PLEASE DESCRIBE SOME OF THE CONSTRUCTION METHODS USED BY TCI THAT ARE SIMILAR TO WHAT U S WEST USES IN ITS COST STUDY.

A. I will summarize several points of that discussion categorized by topic:

<u>Structure Sharing</u>

- The majority of joint trenching opportunities occurred in new developments.
- The opportunity for sharing of buried trenches is infrequent in rebuild situations because there are few locations where more than one utility has a need to place facilities at the same time.
- The electric company was performing some rebuilds in the area, but were using a front lot feed design which didn't follow the TCI cable television design. TCI felt that they would double the required amount of distribution facilities if they used a front lot feed design.
- TCI did not place empty innerducts or conduit for future use. This method of construction was only used in areas where future crossing would be difficult, such as under streets.

1 **Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?**

2 A. The purpose of my supplemental testimony is to adopt, as my own, the Direct
3 Testimony filed by Mark Schmidt in this case on November 12, 1997.

4

5 **Q. DO YOU HAVE ADDITIONAL EXHIBITS?**

6 A. Yes, I have attached, as Exhibit RG-1, page 7, line 14 through page 12, line 10 of
7 Mark Schmidt's Direct Testimony filed in Case No. PU-314-97-12 on December
8 22, 1997.

9

10 **Q. WHAT IS THE SIGNIFICANCE OF THE INFORMATION CONTAINED**
11 **IN YOUR EXHIBIT RG-1?**

12 A. The information in my exhibit discusses the buried cable placement method
13 assumptions that are used in U S WEST's cost model and describes the similar
14 construction methods used by Dakota Cable in Bismarck.[2] Mr. Schmidt had not had
15 the opportunity to meet with the TCI employees when he filed his direct testimony
16 in this case.

17

18 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

19 A. Yes it does.

[2] Although Mr. Schmidt refers to TCI construction methods, it is U S WEST's understanding that Dakota Cable is owned in part by TCI and thus the reference to TCI.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	

STATE MEMBERS' SECOND REPORT ON THE USE OF COST PROXY MODELS

Kenneth McClure, Missouri Public Service Commission
Julia Johnson, Florida Public Service Commission *
Sharon L. Nelson, Washington Utilities and Transportation Commission *
Laska Schoenfelder, South Dakota Public Utilities Commission
Martha S. Hagerty, Public Counsel for the State of Missouri

* Dissenting in part

[COMMISSIONER NELSON'S AND JOHNSON'S DISSENTS WILL BE FILED LATER]

April 21, 1997

N

7. Structure Sharing:

The BCPM model assigns a very high percentage of pole costs, manholes and buried structure placement costs to telephone operations. Various commenters, including the Hatfield sponsors, disagree with the assignment of such a high percentage. Based on a composite of recommendations of commenters,[33] we recommend the use of the following structure assignments for use as inputs in the BCPM model:

Structure Costs (all density groups)	Percentage Assigned to Telephone Operations	
	BCPM Default	Recommended
Plow	100%	100%
Rocky Plow	100%	100%
Trench & Backfill	85 - 100%	66%
Rocky Trench	85 - 100%	66%
Backhoe Trench	85 - 100%	66%
Hand Dig Trench	85 - 100%	66%
Bore Cable	85 - 100%	66%
Push Pipe & Pull Cable	85 - 100%	66%
Cut & Restore Asphalt	85 - 100%	66%
Cut & Restore Concrete	85 - 100%	66%
Cut & Restore Sod	85 - 100%	66%
Poles	50%	50%
Anchors & Guys	100%	100%
Conduit Manholes	75 - 100%	66%

33 Ex parte comments of Maine PUC, February 14, 1997; GTE, February 20, 1997; Sprint, March 21, 1997;

Decision No. C97-739

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

DOCKET NO. 96A-331T

RE: THE INVESTIGATION AND SUSPENSION OF TARIFF SHEETS FILED BY U S WEST COMMUNICATIONS, INC. WITH ADVICE LETTER NO. 2617, REGARDING TARIFFS FOR INTERCONNECTION, LOCAL TERMINATION, UNBUNDLING AND RESALE OF SERVICES.

COMMISSION ORDER

Mailed Date: July 28, 1997
Adopted Date: July 16, 1997

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1. Placement Costs 20

cost is based upon an assumed loop investment requirement of about $555 per loop. USWC also introduced various comparisons to recent construction costs and an analysis of embedded cost. Although USWC maintained that recent construction costs per loop were in the range of $1,100-1,200, AT&T claimed that this number was more likely about $700.[39] While the embedded cost analysis of USWC claimed an investment level of about $1,000 per line, we note that the outside plant value was about $670 and about $900 when including all allocated central office investment.

2. As for the cost model assumptions of USWC, we find that the placement cost, in terms of the percentage of cable requiring boring, is too high and the fill factor assumption used by USWC is too low. Rather than using an assumption of 50% boring and fill factors in the range of 63%, we believe a boring ratio of 25% and 80% fill factors are more appropriate. (The latter adjustment is particularly reasonable relative to the 5-year horizon used by USWC in designing its cost models.) Overall, these adjustments could provide a downward adjustment in the range of 10-15% in the USWC recurring loop cost through lowering the expected investment base. We also find that the depreciation and capital cost expenses used by the Company are overstated. Assuming a 10.4% cost of money and depreciation expenses more consistent with the 1995 FCC represcription, it appears that the recurring loop cost estimate of the Company could be reduced in the range of 15-20%. We also believe that the forward-looking costs of maintaining the network should decrease as advocated by AT&T.[40] We find that this could reduce the loop cost estimates in the range of five plus percent. We also agree with numerous parties that the overhead estimates used by USWC are quite liberal in assuming additional costs to be added to that of costs of the physical plant. An adjustment in the range of 10% of the loop cost for this factor would appear reasonable and warranted.

3. As for the cost model assumptions of AT&T, we believe that several adjustments to the calculation of the investment base for the recurring loop cost of the Hatfield model are warranted. First, the assumed level of structure sharing is too high. We find that sharing in the range of 20-30% would be more reasonable. Adjusting the calculations of USWC witness Fitzsimmons for this assumption, it appears an upwards adjustment in

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38 *See* Exhibit 4, pp. 60-61 and Exhibit 8, pp. 8-20.

39 *See* Transcript V. 1, pp. 380-81.

40 We also note that USWC has, in the past, advised this Commission that significant loop investments under the Rural Facilities Improvement Program ("RFIP") have dramatically lowered trouble report rates in affected wire centers.

3.56 / 18.28 = 19% w/ 50/84/75

the Hatfield base of about 19% is reasonable. As determined by Mr. Fitzsimmons, additional upward adjustments for the drop investment (about 14%) for the assumption of the percentage of aerial plant (5-10%) and the inclusion of DS1/DS3 facilities (10-15%) are found reasonable.

4. Based on these determinations, it appears that a range of reasonableness of the cost of the loop, without inclusion of the central office multiplexing cost assumptions of USWC, is in the range of $16.50-$19.00 on an equivalent investment base.[41] We find that a statewide average cost of $18.00 per loop is a reasonable determination within this range. To this, when appropriate, we add a monthly cost of $2.65 to account for a statewide average of the cost to demultiplex loops into an analog two wire circuit at the USWC central office. Based on this review, the Commission will establish $20.65 as the unbundled loop cost. (This figure is also essentially the USWC 1995 embedded cost per loop in Colorado determined in Mr. Armstrong's exhibits.)

5. Additionally, the Commission finds that a CLEC shall continue to have the ability to access loops at the digital cross-connect as was ordered by this Commission in Docket No. 96S-233T.[42] This would include situations when integrated digital loop carrier ("IDLC") is used and is serving sufficient numbers of loops for CLEC customers, to allow direct access from multiplexing equipment as described by AT&T witness Lynott.[43] However, as described by USWC witness Schmidt, access by this means would be subject to the technical capabilities of the available USWC equipment and any additional costs associated with facilities not normally used for providing loop facilities. USWC shall also include language in its tariff that it will cooperate with CLECs to aggregate CLEC served loops into DS1s where CLECs have obtained sufficient customers to aggregate in this fashion.

Q. Deaveraging of the Statewide Loop Costs

1. USWC

a. As stated by USWC witness Hatzenbuehler[44], the Company does not favor geographic deaveraging of

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41 For the loop, this would be approximately $730-775.

42 *See* Decision No. C96-655, pp. 65-66.

43 *See* Exhibit 32.

44 *See* Exhibit 19, pp. 29-30.

STATE OF IOWA

DEPARTMENT OF COMMERCE

UTILITIES BOARD

IN RE: U S WEST COMMUNICATIONS, INC.	DOCKET NO. RPU-96-9

FINAL DECISION AND ORDER

(Issued April 23, 1998)

SYNOPSIS[1]

On July 5, 1996, U S West Communications, Inc., a local exchange carrier, filed a tariff with the Utilities Board making interconnection available to competitive local exchange carriers (CLECs) pursuant to federal and state law. U S West's tariff described the services, network elements, and prices it proposed to make available to allow CLECs to offer local exchange service to their own end-user customers. The Board rejects this tariff, but describes the corrections to the tariff that are necessary for U S West to provide unbundled network elements and wholesale service to requesting telecommunications carriers. U S West is ordered to file a tariff containing these corrections and making the unbundled network elements and retail services available to requesting telecommunications carriers at specific prices.

Federal and state law requires prices for network elements to be cost-based. The Board adopts incremental costs as a pricing principle for unbundled network elements. Costs for unbundled network elements are set using the Hatfield Model version 3.1 as a pricing tool. The Board elects to establish an average price for unbundled network elements rather than pricing according to density zones. The Board's decision requires U S West to undertake some additional unbundling. The Board's decision also makes mechanical corrections to the pricing model and adopts specific inputs to be used in running the model to compute unbundled network element prices.

Federal law requires the wholesale discount to be established on the basis of costs U S West will avoid in providing retail services at wholesale. Avoided costs are

[1]The purpose of this synopsis is to provide readers a brief summary of the decision. While the synopsis reflects the order, it shall not be considered to limit, define, amend, or otherwise affect in any manner the body of the order including the findings of fact and conclusions of law.

47 C.F.R. § 51.615 (1997) also requires U S West to continue to provide grandfathered services to end-user customers now subscribing to those services, either directly or at wholesale rates through a reseller. In its proposed Iowa Tariff 5, Section 9, U S West excludes from resale "Grandfathered/Obsolete products and services (except to existing customers of the Grandfathered/Obsolete product or service)." This tariff provision is ambiguous because it could be read either to allow customers of grandfathered services to transfer to a CLEC and continue to receive those services, or it could be read to authorize U S West to deny providing the service to a customer who transfers. However, U S West must interpret this provision consistent with the FCC's rule and continue to provide grandfathered services to customers receiving the services from a reseller.

IV. FINDINGS OF FACT

Based on a thorough review of the entire record in these proceedings, the Board makes the following findings of fact:

1. It is reasonable to establish prices for network elements that will promote competition in the local exchange by being nondiscriminatory and by reflecting the incremental costs an incumbent local exchange carrier can actually expect to incur (assuming a reasonable profit) in providing the network element.

2. It is reasonable to determine unbundled network element costs using the Hatfield Model version 3.1, making the mechanical corrections proposed by U S West for the algorithm which omits subfeeder in some census blocks groups and for the omission of part of the trenching costs for underground and buried cable. With

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO	)	
QWEST CORPORATION'S COMPLIANCE	)	
WITH CERTAIN WHOLESALE PRICING	)	DOCKET NO. T-00000A-00-0194
REQUIREMENTS FOR UNBUNDLED	)	PHASE II
NETWORK ELEMENTS AND RESALE	)	
DISCOUNTS	)	

REBUTTAL TESTIMONY OF

GARRETT Y. FLEMING

QWEST CORPORATION

JUNE 27, 2001

REBUTTAL TESTIMONY OF GARRETT Y. FLEMING
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I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH THE QWEST CORPORATION.

A. My name is Garrett Y. Fleming. My business address is 1801 California Street, Denver, Colorado. I am employed as a Senior Director in the Qwest Policy and Law department.

Q. HAVE YOU PREPARED AN EXHIBIT THAT PROVIDES A SUMMARY OF YOUR EDUCATION AND WORK EXPERIENCES?

A. Yes. Exhibit 1 to my Rebuttal testimony provides my educational and work experiences.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to the testimonies of the Staff of the Arizona Corporation Commission (i.e., Commission), the joint intervenors (i.e., AT&T Communications, Worldcom and XO), Sprint and Z-Tel Communications. First, I plan to comment on the following general issues that should be considered by this Commission in determining appropriate TELRIC rates:

1. TELRIC principles utilized to establish the costs and the rates for unbundled network elements (i.e., UNEs);

2. Factors considered by the FCC during the 271 review process in evaluating the reasonableness of ILEC UNE prices;
3. Comprehensive reviews of the positions taken by other state Commissions in their UNE cost decisions; and
4. TELRIC costs adopted by the Commission should reflect the actual cost a company incurs to provide the service and not some hypothetical cost that has no basis in reality.

I will also address the testimony of Mr. Ford and the Joint Intervenors and Staff's proposed switching and collocation pricing. First, however, I will identify changes to the prices and costs Qwest is proposing in this proceeding.

III. REVISIONS TO QWEST COST STUDIES

A. General

Q. ARE YOU PROPOSING ANY CHANGES TO THE QWEST SPONSORED COST STUDIES IN THIS PROCEEDING?

A. Yes. Various intervenor and Staff witnesses have recommended certain changes to the Qwest sponsored cost studies that the Company will not dispute in this proceeding. The Commission has a significant list of issues that must be addressed in this Docket. In order to facilitate the process of evaluating this extensive list of issues, Qwest has decided to adopt certain of the recommendations of other parties to this proceeding. Following is a list of those changes that Qwest will make to its models to address Staff and intervenor concerns:

1. Qwest will use the Commission authorized rate of return that resulted from the recent Stipulation and Order in Docket T-01051B-99-0105.

2. Qwest will revise the material loading factor (i.e., Total Investment Factor or TIF) to reflect the fact that Arizona does not assess sales taxes on the equipment the Company purchases from vendors; and
3. Qwest will propose other revisions to certain of its cost studies that address some of the concerns raised in the testimony of the Staff and intervenors in this proceeding.

The witness that is sponsoring each revision will address the specific changes they propose making to studies in this proceeding. I will address the rate of return and the TIF changes that effect many of the Company sponsored studies.

B. Authorized Rate of Return

Q. WHY ARE YOU RECOMMENDING A CHANGE TO THE RATE OF RETURN USED TO CALCULATE COSTS IN THE COMPANY SPONSORED STUDIES?

A. On March 30, 2001 the Arizona Commission released its order, Decision No. 63487 in Docket T-01051B-99-0105. This Order, which resolved all issues in the rate case, included the adoption of a revised authorized rate of return. I agree with Staff and the other intervenors, the new authorized rate of return should be used to calculate UNE costs and prices in this proceeding.

Q. WHY DID THE ORIGINAL FILING INCLUDE A RATE OF RETURN OTHER THAN THE ONE YOU ARE NOW ADOPTING?

A. The original company sponsored cost studies were filed on March 15, 2001. These costs were calculated using the authorized rate of return as of that date. The Company has always supported using the authorized rate of return to calculate costs in this proceeding and this proposed change to the studies is consistent with that advocacy.

C. Other Proposed Study Changes

Q. IS QWEST PROPOSING TO ADOPT OTHER CHANGES IN THIS PROCEEDING?

A. As previously stated, Qwest is proposing to make selected adjustments to several of its cost studies in this proceeding. The witness sponsoring the revision will address each of these changes in detail.

IV. OVERVIEW ISSUES

A. UNE Price Must Be Set Based on TELRIC Principals

Q. WHAT ARE THE CRITICAL ISSUES THIS COMMISSION SHOULD CONSIDER IN EVALUATING THE COST STUDIES FROM THE VARIOUS PARTIES IN THIS PROCEEDING?

A. The 1996 Telecommunications Act (Act) and subsequent FCC Orders clearly state that the prices for unbundled network elements (UNEs) must be determined based on the cost of providing those elements. The FCC in

its First Report and Order on Interconnection established the Total Element Long Run Incremental Cost (TELRIC) method for determining how cost should be determined pursuant to the Act. In its Orders granting the 271 Applications of certain Incumbent Local Exchange Carriers (ILECs), the FCC continues to stress the point that UNE prices must be established based on TELRIC principles. As stated by the FCC in its Memorandum Opinion and Order granting the SBC application to enter the long distance market in Kansas:

> We have previously held that we will not conduct a *de novo* review of a state's pricing determinations and will reject an application only if "basic TELRIC principles are violated or the state Commission makes clear errors in factual findings on matters so substantial that the end result falls outside the range that the reasonable application of TELRIC principles would produce(.)" Para 59.

A similar or identical statement is included in every application the FCC has approved to date. The Act, the FCC interconnection rules and all the Orders approving 271 applications reiterate that costs must be the basis for setting rates for unbundled network elements. The FCC has defined TELRIC principles that must be used to develop those costs and prices. There can be no question that the purpose of this proceeding must be to determine the cost for unbundled network elements using the TELRIC principles adopted by the FCC in its first Report and Order on Interconnection.

Q. HAVE ANY OF THE PARTIES TO THIS PROCEEDING ARGUED FOR CONSIDERATION OF ISSUES OR ANALYSIS THAT CLEARLY ARE NOT BASED ON THESE TELRIC PRINCIPLES?

A. Yes. Several witnesses for the joint intervenors have recommended that the Commission consider a competitors ability to profitably serve the residential market when establishing UNE Prices. Mr. Hydock states in his testimony:

> As discussed more fully in the testimony of Mr. Gillan, the level of charges any Competitive Local Exchange Carrier (CLEC) would need to pay Qwest for the rental of components of its network would not allow CLECs to match, much less price below, Qwest for residential service. Hydock testimony, Pg. 14

Mr. Gillan then goes on to do an analysis comparing the Qwest proposed cost for a UNE Platform (UNE-P) to the amount of revenue a competing LEC could anticipate recovering from three hypothetical residential customers (Gillan Testimony Page 15). He concludes that the proposed rates would not allow a sufficient margin to encourage CLECs to serve the residential market.

Q. DO YOU AGREE WITH MR. GILLAN'S ANALYSIS?

A. No. For instance, he assumes that the CLEC would not provide a complete range of services to the residential customer, such as a vertical package of services. Mr. Gillan also assumes that the customer purchases his toll service from another carrier further limiting the potential revenue derived from the residential customer. In contrast, Qwest is expending significant resources to acquire the right to offer interLATA toll services. This effort is with the express intent of allowing the company to offer customers an integrated line of services including long distance. Mr. Gillan's CLEC appears to voluntarily forego this customer's long distance business settling

instead for the minimal access charge revenues that have recently been reduced by the FCC. Simply by deciding to enter the long distance business, this hypothetical CLEC can significantly increase the revenues Mr. Gillan estimates it can anticipate receiving from these customers.

Q. DO YOU HAVE ANY OTHE PROBLEMS WITH THIS ANALYSIS?

A. It is important to note that Mr. Gillan has focused his analysis on the residential market. The results of a similar analysis of the business market would produce different results. Fundamentally, Mr. Gillan's analysis is irrelevant in determining TELRIC based prices.

Q. WHY DO YOU SUGGEST MR. GILLAN'S ANALYSIS IS IRRELEVANT TO THIS PROCEEDING?

A. The FCC has defined TELRIC principles as the means that must be employed to set UNE prices. AT&T and other similarly situated companies have made numerous attempts to get the FCC to recognize the validity of different analyses that are virtually identical to the one proffered by Mr. Gillan in this proceeding. In the Order granting SBCs 271 application in Oklahoma the FCC had the following comments regarding pleas to consider the profitability of CLEC entry into the residential market in evaluating Oklahoma's UNE prices:

> Parties also assert that the Oklahoma promotional rates are so high that no competitive LEC could afford to use the UNE platform to offer local residential service on a statewide basis. **Such an argument is irrelevant**. (emphasis added). The Act requires that we review whether the rates are cost-based, not whether a competitor can make a profit by entering the market. Were we to focus on profitability, we would have to consider the level of a state's retail rates, something which is within the state's jurisdictional authority, not the Commission's. Para 92

In response to the Verizon application for 271 approval in Massachusetts AT&T employed a slightly different approach to getting the FCC to recognize a similar analysis. Again their efforts were rebuffed. In their Order granting the Verizon application the FCC stated:

> We do not accept AT&T's contention that its ability to make a profit by entering the Massachusetts market proves that it is not permitted an "efficient entry," which is contrary to the Commission's prior determination. AT&T's misinterpretation of the Commission's prior holding appears to be based on its equating "efficient entry" with the guarantee of a profit that would induce competitors to enter the market. Para 42

Clearly the FCC does not consider analyses such as Mr. Gillan's relevant to the determination of UNE prices.

Q. WHAT SHOULD THIS COMMISSION CONSIDER IN SETTING UNE PRICES?

A. The Commission must set the prices for unbundled network elements based on the ILEC's cost to provide those elements. The costs must be determined using the TELRIC principles established by the FCC in its First Report and Order on Interconnection. Any other approach would be inconsistent with the 1996 Telecommunications Act.

B. Principles that Should be Applied in Establishing TELRIC Prices

Q. WHAT FACTORS SHOULD THE COMMISSION CONSIDER IN SETTING PROPER TELRIC RATES?

A. The Commission should apply a consistent and comprehensive approach in establishing TELRIC rates. This approach should first focus on the model

design and specific input recommendations of the parties to the proceeding. Each input should be evaluated based on its merits and adherence to the TELRIC principles set forth by the FCC. In adopting SBCs 271 application in Kansas, the FCC made the following comments regarding the Kansas Commission's determination of certain nonrecurring rates for interconnection:

> We note that the Kansas Commission modified various aspects of SBCT's cost model inputs once in 1999 and twice in 2000, and carefully considered and at times utilized alternative inputs from AT&T. We commend the Kansas Commission for its commitment to forward-looking pricing and the careful analysis it undertook in its ratemaking dockets.

A careful consideration of the model design and inputs is at the heart of any reasonable decision on TELRIC pricing. Every disputed input should be evaluated independently using a comprehensive and reasoned approach.

Q. ARE THERE ANY OVERRIDING PRINCIPLES THAT THIS COMMISSION SHOULD EMPLOY IN EVALUATING THE VARIOUS INPUTS PROPOSED BY THE PARTIES?

A. Yes. Obviously the Commission must consider all the TELRIC principles that were established by the FCC in its Orders. However, even the FCC acknowledges that there is considerable latitude in how those principles may be applied. In determining how to apply those principles this Commission should consider the following factors:

1. Are the recommended assumptions and inputs achievable in an actual business environment?

2. Would the assumptions and inputs be used by normal business in a competitive environment when considering entering or expanding operation in a given market?
3. Are the assumptions and inputs based on actual technologies that are available and deployed in the market or are they based solely on some hypothetical futuristic design or systems that have never been deployed?
4. Are the methods and analysis used to evaluate the various inputs consistent across all inputs?

A comprehensive and consistent approach to analyzing inputs and assumptions is critical to arriving at reasonable conclusions regarding inputs and assumptions.

Q. WHAT IS THE BEST MEANS TO EVALUATE WHETHER A GIVEN ASSUMPTION OR INPUT IS REASONABLE TO USE IN DEVELOPING A COST?

A. All inputs and assumptions should be evaluated based on the economic decisions that would be employed by a competent business in a competitive market. What assumptions would a prudent business make in evaluating the cost of entering a new or expanding an existing market? Prices in a competitive market would never be driven by assumptions that would never be used in making a rational business decision. Cost-based pricing will never be valid if it does not comport with rational business logic.

Q. WHAT WOULD BE THE RESULT OF BASING PRICES ON THE COSTS OF HYPOTHETICAL NETWORK AND SYSTEM DESIGNS THAT HAVE NEVER BEEN DEPLOYED?

A. Prices based on the cost of a hypothetical network or system designs that have never actually been deployed would ultimately impact the investment decisions of all parties in the market. Setting prices at a level below the cost a company reasonably incurs in providing the service will ultimately impact any company's ability to invest the capital needed to enter or expand into a market. Investment in a market requires prices that will allow for the recovery of that investment.

Q. DO TELRIC PRINCIPLES REQUIRE THE USE OF FORWARD LOOKING HYPOTHETICAL NETWORK AND SYSTEM DESIGNS THAT IGNORE THE COST A COMPANY ACTUALLY INCURS IN PROVIDING A SERVICE?

A. No. The FCC in its First Report and Order defined TELRIC as a cost that is similar to the costs an ILEC actually incurs in providing a service or facility. AT&T acknowledge this fact in its brief before the Supreme Court of the United States in AT&T Corp., v. Iowa Utilities Board, et al. In a prior decision in that case, the Eighth Circuit Court ruled that the FCC rule 47 C.F.R. Section 51.505(b)(1), requiring that cost be based on the "most efficient" technology currently available, was a contrary to the provisions of the 1996 Telecommunications Act. In making that determination the Eighth Circuit Court asserted that the Act required that UNE prices must be set based on the actual cost an ILEC incurs in providing the facilities not some hypothetical cost determined by regulators. In its Brief before the Supreme

Court, AT&T argued that TELRIC does reflect the actual costs a LEC incurs in providing its facilities. As stated by AT&T:

> ...the FCC's TELRIC regulation would be valid even if the Eighth Circuit were correct that Section 252(d)(1) requires rates to be set based on the LEC's cost of providing their "actual" facilities. The FCC repeatedly found that TELRIC determines the "economic costs" of incumbent LECs in providing their facilities.....It found that TELRIC will result in prices that" most closely resembles the incremental costs that LECs actually incur in making network elements available to competitors," and that it "should facilitate competition on a reasonable and efficient basis" by allowing new entrants to use essential facilities "based on costs similar to those incurred by the incumbants"...Id. (Para) 679, 685....TELRIC simply was not intended to do anything other than measure a LEC's cost of providing its "actual facilities". (Page 28)

This Commission is charged with the task of setting the prices for the unbundled network elements that Qwest offers to other LECs. These prices must be set at the cost of providing the service. The costs must be determined based on the TELRIC principles established by the FCC. Those prices must reflect the costs Qwest can reasonably anticipate incurring to provide those services if it acts in an efficient manner. Prices set below this level will discourage future investment in the network. Prices set above this level will inhibit competition. It is the responsibility of this Commission to insure that the rates it sets balances these two considerations.

V. THE FCC ANALYSIS OF TELRIC PRICING

A. Mr. Ford's Two-Part Standard for Setting UNE Prices

Q. HAVE YOU READ MR. FORD'S TESTIMONY IN THIS PROCEEDING?

A. Yes. Mr. Ford argues that the Act establishes two standards for setting UNE prices. First, and foremost, "prices must be set at costs", using TELRIC principles defined by the FCC. The second test involves setting prices at a level that is "conducive to competitive entry." (Pg. 8) Mr. Ford acknowledges that the first priority is to set prices at TELRIC, however, he then states that TELRIC can, "at best", provide a range for setting prices. Once this range is established, Mr. Ford argues that prices should be set at the lower end of this range in order to be "conducive to competition."

Q. DOES THE ACT REQUIRE THE TWO STANDARDS FOR PRICING IDENTIFIED BY MR. FORD IN HIS TESTIMONY?

A. No. Section 252(d) of the Act sets the standards for setting the prices for unbundled network elements. This Section of the Act requires prices to be set at "costs" which can include a "reasonable profit." There is no requirement in this Section of the Act that requires that UNE prices be set at a minimal level to foster competition.

Q. TO YOUR KNOWLEDGE HAS THE FCC EVER PROPOSED MR. FORD'S TWO-PART STANDARD FOR SETTING TELRIC PRICES?

A. No. The FCC set the TELRIC standard with the express intent of meeting the goals set forth in the Act. TELRIC is, by definition, the cost that an efficient provider incurs in providing its services. The FCC in its First Report and Order established this standard as a means of both promoting competition in the market and encouraging investment in new technologies. As stated by the FCC:

"We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements be based on costs that assure wire centers will be placed at the incumbent LECs current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements"

"This benchmark of forward-looking cost and existing network design most closely represents the incremental cost that incumbents actually expect to incur in making network elements available to new entrants. Moreover, this approach encourages facilities-based competition to the extent that new entrants, by designing more efficient network configurations are able to provide the service at a lower cost than the incumbent LEC." Para 695

In other words TELRIC was, by design, developed to promote competition while meeting the dual purpose of encouraging the rapid deployment of new technologies. Mr. Ford is in essence proposing a new standard. Under Mr. Ford's two-part test, prices would be set at the lowest potential cost an efficient firm would incur in providing access to its facilities. It would be hard to argue that this new standard would promote investment in new networks by anyone.

Q. HAS THE FCC USED MR. FORD'S MINIMAL TELRIC STANDARD IN REVIEWING ILEC'S 271 APPLICATIONS?

A. No. In fact, it appears that Mr. Ford's minimal TELRIC standard is in direct conflict with the FCC's deliberations on various 271 applications. In all of the Orders I have reviewed, the FCC has taken the approach that the proper development of a TELRIC price requires a comprehensive and reasoned evaluation of all the assumptions and inputs recommended various parties. To my knowledge, the FCC has never rejected a 271 Application due to the fact that UNE prices were not set at the bare

minimum of the TELRIC range. In adopting the SWBT 271 application in Oklahoma the FCC stated:

> We also reject AT&T's argument that because the cost models SWBT provided for Kansas and Oklahoma were nearly identical, the fact that the resulting rates are significantly different suggests that the Kansas and Oklahoma recurring UNE rates cannot *both* be consistent with TELRIC. The Act requires that UNE rates be just and reasonable, and in other contexts, we have determined that standard to mean that any of a number of inputs or results from within a certain range would be appropriate.

The FCC could have never reached this conclusion by adhering to the two-part standard Mr. Ford argues the Act requires. The UNE switching rates in Kansas and Oklahoma are $0.00131 and $0.00204, respectively[1]. The FCC could never have determined that both these rates complied with TELRIC principles if it had used Mr. Ford's standard of setting TELRIC prices at the bare minimum of the TELRIC range. Contrary to Mr. Ford's assertions, his minimum TELRIC standard is not consistent with either the Act or the FCC implementation of the Act.

B. The FCC TELRIC "Presumption Test"

Q. DOES MR. FORD PROVIDE AN ANALYSIS THAT IMITATES A TEST USED BY THE FCC FOR A TELRIC RANGE OF LOOP PRICES?

A. Yes. Mr. Ford has used a methodology allegedly developed by the FCC to test the reasonableness of TELRIC based rates to establish what he claims is a zone of reasonableness for setting the loop prices in Arizona. The FCC

[1] SBC Ex Parte with FCC CC Docket No. 01-88 May 4, 2001 (KS) & June 6, 2001 (OK) Urban Rates

methodology compares the UNE prices from states that have obtained 271 approval to the UNE prices for states seeking 271 approval.

Mr. Ford utilizes the FCC methodology in a two-step process. The first step in this analysis is to select the states that will be used in the comparison. Mr. Ford selects the SWBT loop rates from SWBT states that have been granted 271 approval (i.e., Kansas, Oklahoma and Texas) as the basis for making the comparison. Second, Mr. Ford claims that "Applying the relative cost framework" established by the FCC to the loop rates in the SWBT states identified above results in a TELRIC range of reasonableness of $12.17 to $13.70. Based on the above comparisons, Mr. Ford recommends the adoption of rates at or below this range claiming that they are the "entire cost of the loop" according to the FCC.

Q. HAVE YOU BEEN ABLE TO REPLICATE MR. FORD'S HCPM COST ESTIMATES FOR TEXAS, OKLAHOMA, AND KANSAS?

A. No. I have not been able to replicate Mr. Ford's HCPM cost results. I arrive at a different loop cost result using the HCPM data. Mr. Ford's response to the data request[2] for his calculations provides inadequate information to match the cost he is using. He does not define which specific costs he shares between the loop and other elements in the HCPM.

[2] Qwest Corporation's Second Set of Data Requests to the CLECs, number 131 parts 2, 3, and 4.

Q. COULD YOU EXPLAIN THE FCC TELRIC TEST?

A. Yes. The FCC TELRIC test compares the prices in one state to the prices in another state using the results of the Synthesis Model (SM) as a relative gauge of the differences in costs between the states. The FCC developed the SM for use in administering its high cost fund. As noted by the FCC, the USF cost model was not designed to "determine rates for a particular element," however, it was developed to "determine the relative cost differences among different states..". The presumptive test uses the relative cost differences between states identified in the USF model to compare the ordered rates in a given state to the similar rates in another state to determine if the cost differences can be justified.

Q. WHEN DID THE FCC ADOPT THE PRESUMPTIVE TELRIC TEST?

A. The FCC first developed the "presumptive TELRIC" in its order granting 271 approval to SWBT for the state of Oklahoma. In that Order the FCC found that the ALJ's Order that established the Oklahoma loop rate "violated" TELRIC principles by adopting fill factors that were outside the reasonable TELRIC range. Upon making this finding, the FCC adopted the relative TELRIC test to determine if the ALJ's error resulted in prices that were outside the range of the reasonable application of TELRIC principles. As stated by the FCC "we must determine whether the ALJ's error was substantial, i.e.," resulted in rates "outside the range that the reasonable application of TERIC principles would produce." (Para 81) The FCC went on to state "in making such a determination" they could consider "rates we have found to be based on TELRIC." (Para 82) The FCC then proceeded to

develop the "presumptive" TELRIC test to test the overall reasonableness of the Oklahoma loop rate.

Q. DO YOU AGREE WITH MR. FORD'S APPLICATION OF THE FCC's TELRIC PRESUMPTION TEST?

A. Not at all. Mr. Ford selectively applies the TELRIC test to derive his desired results. He compounds this problem by asserting that prices should be set using his analysis, as opposed to the TELRIC principles adopted by the FCC.

Q. SHOULD THE COMMISSION USE THE PRESUMPTIVE TELRIC TEST TO SET RATES IN THIS PROCEEDING AS RECOMMENDED BY MR. FORD?

A. No. The FCC has never even indicated that the TELRIC test is a reasonable substitute for applying TELRIC principles as a means of establishing UNE prices. In its First Report and Order on Interconnection the FCC required states to set the prices for UNEs based on TELRIC principles. The FCC has never changed this basic requirement.

Q. HAS THE FCC EVER USED THE TELRIC TEST TO SET PRICES FOR UNES?

A. No. The FCC developed the test solely as a means for assessing the reasonableness of a company's UNE prices when those prices were based on assumptions or inputs that did not comport with the TELRIC rules. If the FCC determines that a state Commission erred in its application of TELRIC principles, the FCC uses the test to assess whether the error was so

grievous as to result in a price that is outside the range that the reasonable application of TELRIC principles would produce. In other words, it is a test that the FCC uses to determine if a misapplication of TELRIC principles has resulted in prices that are outside a reasonable range.

Q. DO YOU BELIVE THAT THE USE OF A SINGLE TEST TO SET TELRIC RATES COMPORTS WITH THE REQUIREMENTS OF THE TELECOMMUNICATIONS ACT?

A. No. The Act specifically delegates the task of setting UNE prices to state Commissions. Universal application of the presumptive TELRIC test would invalidate this provision of the Act. The logical extension of Mr. Ford's proposal in this Docket would deprive all state Commissions of any further say in the development of UNE prices. All future UNE rates would be set based on a simple extrapolation of the UNE rates in the nearest state or states that have previously been granted 271 approval. State Commissions would become an afterthought in the process of developing UNE rates. New York and Texas would become the standard for setting all future UNE prices. All other states Commissions would have no role in developing these prices. Their sole function would be reduced to applying a simple ratio analysis to the rates set in Texas or New York, whichever is closer, to determine the UNE prices that are applicable to their state.

Q. DOES THE FCC USE THE TEST AS AN ABSOLUTE GAUGE OF THE REASONABLENESS OF UNE PRICES?

A. No. The FCC recognizes that there can be reasonable differences in the application of TELRIC principles between states. In granting the SWBT

application for 271 relief in Oklahoma, the FCC recognized the important role states play in establishing UNE rates:

> ...differences in rates alone do not constitute sufficient grounds to conclude that higher rates are not TELRIC based. In addition to reasonable differences in judgement, legitimate factors can cause differences in nonrecurring UNE rates between two states, including costs and services to which they apply. For example, the nonrecurring loop rates in Texas do not include installation and maintenance activities, which SWBT intended to recover from the trip charge and that the Texas Commission refused to accept. In Oklahoma, on the other hand, the nonrecurring rates include this charge. Furthermore, although both Oklahoma and Texas Commissions use the TELRIC standard, they differ in terms of inputs to that model and how much they anticipate future cost reductions.....Thus we find, as we did in Kansas, that the fact that Oklahoma nonrecurring rates are higher than those in Texas does not make them unreasonable, nor does it cause SWBT to fail this checklist item. (Para 101)

Obviously the FCC did not consult with Mr. Ford prior to making this decision. He would have informed them that this action was a direct violation of their own standards.

Q. DOES THE FCC RECOGNIZE THE IMPORTANT ROLE STATES PLAY IN SETTING TELRIC PRICES?

A. Yes. In granting the Oklahoma application for 271 relief, the FCC rejected AT&T's arguments that the differences between the Oklahoma and Kansas recurring rates indicated that both could not comply with TELRIC principles. The FCC recognized that AT&T's arguments (that there can never be legitimate differences in UNE prices between states), would relegate states to a role of "mere functionaries in the section 251 and 252 pricing process..." (Para 91).

Q. IS MR. FORD'S APPLICATION OF THE TELRIC TEST REASONABLE?

A. No. Mr. Ford selectively applies the test to get his desired result. There are five states that have been granted 271 relief. Mr. Ford uses the three states with the lowest relative loop prices as the basis for his comparison. Selection of either of the remaining states would have resulted in a dramatic difference in his test results. Mr. Ford's TELRIC range is a product of selectively eliminating any data point that would have resulted in higher range.

Q. WHAT JUSTIFICATION DID MR. FORD GIVE FOR HIS SELECTION OF STATES HE USED IN HIS ANALYSIS?

A. Mr. Ford claims that he selected the SWBT states due to the fact they were in close proximity to Arizona and that their rate structures were more in line with those of Qwest. According to Mr. Ford, this selection process is in accordance with the FCC stated practice.

Q. OBVIOUSLY YOU DO NOT CONCUR WITH MR. FORD'S SELECTION PROCESS?

A. That is correct. The FCC has only applied the presumptive TELRIC test when the following conditions have been met:

1. The rates in the state used in the comparison have been determined to be based on the proper application of TELRIC principles;
2. The states in the comparison have a "common BOC and geographic similarities"; and
3. The states in the comparison "have similar, though not identical, rate structures". (Para 28, Mass)

No state that has been granted 271 relief meets more than half these standards. Obviously, all the states that have been granted 271 relief have rates that the FCC found are within an acceptable TELRIC range. It can also conceivably be argued that Texas, Oklahoma and Kansas are geographically similar to Arizona, even though I personally do not picture Arizona as just another Kansas. However, there is no question that all the states that have gained 271 approval have different rate structures and are part of a different BOC. In other words, none of the data points Mr. Ford considered met more that half the criteria established by the FCC for justifying the comparison.

Q. DID YOU STATE THAT MR. FORD SELECTED THE SBC STATES BECAUSE THEIR RATES WERE MORE "COMPATIBLE" WITH QWEST'S RATES THAN VERIZON'S RATES?

A. Yes. However, this proclamation is at best a stretch. The only justification Mr. Ford gives for this conclusion is "For example rate structures for unbundled switching and reciprocal compensation are very similar between SBC and Qwest states, but not Verizon states." (Pg. 14) Both Verizon and SBC have uniquely deaveraged switching rates (i.e., they are not deaveraged on the same basis). Qwest does not. Both Verizon and SWBT include the cost of feature functionality in their local switching rates. Qwest does not. Based on the above analysis SWBT's rates are more comparable to Verizon's than they are to Qwest's. It is this type of stretch that implies that Mr. Ford's analysis is at best contrived to achieve a specific objective.

Q. HOW WOULD YOU APPLY THE TELRIC TEST WHEN CONFRONTED WITH THE FACT THAT NO SINGLE STATE HAS MET MORE THAN HALF THE CRITERIA FOR BEING A CANIDATE FOR COMPARISON?

A. One logical and unbiased means of addressing this selection process problem would be to expand the comparison. That is, expand the sample to include some states that meet all the criteria needed to justify the comparison. Instead of this approach, Mr. Ford tried to contrive a justification for limiting the sample to those states that would establish the lowest possible range using the TELRIC test.

Q. HOW WOULD YOU EXPAND THE SAMPLE?

A. The obvious answer is to include all states that meet at least one of the criteria established by the FCC. All the Qwest states meet one or more of the defined criteria. In addition, both Massachusetts and New York have been granted 271 approval meeting another of these criteria.

Q. IS IT REASONABLE TO INCLUDE QWEST STATES IN THE COMPARISON WHEN NONE HAVE BEEN GRANTED 271 APPROVAL?

A. Yes. To date the FCC has only applied its TELRIC test between states that are served by the same ILEC. In the Verizon 271 filing in Massachusetts, AT&T requested that the FCC compare the Massachusetts' switching rates to the rates in the SWBT states that had attained 271 approval. AT&T pointed out that the New York Commission was currently reviewing its prior decision which established the existing switching rates the FCC was using in the comparison. AT&T then argued that since the New York rates were currently under review, the TELRIC test should use the SWBT rates that

were not under a similar review. The FCC rejected this argument. In doing so the FCC used the criteria I identified above. It is clear the FCC has shown a preference for applying the TELRIC test between states served by the same ILEC. This predisposition to compare the rates of states served by the same ILEC justifies including other Qwest states in the analysis.

Q. WHY DO YOU FEEL IT IS REASONABLE TO INCLUDE THE VERIZON STATES IN THIS COMAPARISON?

A. Absent any state that meets all the criteria that the FCC used to select a proper point of comparison for its TELRIC test, it is appropriate to expand the analysis to all states that have obtained 271 approval. The SM provides a basis for comparing the relative costs of all states across the country. The SM is used by the FCC as the basis for determining the non-rural high cost fund receipts on a national basis. This model provides a means of normalizing geographic and density-based differences. Differences in rate structure cannot be reasonably accounted for by the use of this common platform.

Q. ARE YOU PROVIDING YOUR OWN COMPARATIVE ANALYSIS?

A. Yes. I have separated my analysis into two parts. First, I compare the prices for UNEs across the Qwest states. I then perform an analysis that compares the Arizona rates to the rates for states that have received 271 approval.

Q. EXPLAIN HOW YOU HAVE APPLIED THE TELRIC TEST IN YOUR ANALYSIS?

A. The SM identifies the combined costs of all facilities required to provide the local retail service. In other words, the model combines the cost of all facilities (i.e., loop, switching and transport) required to provide basic exchange service. The operating expenses in this model are calculated on a per line basis, as opposed to being assigned to each of the unique elements required to provide the service. Marketing expenses included in the model, are based on the retail not wholesale operations of the ILECs. The result is an FCC model that can be disaggregated into 3 categories of costs. The three categories of costs derived by the model are:

1. The direct investment-related cost of the loop;
2. The direct investment-related cost of traffic sensitive elements such as switching and transport (e.g. these costs can be segregated by type of traffic sensitive element such as switching); and
3. The cost of basic local service.

In evaluating the prices in Oklahoma, the FCC compared Oklahoma and Texas rates using the total local exchange service cost output produced by the SM model. Thus, switching costs and retail commercial marketing expense were incorporated into the comparison of Texas and Oklahoma loop rates. In evaluating the Massachusetts 271 application the FCC further refined this analysis. In comparing the New York and Massachusetts switching costs the FCC premised the comparison on the direct switch related investment costs produced by the model.

Q. WHAT WERE THE RESULTS OF YOUR COMPARISON OF LOOP COSTS ACROSS THE QWEST STATES?

A. Following is a table comparing the actual ordered loop rates for Minnesota, Colorado, Washington and Arizona. The top line identifies the ordered rate in each state. The second line identifies the total the cost output from the SM. The next 3 lines provide each states adjusted loop rate using the FCC TELRIC test with the ratios based on Minnesota, Colorado, and Washington respectively.

State	MN	CO	WA	AZ
Ordered Loop Rate	$17.87	$18.00	$18.16	$21.98
SM Total Basic Local Svc Cost	$22.42	$22.56	$20.56	$20.62
Loop Rate Using MN Ratio	$17.87	$17.98	$16.39	$16.44
Loop Rate Using CO Ratio	$17.89	$18.00	$16.40	$16.45
Loop Rate Using WA Ratio	$19.80	$19.93	$18.16	$18.21

Table 1: Loop Rate Adjusted By SM Total Basic Local Service Cost and Investment

Applying the FCC TELRIC tests to the ordered loop rates in Colorado, Minnesota and Washington yields a loop rate of up to $18.21.

Q. WHY DID YOU SELECT COLORADO, WASHINGTON AND MINNESOTA AS THE BASIS FOR THIS COMPARISON?

A. I selected Colorado, Washington and Minnesota as the basis for this comparison based on the fact that they are similar in size to Arizona and contain areas with comparable densities.

Q. DID YOU PERFORM A SIMILAR ANALYSIS USING THE ORDERED LOOP RATES FOR STATES THAT HAVE PREVIOUSLY BEEN GRANTED 271 RELIEF?

A. Yes. Following is the results of applying the FCC TELRIC test to the ordered rates in New York, Massachusetts, Kansas and Texas:

State	NY	MA	KS	TX	AZ
Ordered Loop Rate	$14.52	$15.00	$13.30	$14.11	$21.98
SM Total Basic Local Svc Cost	$18.71	$19.23	$24.08	$21.13	$20.62
Loop Rate Using NY Ratio	$14.52	$14.92	$18.69	$16.40	$16.00
Loop Rate Using MA Ratio	$14.59	$15.00	$18.78	$16.48	$16.08
Loop Rate Using KS Ratio	$10.33	$10.62	$13.30	$11.67	$11.39
Loop Rate Using TX Ratio	$12.49	$12.84	$16.08	$14.11	$13.77

Table 2: Loop Rate Adjusted By SM Total Basic Local Service Cost and Investment

Using the loop rates in New York, Massachusetts, Kansas and Texas as the basis for applying the TELRIC test results yields a loop price in Arizona of up to $16.08

Q. WHY DID YOU SELECT NEW YORK, MASSACHUSETTS, KANSAS, AND TEXAS AS THE BASIS FOR THE COMPARISON?

A. I selected New York, Massachusetts, Kansas and Texas as the basis for the comparison because their loop rates were established by the state Commissions using methods that the FCC found adhered to reasonable TELRIC principles. Using Oklahoma prices as a point of comparison, adds an element of circularity into the analysis. It is improper logic to use the rates that were established using the TELRIC test, as the basis for applying the TELRIC test in another state. For this reason I have limited my analysis to prices from states whose prices were based on the proper application of TELRIC principles.

Q. COULD YOU SUMMARIZE THE RESULTS OF YOUR ANALYSIS?

A. Yes. Applying the FCC TELRIC test to rates in states that meet one or more of the comparison criteria established by the FCC, results in an expected TELRIC range of up to $18.21.

Q. HAVE YOU PERFORMED A SIMILAR ANALYSIS OF SWITCHING RATES?

A. Yes. As shown in Table 3, applying the FCC TELRIC tests to the ordered switch rates in New York, Massachusetts, Kansas and Texas yields a switching cost per line for Arizona of up to $3.24 per line.

State	NY	MA	KS	TX	AZ
Ordered Monthly Switch Cost (1)	$2.75	$3.26	$2.53	$2.12	$2.80
SM Switching Cost Per Line	$2.69	$2.67	$2.92	$2.65	$2.65
Switching Rate Using NY Ratio	$2.75	$2.73	$2.99	$2.71	$2.71
Switching Rate Using MA Ratio	$3.28	$3.26	$3.57	$3.24	$3.24
Switching Rate Using KS Ratio	$2.33	$2.31	$2.53	$2.30	$2.30
Switching Rate Using TX Ratio	$2.15	$2.14	$2.34	$2.12	$2.12
Ordered Monthly Switch Cost (1)	$2.75	$3.26	$2.53	$2.12	$2.80
SM Switching Investment Per Line	$105.71	$111.33	$123.35	$109.90	$108.08
Switching Rate Using NY Ratio	$2.75	$2.90	$3.21	$2.86	$2.81
Switching Rate Using MA Ratio	$3.10	$3.26	$3.61	$3.22	$3.16
Switching Rate Using KS Ratio	$2.17	$2.28	$2.53	$2.25	$2.22
Switching Rate Using TX Ratio	$2.04	$2.15	$2.38	$2.12	$2.08

Table 3: Switching Rate Adjusted By SM Switching Cost and Investment

(1) Total switching cost is based on the ordered per minute rate and an assumed 1,000 minutes per month of usage

VI. COLLOCATION

A. Overview

Introduction

Q. WHAT ISSUES WILL YOU ADDRESS IN YOUR TESTIMONY REGARDING COLLOCATION?

A. I will first address certain overriding concerns that have been expressed by other parties to this proceeding. This testimony will:

1. Explain why actual costs, adjusted for known changes since these costs were incurred, are the proper basis for setting collocation costs;
2. Explain why the use of nonrecurring pricing is the preferred method for recovering certain collocation costs and how this approach is consistent with the TELRIC principles established by the FCC; and
3. Address the concerns expressed by other parties that the Qwest sponsored cost studies are not documented and do not reflect Arizona specific collocation jobs.

In addition, I will address the individual cost recommendations of the other parties to this proceeding, including the concerns that the study was inadequately documented. First, however, I will explain certain changes to the collocation prices that I am sponsoring in this testimony.

Proposed Changes to the Qwest Sponsored Collocation Study

Q. WHY ARE YOU PROPOSING CHANGES TO THE QWEST COLLOCATION STUDY IN THIS PROCEEDING?

A. Meeting TELRIC requires continual re-evaluation of the cost studies to determine if they include assumptions and inputs that reflect the efficient

costs a company would currently incur in providing access to the facility and/or service. Subsequent to filing this case, Qwest has proposed certain modifications to its collocation study in active cases in other states. I am adopting all of those modifications in this proceeding. In addition, I am proposing additional modifications to address some of the concerns raised by parties in this proceeding.

Q. WHAT STUDY MODIFICATIONS ARE YOU PROPOSING IN THIS TESTIMONY?

A. I am proposing the following changes to the Company sponsored collocation cost study:

1. The cost of the Entrance Facility was revised to reduce the costs associated with a manhole dedicated solely to the use of collocating CLECs and to correct certain calculations within the study;
2. The fiber cost per foot was modified to reflect the cost of a 24-strand fiber cable.
3. The maintenance factor was adjusted for collocator space and collocator equipment to remove power expense components.

Q. ARE YOU PROVIDING UPDATED COST RESULTS FOR ANY OTHER ELEMENTS?

A. The above changes are being presented for collocation in addition to changes in cost caused by using the new prescribed rate of return.

Entrance Facility Cost Calculation

Q. WHAT CHANGES ARE YOU PROPOSING TO MAKE TO THE ENTRANCE FACILITY?

A. I am proposing revisions to the calculation of the entrance facility cost in order to: 1) substantially reduce the cost of a manhole dedicated solely to collocation; 2) to correct the calculation of the fiber pulling costs to make it consistent with a per fiber pricing structure; and, 3) to change the underground fiber cost calculation to reflect the cost of placing a 24-strand cable. These changes are identical to the changes the Company is proposing in the Utah Cost Docket addressing collocation. During the workshops and hearings in that Docket, certain concerns were raised regarding the entrance facility costs the Company was sponsoring in that Docket. To address these concerns the Company made the above modifications to its studies. I am proposing these same modifications in this proceeding.

Q. WHY DID THE COMPANY'S ORIGINAL STUDIES INCLUDE THE COST OF PLACING A MANHOLE THAT WAS DEDICATED TO PROVIDING COLLOCATION?

A. Due to concerns regarding security and congestion in the primary manhole (i.e., manhole 0) serving as the point of entry to the large central offices, the Company decided that a separate utility hole dedicated to collocation was advisable. This can be considered the Point of Interface (POI). Most of the early collocation jobs included the cost of building these manholes. As collocation requests spread to smaller suburban offices, this policy was

revised to support only placing such manholes when congestion in the network absolutely required the placement of a new manhole. As the Company's construction practices evolved, the study was revised to reflect these changes. For example, the studies were revised to reflect a reduction in the percentage of jobs in which a new manhole was required. In the Utah proceeding, the Company, in response to continued concern regarding the use of dedicated manholes, reduced the percentage weighting of the POI from 60% to 10%. I am adopting this change in this proceeding.

Q. HAVE YOU PROVIDED AN EXHIBIT IDENTIFYING THE IMPACT OF THESE CHANGES ON THE ENTRANCE FACILITY COSTS YOU ARE PROPOSING IN THIS PROCEEDING?

A. Yes. Exhibit 2 to this testimony identifies the impact of revising all Entrance Facility costs the Company is sponsoring to reflect the changes I am proposing in this testimony.

Q. WHAT IS THE IMPACT OF PROPOSED CHANGES TO THE ENTRANCE FACILITY COSTS?

A. The sum of the proposed changes to the collocation study reduces the nonrecurring direct costs for the Standard Entrance Facility from $934.46 to $474.60 and the nonrecurring costs for the Cross Connection Entrance Facility from $1,256.74 to $555.77. Due to the increase in distances associated with the POI and MH1, the nonrecurring direct costs for the Express Fiber Entrance Facility are increased from $6,657.09 to $6,951.92. There is a corresponding reduction in the recurring costs for these facilities.

Contractor Labor Ratio

Q. DID MR. DUNKEL EXPRESS CONCERNS REGARDING THE COMPANY'S USE OF CONTRACTOR LABOR IN CONSTRUCTING COLLOCATION FACILITIES?

A. Mr. Dunkel noted that the use of contractor labor increased the costs produced by the model. Qwest does not dispute this fact. He then argues that the use of contractor labor does not reflect the costs an efficient provider would incur to construct these facilities.

Q. DO YOU AGREE WITH MR. DUNKEL THAT THE USE OF CONTRACTOR LABOR IS AN INEFFICIENT MEANS OF MEETING A COMPANY'S RESOURCE REQUIREMENTS?

A. No. Every major corporation in the country has employed outside contractors. In virtually every instance, the cost of using outside contractor labor exceeds the costs that would have been incurred if the function had been performed internally by company employees. Based on his assertion in this case, Mr. Dunkel would contend that any entity that employs the services of an outside contractor is inefficient. It is ironic for a contractor, such as Mr. Dunkel, to claim that the use of outside contractor services is the sign of an inefficient operation.

Q. WHAT WOULD JUSTIFY THE USE OF OUSIDE CONTRACTORS' SERVICES?

A. There are numerous legitimate circumstances that justify the use of contractor services. Two of the primary reasons firms employ outside contractors are:

1. A firm requires a special expertise that is not readily or sufficiently available in its current work force; and
2. A firm is faced with unanticipated or fluctuating resource requirements.

Both of these factors play a role in Qwest's use of outside contractor services in constructing collocation facilities. The more variable the demand for a specific expertise, the greater the possibility that the use of external contractors can be justified. If the demand for resources varies significantly between periods, firms frequently find that it is more economical to meet this demand through the use of contract labor as opposed to hiring additional employees. The unit cost of hiring outside contractors during peak resource requirements can be more than offset by the ability to avoid the carrying costs of an internal employee during down cycles. The ability to control fluctuations in workload is the key to minimizing those instances where it is advisable to use outside contractors. The more variable and uncontrollable the workload, the greater the probability that the use of outside contractors can be justified.

Q. WHY IS IT REASONABLE FOR QWEST TO USE OUTSIDE CONTRACTORS TO MEET ITS COLLOCATION COMMITMENTS?

A. Qwest has little or no control over the level or the timing of the demand for new collocation facilities. There are no limits to the timing or volume of CLEC's requests for collocation. Qwest must meet all demands for collocation within the limited timeframe required by the contract. Many of

these time commitments were set by Commissions trying to protect the CLECs ability to quickly enter the market. There is no latitude in these performance requirements to redistribute or levelize the workload. Requests for collocation have varied dramatically between selected periods and locations. Constructing central office facilities requires an expertise that must be developed over time. For these reasons, Qwest has determined that the use of contract labor to meet demand fluctuations across the region is justified.

Q. HAVE YOU PREPARED AN EXHIBIT ILLUSTRATING THE LARGE FLUCTUATIONS IN DEMAND FOR COLLOCATION FACILITIES OVER TIME?

A. Yes. Exhibit 3 to my testimony shows Arizona collocation requests by month since January of 1999. As illustrated by this Exhibit, collocation requirements fluctuate significantly between periods. This is typical of the type of demand fluctuations that justify the use of contract labor.

Relationship Between the Quote Preparation Fee and Engineering

Q. DOES MR. LATHROP ARGUE THAT CHARGING THE QUOTE PREPARATION FEE AND THE ENGINEERING CHARGE WILL RESULT IN A "DOUBLE RECOVERY"?

A. Yes. On page 45 of Mr. Lathrop's testimony, he indicates that there may be an overlap between the engineering costs included in the Company's Space Construction Charge and the Quote Preparation Fee (QPF). Mr. Lathrop is correct in his express concern that these two elements include some of the

same engineering costs. The engineering charges included in the Space Construction calculation include all engineering costs incurred to construct the collocation facility including the preliminary engineering included in the calculation of the Quote Preparation Fee. Assessing both these charges on a collocation job would result in "double recovery" of these preliminary engineering charges.

Q. WHY IS THE COMPANY PROPOSING CHARGES THAT RESULT IN DOUBLE RECOVERY OF CERTAIN ENGINEERING FUNCTIONS?

A. The Company is not proposing to seek double recovery of these costs. The Qwest sponsored cost study was originally compiled under the assumption that the QPF would be credited against the Space Construction Charge, once the CLEC determined that it did wish to accept the terms of the collocation. Qwest would recommend, assuming the Commission adopts Qwest's cost studies, that the Commission adopt its proposal to credit the QPF against the Space Construction Charge.

Q. ARE THERE ANY OTHER OPTIONS THIS COMMISSION COULD USE TO ENSURE THAT THERE IS NO DOUBLE RECOVERY OF THESE COSTS?

A. Yes. The Commission could decide to have Qwest reduce the Space Construction Charge by the amount of engineering costs contained in the QPF. Based on the revised studies attached to my testimony, the Quote Preparation Fee includes $2619 of preliminary engineering costs. Fully loaded these costs would equate to a $3630 reduction to the Space Construction Charge proposed by the Company in this proceeding.

Q. IS QWEST OFFERING A TWO BAY MINIMUM, CAGELESS COLLOCATION SPACE?

A. No. Mr. Farrar is wrong when he suggests on page 31 that Qwest insists that collocators order at least 2 bays of cageless collocation. In discussions with CLECs, most collocators required at least two bays. Thus, Qwest initially priced out a charge building two bays. After collocators and the FCC demanded a one bay configuration, Qwest developed a credit against the two bay charge when a collocator orders one bay. This credit is equal to the charge for an additional bay. This credit is not 50% of the one bay charge, because many of the costs of building cageless collocation do not vary with number of bays.

Q. ARE YOU PROPOSING ANY ADDITIONAL CHANGES TO THE COLLOCATION STUDY THE COMPANY IS SPONSORING IN THIS PROCEEDING?

A. No.

B. General

Current Costs are the Best Basis for Projecting Future Costs

Q. WHY DID YOU BASE YOUR STUDY ON THE ACTUAL COSTS THE COMPANY IS INCURRING TO BUILD COLLOCATION FACILITIES?

A. A projection of the future should always be predicated on knowledge of the past. This is particularly true if there is a close proximity between the recent history and the period being projected. Collocation was virtually nonexistent five years ago when the Act was passed. All of the costs incurred to provide collocation can be identified from recently completed jobs. As AT&T stated in its brief before the Supreme court, TELRIC is designed to replicate the cost a company would incur to replace its existing facilities. Obviously, the best estimate of the cost to replace facilities that were constructed in the last five years should bear some resemblance to the cost originally incurred to place the facilities. Any other assumption would be contrary to standard forecasting techniques. In its brief before the Supreme Court in AT&T versus Iowa Utilities Board, AT&T acknowledged that TELRIC is the best estimate of the costs a company will incur in the future to provide access to its facilities.

Q. DOES THAT IMPLY THAT ALL COSTS INCURRED IN THE PAST SHOULD BE INCLUDED IN THE PROJECTION OF A THE FUTURE COST A COMPANY WILL INCUR TO PROVIDE ACCESS TO ITS FACILITIES?

A. No. Circumstances change over time. Any proper TELRIC model should be adjusted to reflect reasonable estimates of changes to the studies inputs and assumptions. Qwest has made numerous revisions to its collocation model to include changes in inputs and assumptions that have occurred subsequent to the development of the original study. Any TELRIC study should be updated to reflect changes in the cost of inputs and best practice construction procedures. No study should ignore costs incurred yesterday

when trying to estimate the costs that will be incurred tomorrow for performing the same function.

Recurring versus Nonrecurring Charges for Collocation Facilities

Q. DO THE JOINT INTERVENORS ARGUE THAT MANY OF THE COLLOCATION COSTS SHOULD BE RECOVERED OVER TIME THROUGH RECURRING CHARGES?

A. Yes. Numerous witnesses for the joint intervenors recommend the use of a recurring cost structure for recovering a large portion of the costs that Qwest incurs in providing collocation. For example, Mr. Lathrop argues that "Qwest developed a nonrecurring charge using investments in shared and reusable assets that should be recovered through recurring charges." (Pg. 38) He goes on to state that the only criteria Qwest uses in determining if the cost of a facility should be recurring is whether the facility "is <u>shared immediately</u> with Qwest." He then asserts that another collocator can reuse many of the facilities Qwest constructs for a particular collocator if they are abandoned. He goes on to argue that allowing Qwest to recover the cost of the facilities through nonrecurring charges would result in "multiple" recovery of the costs as collocator after collocator are charged for the use of the same assets. (Pg. 39) Other joint intervenor witnesses echo Mr. Lathrop's arguments.

Q. DO YOU AGREE WITH THE POSITION TAKEN BY THE JOINT INTERVENORS REGARDING THE USE OF NONRECURRING COSTS?

A. No. There is no reasonable argument for the recovery of nonrecurring collocation costs through recurring charges. In fact, requiring Qwest to recover the nonrecurring cost of installing collocation equipment through a recurring charge will, in all probability, preclude Qwest from ever recovering many of these costs, a direct violation of the Telecommunications Act of 1996 and the FCC policy.

Q. DID QWEST DETERMINE THAT A NONRECURRING CHARGE WAS APPROPRIATE BASED SOLELY ON WHETHER THE FACILITY COULD BE "SHARED IMMEDIATELY" BY QWEST?

A. No. Qwest used a three-part criterion for determining whether a particular cost incurred in providing collocation would be recovered through a non-recurring charge:

1. The facilities must have been constructed solely for the use of collocators;
2. The cost of the facilities must have been incurred at the time the collocation arrangement was established; and
3. The facilities were not required for the provision of any of Qwest's services.

Many of the costs Qwest incurred in constructing collocation facilities for the CLEC's did not qualify for nonrecurring treatment under this standard. Exhibit 4 of this testimony illustrates this point. Column I of this exhibit identifies the total average cost Qwest incurred to build the 41 collocation arrangements that form the basis of the Company's study. The top half of this exhibit identifies the costs that Qwest is requesting to recover through nonrecurring rates. The bottom half of this exhibit identifies those costs that

did not fit the Qwest criteria for nonrecurring treatment. Of the $90,593 average cost Qwest incurred to build these collocation arrangements, Qwest only charges for $84,938; and, only $47,558 or 56% qualified for nonrecurring treatment under the Qwest criteria. The remaining $37,378 or 44% of costs the Company is charging for in building these collocation spaces was built into the recurring costs the Company is proposing in this proceeding.

Q. WOULD THE CRITERIA MR. LATHROP CLAIMS THE COMPANY USED TO DETERMINE IF A COST WAS NONRECURRING RESULT IN THE SAME CLASSIFICATION OF COSTS THAT YOU DISCRIBE ABOVE?

A. Absolutely not. Under the criteria Mr. Lathrop claims was used by the Company virtually all these costs would have qualified for nonrecurring treatment. None of the facilities constructed for these jobs were "shared immediately" by Qwest. For instance, some jobs required the placement of a new battery distribution fuse bay. A battery distribution fuse board (BDFB) is a small power board used to divide the large power feeds originating from the power plant into the smaller power feeds required to power electronic equipment throughout the central office. These BDFBs were placed for the sole purpose of meeting the collocators' power requirements. Qwest, using the criteria identified above, determined that these costs should be recovered through recurring charges. Using Mr. Lathrop's supposed Qwest criteria, the costs would have been included in the calculation of the Company's nonrecurring charges.

Q. PLEASE DESCRIBE THE PROPER APPROACH FOR APPLYING THE REUSE CONCEPT IN RECOVERING COLLOCATION COSTS.

A. The answer to the question of reuse and the recovery mechanism for costs incurred to provide collocation should be based on whether the equipment will be reused. There are two aspects of reuse that must be considered in determining the means by which a cost should be recovered. First, it must be determined whether Qwest will reuse the collocation equipment in the provision of service to its customers. Second, it must be determined that Qwest can be assured that the equipment will be reused by another collocator.

Q. IS COLLOCATION EQUIPMENT REUSABLE BY QWEST?

A. As discussed above, some equipment used to provide collocation can be reused by Qwest if it is abandoned by the collocator. If equipment is shared between collocators and Qwest, then Qwest can generally reuse the equipment, and the costs of the equipment should be recovered on a recurring basis. For example, Entrance Facility cable racking between the cable vault and the fiber distribution panel (FDP) is shared between Qwest and collocators. The cost of this shared equipment can be reused by Qwest, and therefore, is recovered on a recurring basis.

Q. ARE THERE COLLOCATION FACILITIES THAT THE COMPANY WILL NEVER REUSE IN PROVIDING ITS OWN SERVICES?

A. Yes.. There is a low probability that Qwest will reuse the facilities it builds for the exclusive use of one or more collocators. These costs should be recovered through nonrecurring charges. For example, Qwest will never

reuse cages constructed for collocators. Similarly, Qwest has no alternative use for the DC power cables supplying the equipment located in a CLECs collocation space, since these cables often terminate in an area where none of Qwest's equipment is located. It is unlikely Qwest will take over space for its own use when it has set aside this space for CLECs. Qwest could be asked to move from that space at a later date to provide room for additional CLEC equipment. Therefore, Qwest has proposed that only the cost of those facilities dedicated to the use of collocators be recovered through nonrecurring charges. However, reuse and sale of the collocation space may mitigate some of this condition.

Q. WHY IS IT CRITICAL THAT THE COSTS OF EQUIPMENT DEDICATED TO CLECS BE RECOVERED ON A NONRECURRING BASIS?

A. The only means of reasonably insuring Qwest recovers the costs incurred to construct facilities dedicated to collocation is through the application of nonrecurring charges.

Q. IS IT POSSIBLE THAT SOME OF THE COLLOCATION FACILITIES USED BY ONE COMPANY WILL BE USED BY A SUBSEQUENT CLEC ONCE THEY ARE ABANDONED?

A. Yes. Collocation equipment that is not reused by Qwest <u>may</u> be reused by another CLEC and the first CLEC can recover some of its charges by transferring to another. However, Mr. Lathrop bases his argument on the assumption that collocation equipment abandoned by one CLEC will be used by another CLEC with the same requirements. There is simply no basis for assuming that all collocation equipment installed by Qwest will be

reused by another CLEC, if the first CLEC terminates its collocation arrangement. Mr. Lathrop assumes that all collocation cages (and other equipment) are fungible and will be reused by CLECs over time, as loops are reused by subsequent occupants in the dwelling they serve. He assumes when one CLEC moves out of a collocation cage, a new CLEC will move in to the cage and assume the existing arrangement.

Q. IS THIS A REASONABLE PROPOSITION?

A. No. There is simply no assurance that collocation cages (and other collocation equipment) will be reused by a new CLEC when the space is vacated by the original collocator. While some equipment may, in some cases be reused by another CLEC, there is no basis to assume that this will always be the case. In many cases, the equipment is likely to remain unused and eventually removed. In other cases, the collocation space may need significant alteration before a new CLEC would assume the space. There must be a reasonable assurance that collocation facilities will be reused before recurring charges can be used as a means of recovering these costs.

Q. IS THERE ANY EVIDENCE IN ARIZONA THAT COLLOCATION FACILITIES ARE REUSED ONCE THE ORIGINAL COLLOCATOR ABANDONS THEM?

A. No. In fact, the information that does exist indicates that abandoned collocation installations are not being reused. As noted in Mr. Kennedy's testimony, there have been 73 collocation cancellations in Arizona, of which only 11 of which have been assumed by a subsequent collocator. The fact

that subsequent collocators have reused only 15% of the abandoned collocation sites belies Mr. Lathrop's claim that in a vast majority of the cases collocation facilities will be reused.

Q. WHY MUST THIS COMMISSION INSURE THAT THE COLLOCATION FACILITIES WILL BE REUSED PRIOR TO ORDERING THE RECOVERY OF NONRECURRING COSTS THROUGH RECURRING RATES?

A. If the facilities will, as recent history has indicated, seldom be reused, Qwest would be denied recovery of costs it incurred in constructing the facilities. This would be a direct violation of the Act, which requires that incumbent LECs be compensated for the costs they incur in providing interconnection to their facilities. The use of nonrecurring charges for recovering costs directly and solely incurred for the provision of interconnection facilities, transfers all the investment risk associated with entering a new business from the CLEC to Qwest. If the CLEC abandons the facilities and they are not reused, Qwest suffers the loss.

Q. HAS THE FCC RECOGNIZED THE RISK ILECS ASSUME IF RECURRING CHARGES ARE USED TO RECOVER NONRECURRING INVESTMENTS?

A. Yes. In its Second Report and Order on Collocation in the Expanded Interconnection Docket, the FCC stated:

> To the extent that the equipment needed for expanded interconnection service is dedicated to a particular interconnector, we believe that requiring that interconnector to pay the full cost of the equipment up front is reasonable because LECs should not be forced to underwrite

the risk of investing in equipment dedicated to the interconnectors use, regardless of whether the equipment is reusable.[3]

However, the FCC does not require states to use nonrecurring charges as the basis for recovering nonrecurring costs. Instead the FCC, in its first Report and Order on interconnection, opined that states may spread the recovery of nonrecurring costs over a "reasonable period of time" if it can be assured that "any such reasonable arrangement would ensure that incumbent LECs are fully compensated for their nonrecurring costs." (Para 749) (emphasis added). In order to "ensure" Qwest recovers its costs, there must be some evidence that there is no risk to Qwest in deferring this cost recovery. The evidence indicates the risks to Qwest of deferring this recovery of these costs are both real and probable. Mr. Lathrop premises his whole recurring charge argument on a reuse assumption that he never defends nor substantiates. There is simply no basis for assuming that recurring collocation rates proposed by Mr. Lathrop will "ensure" that Qwest would be "fully compensated" for the costs it incurs in providing collocation.

Q. IS MR. LATHROP CORRECT IN STATING THAT THE USE OF NONRECURRING CHARGES FOR RECOVERING COLLOCATION COSTS WILL RESULT IN MULTIPLE RECOVERY OF THESE COSTS?

A. No. Mr. Lathrop argues that costs paid by the initial collocator will be subsequently charged to subsequent collocators that occupy the same facilities resulting in multiple recovery of these costs. Mr. Lathrop goes on to state that the Company has "no written procedures" for compensating the

[3] CC Docket No. 93-162, Second Report and Order, Released June 13, 1997, ¶33

original collocator for the subsequent use of these facilities by another collocator. (Pg. 40). The Company does have a written policy that compensates the original provider for the reuse of abandoned collocation facilities by a subsequent provider. The policy ensures that there will be no multiple recovery of the costs of erecting the facilities.

Q. IS QWEST PRESENTING THIS POLICY IN THIS PROCEEDING?

A. Yes. The Qwest "Collocation Change of Responsibility Policy" is contained as an exhibit to Mr. Kennedy's rebuttal testimony. This Policy states that the vacating and new co-providers can negotiate terms and conditions regarding the transfer of the collocation facilities. Section 8(a)(ii) of the Change of Responsibility policy states that "all interested Co-Providers shall directly contact the vacating Co-Provider to begin negotiations for the available space" and that "negotiations of the terms and conditions between the vacating Co-Provider and the new Co-Provider are the responsibility of the two parties." Thus, when a new collocator assumes the facilities constructed for a previous collocator, the two collocators can work out a financial arrangement that compensates the original collocator for some or all of the cost it incurred to originally establish the collocation. The Qwest "Collocation Cancellation" and "Collocation Decommissioning" policies, also, define terms under which a new collocator will reimburse a vacated collocator for the reuse of his collocation facilities. A description of these terms is contained in Section 8(a) of the Cancellation terms and conditions and Section 10(a) of the Decommissioning terms and conditions.

Q. IN THE EVENT COLLOCATION EQUIPMENT IS REUSED BY A SUBSEQUENT COLLOCATOR, WILL QWEST "DOUBLE RECOVER" THE COSTS OF THE COLLOCATION INSTALLATION?

A. No. With a Change of Responsibility, Qwest will not re-assess the nonrecurring charges already paid by the vacating collocator, as described in the policy. If a new collocator takes over a collocation installation from a CLEC that cancelled or decommissioned its collocation space, Qwest will assess the new CLEC's nonrecurring charges for the reuse of the equipment and refund those charges to the vacated CLEC. A description of these terms is contained in see Section 8(a) of the Cancellation terms and conditions and Section 10(a) of the Decommissioning terms and conditions.

C. Specific Collocation Cost Issues-Staff

Q. HAVE YOU ANALYZED THE STAFF TESTIMONY REGARDING COLLOCATION?

A. Yes. Mr. Dunkel disputes the fact that Qwest used actual costs in developing its cost model, based on his review of the labor costs included in the model. Then, he goes on to discuss his concerns with the following specific inputs and assumptions in the Qwest model:

1. He claims costs associated with the use of contract labor are excessive and do not reflect the actions of an efficient firm;
2. He finds that the block costs in the Qwest Sharing collocation are significantly larger than the block costs in the Qwest DSL study, concluding material prices in the model are overstated;

3. He finds that the Qwest sponsored Sharing collocation model includes costs for cable racking and aerial support that are not included in the Qwest DSL study;
4. He finds that a land and building factor and a power factor have been inappropriately applied to the direct cost associated with Line Sharing Collocation;
5. He determines that the depreciation factor for digital equipment has been used in the determination of the building rent charge in the Line Sharing Collocation study: and
6. He determines that Qwest used an overhead factor that was inconsistent with the Arizona Commission Order in the last Cost Docket.

Based on these claimed deficiencies in the Qwest model, Mr. Dunkel concludes that all collocation costs should be reduced by 58% unless the cost was "specifically otherwise addressed" in the testimony. He then goes on to recommend certain adjustments to specific cost elements.

Q. WHAT CONCERNS DO YOU HAVE WITH MR. DUNKELS ANALYSIS?

A. My primary concern with Mr. Dunkel's analysis is his conclusion. Mr. Dunkel identifies a few selected potential problems with the Company's models and then extrapolates these findings to an adjustment that is more than half the proposed costs. I will show that if all the problems he claims to have found in the model are corrected, the result of the corrections is a small fraction of the reduction proposed by Mr. Dunkel. It is not reasonable to extrapolate unsubstantiated adjustments to a collection of cost studies based on the analysis of one component of the cost study. I will show that

this extrapolation from an analysis of a small fragment of the study is unreasonable and a direct violation of the costing provisions of the Act.

The Use of Actual Costs in Developing the Collocation Model

Q. DO YOU AGREE WITH MR. DUNKEL'S ASSESSMENT THAT THE COSTS THE COMPANY SUBMITTED FOR COLLOCATION WERE NOT BASED ON ACTUAL JOB COSTS?

A. No. A large portion of the costs included in the study were based on actual receipts obtained from a study of 41 cageless collocation jobs. The costs for elements that were not installed on the 41 jobs studied were derived through a number of other means. In addition, the actual job costs have been modified over time to update assumptions and inputs for changes in company practices or new information on cost inputs.

Q. COULD YOU EXPLAIN THE PROCESS THE COMPANY USED TO DEVELOP ITS COLLOCATION MODEL?

A. The Company used a multi-step process in developing the collocation model. The first step was to identify all the cageless jobs that were completed and booked at the time the study was commenced. This process led to the selection of the 41 jobs that were studied. The Company then proceeded to gather all of the material, labor, and engineering receipts for each job. Each individual material item purchased on these jobs was loaded into spreadsheets and sorted by the collocation component to which they applied. For instance, all materials used in extending power cables to the collocation site were separated into a power cable category. Similarly,

the costs for cable racking, lighting, and aerial support were disaggregated into their respective categories. These spreadsheets identified the cost of each material item purchased and the amount purchased for the job. The cost for each piece of material was then calculated by dividing the sum of the total amount spent on each item for all 41 jobs by the total number of items purchased. The material prices for a majority of the items included in the study were based on these actual receipts.

Q. WERE COSTS FOR COMPONENTS OF THE MODEL OTHER THAN MATERIALS ALSO EXTRACTED FROM ACTUAL RECEIPTS?

A. Yes. The engineering and shipping charges were also taken directly from receipts for the jobs studied. However, labor costs were not derived directly from the receipts. The labor invoices for the jobs studied did not include sufficient detail to identify labor by cost element (e.g., power cable). In order to spread these costs to the individual components of collocation, the group used the actual contracted labor rates for the vendors that performed the construction to assign labor costs to the individual collocation components. The vendor price for installing a particular component of collocation was applied against the number of components placed to derive the labor costs for the jobs. The number of components placed was taken from the actual material receipts. The calculated labor was then compared to the actual invoiced labor receipts to assure the amount calculated was reasonable. This comparison is identified on Exhibit 4. The last row on this sheet identifies the average total receipts the Company incurred in constructing these 41 jobs. The second to last line shows the sum of the costs used in the Company study. The method the Company used to

calculate labor on these jobs was $3,168 less than the actual labor costs it incurred on the jobs. In other words, the calculated labor costs were within 91% of the invoiced labor costs for the jobs. The Company determined this was a reasonable variance and proceeded with the study.

Q. WHY DID YOU CALCULATE THE LABOR COSTS BASED ON VENDOR AS OPPOSED TO INTERNAL LABOR?

A. The vast majority of the jobs in the sample were constructed using outside vendor labor, so the initial analysis required using a high level of vendor sources.

Q. DO YOU BELIEVE IT IS REASONABLE TO ASSUME THE USE OF 100 PERCENT OUTSIDE VENDOR LABOR IN DEVELOPING THE COLLOCATION COST MODEL?

A. No. The Company model does not assume that outside vendor labor will be used to construct 100% of the collocation facilities. As Mr. Dunkel noted, the original model assumed 25 percent of all jobs would be constructed by internal company labor. We have since revised this assumption to reflect the use of internal labor 50 percent of the time. This effectively reduces the labor rate to an average of internal and external rates. The original filing of the Collocation Model (Study ID #4694) reflected this revision. This is an example of how the study is modified to account for changes in processes and costs over time. Since the reduction in the number of collocation job requests, internal personnel have been able to construct a growing portion of the collocation jobs and the studies have been revised to reflect this fact.

Q. HOW WAS THE MODEL COMPILED FROM THIS EXTENSIVE STUDY?

A. The average of the data gathered from the 41 jobs was compiled into a study that reflected prices for the various elements of collocation. Those collocation elements not constructed in the 41 job sample were then modeled using the best available information. For instance, as would be expected, the 41 cageless collocation jobs did not include the cost of a cage. Therefore, cage costs were subsequently added in the development of the cage collocation study. The cage costs were derived from a study performed by an independent firm and modified slightly to reflect an analysis of cage construction price schedules submitted by 13 contractors. Other elements were added to the analysis as needed. This includes developing costs for new elements as they are defined. It should be noted that in developing the caged collocation cost study, certain assumptions were revised to reflect the difference between caged and cageless collocation. These changes included adding cable racking to extend across the top of the enclosure and adding cages, among other revisions. However, where possible, the actual costs from the cageless jobs were used to make these changes.

Q. HOW LONG DID IT TAKE THE COMPANY TO COMPILE THIS STUDY?

A. It took three people approximately three months to compile the information contained in the cageless study.

Q. HAS MR. DUNKEL IDENTIFIED SOME COSTS THAT WERE NOT DEVELOPED FROM THE ACTUAL COLLOCATION RECEIPTS?

A. Not really, though some costs in the model are not derived from actual collocation receipts. The specific rate he refers to in his testimony (at page 6, lines 7 – 15) is the labor rate listed in the power installation section of the collocation model. Based on a Qwest response to an ACC data request[4], Mr. Dunkel postulates that Qwest used a labor rate from a vendor that 'did not do any of the power and grounding feeder work' to calculate power installation costs within the collocation model. The calculations in the power show that the labor rate listed there (and referred to in the data request) is <u>not used</u> in any of the power installation cost calculations. This labor rate is a remnant of a previous version of the model and plays no role in the calculation of costs.

A vast majority of the material costs are derived directly from actual receipts. The labor costs, though not directly quantified on the receipts, were based on the actual vendor prices for each function performed and reconciled back to those sheets. The basis for the original study was actual job costs. However, the fact that some costs were acquired from other sources cannot be used to generalize that the studies do not include actual costs.

Comparisons Between the Line Sharing Study and Qwest's DSL Study

Q. WHY DOES MR. DUNKEL COMPARE THE COMPANY'S RETAIL DSL AND LINE SHARING COLLOCATION STUDIES?

[4] ACC Request WD 06-148

A. Mr. Dunkel compares the two studies to determine whether the costs Qwest includes in its own retail models are similar to the costs it has included in the Line Sharing Collocation. He finds that the cost of Type 89 blocks of $85.46 included in Qwest's current Line Sharing Collocation study is significantly greater than the $44.00 cost for this item in its retail DSL study. He also finds that certain facilities included in the Line Sharing Collocation study are not incorporated into its retail DSL cost study. The facilities he identifies as being omitted from the DSL study include cable racking, and the aerial support structure holding the racking and lighting. Based on this analysis he concludes that a significant portion the costs of Line Sharing Collocation are unnecessary.

Q. DO YOU AGREE WITH THE CONCLUSIONS MR. DUNKEL MAKES BASED ON THIS COMPARISON?

A. No. First, he compares a Line Sharing Collocation study that was developed last year to a DSL study that was filed with the FCC in early 1999. It would have been difficult to have incorporated costs from the Line Sharing Collocation study which was begun in 2000, into a DSL retail study that was filed a year before with the FCC. What Mr. Dunkel has identified is that over time the Company has changed its studies to reflect better and more current information. In 1996 and 1997, Qwest used the same block costs in both its CLEC collocation and DSL studies. However, since that period, the CLEC collocation study has gone through numerous revisions. The retail DSL study was never updated until May 30, 2001, when it was again filed with the FCC[5].

FCC ADSL 256 Megabit Filing, May 30, 2001

Q. DOES THE NEW STUDY INCLUDE A CABLE RACKING CHARGE?

A. Yes. There is a charge for cable racking of $31.10 per customer. This charge includes the cost of the aerial support structure.

Q. WHAT IS THE COST FOR 89 BLOCKS IN THE NEW STUDY?

A. The cost for 89 blocks in the new study is $85.46 the same cost that is included in the collocation cost study Qwest filed in this proceeding. Note that this cost was based on the receipts for the 41 jobs the Company studied to develop the collocation model.

Q. IS THE NEW DSL COST STUDY BASED ON THE SAME ASSUMPTIONS AND INPUTS THAT WERE INCLUDED IN THE LINE SHARING STUDY?

A. Yes. The effort was made to make them consistent when appropriate. It should be noted that the Company's DSL offering does not include the use of a centrally located splitter. The splitter is combined with the DSLAM equipment in the same bay. This design difference would be comparable to the Line Sharing Option where the splitter is located in the collocation space of the CLEC and is charged nothing by Qwest for Line Sharing Collocation.

Vendor Labor

Q. DOES MR. DUNKEL DISPUTE THE COMPANY'S USE OF CONTRACT LABOR IN DEVELOPING ITS PROPOSED COSTS FOR COLLOCATION FACILITIES?

A. Yes. As I discussed above, Mr. Dunkel argues that the use of contract labor, which has a higher unit cost than internal labor, is the sign of an inefficient firm.

Q. DO YOU AGREE WITH MR. DUNKEL'S ASSESSMENT?

A. Absolutely not. Collocators, not the Company, control the timing and the number of facilities that must be constructed at any point in time. Contracts, with time frames that were established under the purview of Commissions, require that these facilities be constructed over relatively tight timeframes. As I have shown, demand for these facilities fluctuates significantly over time. The amount and timing of this construction is completely beyond the control of this Company. In such a scenario, the use of contract labor to meet large fluctuations in demand is not only an option it is the preferable option. No efficient firm would hire a workforce to meet the very peak demand for its services if that demand varies significantly over time. Such an approach would be inefficient in that many of these resources would be idle during periods of low demand. It would be patently unfair to adopt standards, such as construction timeframes, that limit a firms flexibility to control its workload while limiting the options the Company has to meet the resulting fluctuating resource requirements.

Q. DOES THE COMPANY ACTUALLY USE CONTRACT LABOR TO CONSTRUCT SOME OF THESE FACILITIES?

A. Yes. All 41 of the jobs studied included the use of contract labor. The study assumptions have been revised to reflect the use of this labor source only one half of the time which is more consistent with the current trend. No one has shown that the use of this labor source is either unreasonable or imprudent. Many factors must be assessed to make such a conclusion. Mr. Dunkel has performed no such analysis. The mere fluctuations in the workload over time indicate that the use of contract labor is a reasonable and efficient means of building these facilities. The final labor rate is an average of internal and external charges.

Land and Building Factor and Power Factor

Q. DO THE REMAINDER OF THE STUDIES THE COMPANY FILED IN THIS DOCKET INCLUDE SIMILAR LOADINGS?

A. No. The Line Sharing study, because it is new, was developed outside of the collocation model. New studies are compiled outside the model in order to expedite their development. Once completed they are, as time allows, built into the model. The collocation model does not apply these factors in developing the nonrecurring collocation charges. The Line Sharing charges have been revised to reflect this same practice. Ms. Gude has additional testimony on the development and application of factors in the Qwest cost studies that address this issue in more detail.

Depreciation Charges in Line Sharing Study

Q. DID THE COMPANY USE THE WRONG DEPRECIATION RATE IN THE RENTAL CALCULATION IN THE LINE SHARING STUDY AS MR. DUNKEL CLAIMS?

A. Yes. In the Line Sharing study the Company used the depreciation factor for digital equipment in calculating its Space Rent Charge. Mr. Dunkel is correct in this assessment.

Q. WAS THE SAME ERROR MADE IN THE DEVELOPMENT OF THE SPACE RENT CHARGE FOR OTHER FORMS OF COLLOCATION (I.E., CAGED AND CAGELESS COLLOCATION)

A. No. As with the power and building factor, this was an issue that was isolated to the Line Sharing study. The rental charge for both cageless and caged collocation applied the appropriate land and building depreciation rates.

Overhead Loadings

Q. WHAT WERE MR. DUNKEL'S CONCERNS REGARDING THE OVERHEAD LOADINGS IN THE COMPANY STUDY?

A. Mr. Dunkel compares the total expense loadings in the model to the overhead loadings this Commission ordered in the last Cost Docket and concludes that the Company's proposed expense loadings are excessive. He then replaces the Company's total expense loadings with the 15% Overhead Loading Factor adopted by this Commission in the last case to derive his proposed adjustment.

Q. WHAT PROBLEMS DO YOU HAVE WITH THIS ADJUSTMENT?

A. Mr. Dunkel replaces factors that are designed to recover a multitude of expenses with a Commission ordered factor that was designed to recover only a small portion of those costs. The overhead factor, adopted by this Commission in the last case, was designed to recover only overhead expenses. This factor was developed based on an analysis of the 6700 expense accounts. The 6700 expense accounts are designed to account for executive, human resources, accounting, research and development and other costs generally considered as overhead costs. Many costs the Company legitimately incurs are not reflected in these accounts. For example, the costs of running the network (i.e., Network Operations) are not reflected in this category of expenses. Similarly, the cost of the systems used to track and record network operations fall outside of this expense category. Numerous witnesses to this proceeding argue that advanced systems allow for the efficient design and operation of the network. Mr. Dunkel has removed all these systems costs from his collocation calculations. In replacing all of Qwest's expense loadings with the Commission ordered overhead factor, Mr. Dunkel eliminates numerous categories of legitimately incurred expenses without any explanation as to why they should be eliminated. He has completely misapplied the Overhead Loading Factor to inadvertently eliminate legitimate expenses from the model.

Q. IS MS. GUDE PROVIDING ADDITIONAL TESTIMONY ON THIS ISSUE?

A. Yes. Ms. Gude has a more detailed description of how the Commission ordered factor was developed and how Mr. Dunkel has misapplied this

factor. However, it is clear that the Commission developed this factor to account for a certain category of expenses. Mr. Dunkel misuses that factor, by using it as a replacement for all the expenses incurred by Qwest, most of which fall outside of the categories of expenses which the factor was designed to recover. Eliminating large categories of costs by the misapplication of a factor is not consistent with either TELRIC principles or the Act.

Mr. Dunkel's Super Adjustment

Q. HOW DOES MR. DUNKEL ADJUST THE COMPANY'S COST STUDIES TO ACCOUNT FOR THESE SUPPOSED DEFICIENCIES?

A. Mr. Dunkel uses his analysis of the Line Sharing collocation study to come to the conclusion that all studies in the model overstate the direct cost of constructing collocation facilities by 50 percent. He then uses his misapplication of the Commission Ordered overhead factor to recommend an overall reduction in the total collocation costs proposed by the Company of 58 percent.

Q. IS MR. DUNKEL'S ADJUSTMENT REASONABLE?

A. Absolutely not. Mr. Dunkel bases his collocation adjustment on an analysis of one small component of the total collocation elements proposed by the Company in this proceeding. The Line Sharing study calculates the costs for a relatively minor collocation element. With the exception of his recommendation to eliminate contractor labor, all of his proposed adjustments to the model are directed to the Line Sharing study. Many of

these adjustments are to correct errors that are in that specific study. Few of his adjustments have any relationship to many of the components to the much larger caged and cageless collocation studies. For instance, there are no power elements (i.e., power cable and DC power supply) in the Line Sharing study, yet, Mr. Dunkel uses his analysis of this Line Sharing study to recommend a 58 percent reduction in these power costs.

Other elements contained in the caged and cageless collocation studies but not in the Line Sharing study reviewed by Mr. Dunkel include: cages; the termination cables that connect the collocator's cage to the Qwest network; and the entrance facilities that connect the collocation space to the collocator's facilities outside of the office. Mr. Dunkel's testimony does not even comment on the existence of these elements and yet he recommends reducing the cost for these elements by 58 percent. Mr. Dunkel's proposed collocation adjustment is unreasonable and results in a direct violation of the pricing requirements of the Act. Using a limited analysis to recommend large, unsubstantiated adjustments to studies never even discussed in his testimony is completely arbitrary and contrary to the FCC's TELRIC rules.

Q. HAVE YOU DONE AN ANALYSIS OF THE IMPACT MR. DUNKEL'S SPECIFIC ASSUMPTION AND INPUT RECOMMENDATIONS WOULD HAVE ON THE COLLOCATION COSTS THE COMPANY IS PROPOSING IN THIS PROCEEDING?

A. Yes. Exhibit 5 to my testimony compares the directly incurred costs included in the Company's original filing to those same costs adjusted for every specific finding contained in Mr. Dunkel's testimony. It should be noted that the adjustments I have made to these direct costs are the same adjustments Mr. Dunkel used to justify his 50 percent reduction to the direct costs in the study. Note that this analysis only addresses the 50 percent reduction in direct costs that Mr. Dunkel proposes. The remainder of the 58 percent overall reduction in cost he proposes is related to the misapplication of the overhead factor as discussed in Ms. Gude's testimony. Adjusting each study for every specific cost finding in Mr. Dunkel's testimony results in a cost reduction of anywhere from 0 to 70 percent. The weighted average reduction to all of the elements is 10%. The percentage adjustments identified in the far right column of this exhibit, includes removing all cable racking and aerial support structure from the calculation of the cage and cageless Space Construction Charges. As discussed above, Mr. Dunkel argues for the elimination of these charges based on a comparison of an old DSL study to a new collocation study. The new DSL study includes charges for these structures. Reducing the cost of these structures in the cost of Space Construction increases adjustments proposed by Mr. Dunkel 13 percent for Cageless Collocation Space Construction and 17 percent for Caged Collocation Space Construction. The Commission should not adopt a large unsubstantiated and unquantifiable adjustment to the Company's cost studies based on specific recommendations that have no relationship to the level of the adjustment being proposed. Mr. Dunkel's proposed reduction to the direct

cost of all collocation cost elements has no relationship to his specific findings regarding these studies.

Q. HOW SHOULD THIS COMMISSION SET COLLOCATION PRICES IN THIS PROCEEDING?

A. This Commission should determine collocation costs through a process of analyzing the specific assumptions and inputs to the model. A decision should be made regarding each input or assumption. The adjustment to the cost of the collocation elements should be based on the impact of applying that specific assumption or input change. Adjustments to the collocation prices proposed by the Company should not be based on unquantifiable guesses that have no relationship to the specific findings upon which they are based.

D. Specific Collocation Cost Issues-Joint Intervenors

Quote Preparation Fee

Q. DOES MR. LATHROP RECOMMEND REVISING THE COSTS FOR THE QUOTE PREPARATION FEE?

A. Yes. Mr. Lathrop argues that the Quote Preparation Fee (QPF) proposed by Qwest is excessive and could be duplicative of the engineering functions contained in the Space Construction Charge. Mr. Lathrop's concerns that the engineering costs in the Quote Preparation Fee are duplicative of the engineering costs contained in the Space Construction Charge are identical

to the potential "double recovery" concerns of Mr. Dunkel discussed above. Mr. Knowles, on the other hand, acknowledges the Company's position regarding the Quote Preparation Fee when he stated: "If a contract has provisions to collect and retain a Quote Preparation Fee, that fee would be deducted from the construction charge" (Pg. 12) This position is totally consistent with the Company position I reiterated previously in this testimony.

Q. DOES MR. KNOWLES HAVE OTHER CONCERNS REGARDING THE CALCULATION OF THE QUOTE PREPARATION FEE?

A. Yes. Mr. Knowles argues that the Company provided absolutely no backup for this cost except "a single cost figure, without any explanation of how that figure was calculated..". (Pg. 12) Mr. Lathrop on the other hand, proposes specific changes to the Qwest study developing these costs. The Company's calculation of the QPF charge, including all assumptions and inputs, was specifically laid out in its nonrecurring cost model. Obviously, these assumptions and inputs should be evaluated based on their merits in this proceeding. However, claims that the Company provided no study are unfounded, and should be disregarded.

Q. HOW DO YOU ADDRESS THE JOINT INTERVENORS' CLAIMS THAT THE COSTS PROPOSED BY QWEST ARE OVERSTATED?

A. The QPF proposed by Qwest, was developed based on the time estimates of Company personnel involved in the processing of these quotes. Each task was identified and assigned time requirements. Current labor rates were then applied to the estimated times to derive the estimated costs for

performing these functions. Mr. Lathrop has proposed a different set of time estimates to certain tasks required in performing these functions. Qwest used the best estimates of engineers involved in the actual collocation process. Mr. Knowles relies on his own judgement. The level of these charges must be set to recover the cost of providing these functions. The Commission must determine which estimates best reflect these costs.

Q. WILL THE LEVEL OF THESE COSTS HAVE A SIGNIFICANT IMPACT ON CLECS EARNESTLY SEEKING TO COLLOCATE IN A QWEST CENTRAL OFFICE?

A. No. The level of the charges for the QPF will have little or no impact on a CLEC that is earnestly seeking to collocate in a Qwest central office. The Company proposes offsetting the QPF against the actual collocation job costs once the job is completed. A CLEC that enters into a collocation arrangement will pay the same amount regardless of the level of these charges. The QPF, under the Qwest proposal, only affects those companies that do not proceed with the purchase of a collocation site.

Q. IS MR. LATHROP CORRECT WHEN HE STATES THAT QWEST DID NOT PROVIDE BACKUP FOR QPF?

A. No. The file labeled ENRC4.xls contains this data. I have printed the Details Output tab of this worksheet and attached it as my Exhibit 6. This spreadsheet shows the individual functions performed in the preparation of quotes. A time estimate and the probability of occurrence for each function are detailed. The people supervising or performing the individual functions provided the data.

Q. HAVE YOU BEEN ABLE TO VERIFY MR. LATHROP'S CALCULATIONS THAT UNDERLIE HIS EXHIBITS AND WORKPAPERS?

A. No. At the time this testimony was being prepared Qwest had not received a response to its data request[6] to Mr. Lathrop for an electronic copy of all his model runs. Therefore, I have not been able to perform a detailed analysis of his actual calculations.

Q. WHAT IS ENRC4.XLS AND HOW DOES ONE GET ACCESS TO IT?

A. The ENRC4.XLS workbook is the TELRIC Non-Recurring Cost Model (ENRC). It is the CM module that calculates the direct costs of QPF. It multiplies work times by probabilities and labor rates for each QPF function to calculate the direct cost of each function. It then totals the direct costs for each function. The results of which are passed to the output of CM. To gain access to ENRC the CM must be installed on the users computer. Follow the directions on page 26 of the CM User Manual for opening the output workbook. When the output workbook opens, click the menu item Window and select ENRC4.

The Details Output tab of ENRC is described on page 20 of the ENRC User Manual. User manuals and all other documents associated with CM may be accessed by clicking the Help button on any of the user input screens. Then select the Contents tab for a list of the documents. Acrobat reader

[6] Qwest Corporation's First Set of Data Requests to the CLECs, number 2a.

must be installed on the user's computer. The user manuals and the other documentation can also be found on the CD provided with this filing. Search the CD for the Document folder.

Engineering Costs

Q. DOES MR. LATHROP'S PROPOSED COSTS ASSUME THAT THE QPF WILL BE REFUNDED?

A. No. Mr. Lathrop has estimated each of these costs independently. As he stated in his testimony, he had concerns whether these costs were "duplicative" of each other. He then goes on to give a separate estimate for each of these costs. There is nothing in his testimony that indicates his estimates include duplicative charges. If Mr. Lathrop's proposal is adopted, the QPF would not be credited against the costs for the remainder of the construction of the collocation site. Doing so would preclude Qwest of any recovery of these charges.

Q. HAVE YOU REVIEWED THE INTERVENOR TESTIMONY REGARDING THE ENGINEERING COSTS INCLUDED IN THE SPACE CONTRUCTION CHARGE THE COMPANY IS PROPOSING IN THIS DOCKET?

A. Yes. Mr. Lathrop and Mr. Knowles, both argue that these costs are unreasonable and should be reduced. Mr. Lathrop proposes to reduce the costs by fifty percent. Mr. Lathrop provides a cost from a Verizon study in Washington and then states that engineers in his company indicate that these costs should be no greater than $2,000. Both provide no further backup for their estimates or recommendations.

Q. HOW WERE THE ENGINEERING COSTS INCLUDED IN THE COMPANY SPONSORED COST MODEL DEVELOPED?

A. The engineering costs included in the Qwest Collocation Model are based on a study of 41 actual collocation jobs. The engineering costs for all 41 jobs were compiled from the actual job receipts, and contained in the tab marked "E. 2.1 & 3.1" in the collocation output spreadsheet. The total cost for all 41 jobs were identified; however, the costs associated with the two highest and two lowest cost jobs were not included in the calculation of the costs used in the model. The engineering cost per job is based on the average cost of the remaining 37 jobs. Thus, the Qwest proposed engineering costs are calculated using the actual costs Qwest has incurred in constructing collocation facilities. As stated above, costs currently being incurred to construct facilities is the proper basis for estimating the costs of constructing the facilities in the future.

Q. DOES MR. LATHROP AGREE WITH THE APPROACH QWEST USED TO DEVELOP ITS ENGINEERING COSTS?

A. No. Mr. Lathrop states that the vendor receipts do not include sufficient detail to insure that the tasks performed relate to the collocation job functions required to construct the collocation sites. Qwest has based the engineering costs included in its models on the receipts from actual collocation. The receipts for these costs are identified by job and listed on the "E. 2.1 & 3.1 Engineering" tab of the Collocation Model. Mr. Lathrop makes a few disparaging claims regarding these receipts and then

proceeds to arbitrarily reduce the engineering costs included in the Qwest model by 50%.

Q. DO YOU HAVE ANY COMMENTS REGARDING MR. KNOWLES' PROPOSAL TO USE THE ENGINEERING COSTS PROPOSED BY VERIZON IN THE WASHINGTON COST DOCKET?

A. Yes. Throughout his testimony, Mr. Knowles faults Qwest for using costs that are not specific to Arizona. Yet, in recommending alternatives to Qwest sponsored costs, he proposes using costs that are not reflective of either Qwest or Arizona located operations. In fact, in the Washington Docket to which Mr. Knowles refers, the Commission did not alter the Qwest proposed collocation cost structure to reflect these Verizon specific engineering costs.

Selecting specific costs from a collocation model sponsored by another company is a difficult proposition. The design of these models varies dramatically by company. For instance, the engineering charge Qwest is proposing in this Docket, as discussed above, includes the preliminary engineering the Company incurs in preparing the original quote. To my knowledge, no other company employs a similar cost design. It is also possible that certain companies include engineering costs in the costs for specific structures. The FCC, in its Second Report and Order on Collocation, recognized that it was difficult to compare models across ILECs, due to the structural differences in the various models[7].

[7] FCC Second Report and Order CC Docket 93-162, Released June 13, 1997, at Paragraph 131.

Clearly, Mr. Knowles' approach of isolating individual cost elements from cost models presented in other states is neither consistent with TELRIC principles, nor the cost requirements of the Act. Any such proposals must take into consideration the total design of the model to ensure all costs are appropriately recovered. Mr. Knowles has performed no such analysis.

HVAC and Electrical Distribution Costs

Q. HAVE YOU REVIEWED THE JOINT INTERVENORS' POSITION REGARDING THE HVAC AND ELECTRICAL DISTRIBUTION COSTS THE COMPANY INCLUDES IN ITS SPACE CONSTRUCTION CHARGE?

A. Mr. Lathrop claims that Qwest has "double counted" by including the cost of the HVAC (i.e., office heating and cooling) system and electrical distribution costs in the calculation of both the space rental rate and the Space Construction Charge. Again, Qwest is confronted with numerous claims of "duplicative" charges. Based on this analysis, Mr. Lathrop recommends removing these costs from the study.

Q. COULD YOU GIVE A BRIEF DESCRIPTION OF HOW THE STUDIES PROPOSED BY THE COMPANY ACCOUNT FOR HVAC AND ELECTRICAL COSTS?

A. Yes. HVAC and AC electrical costs are divided between two elements in the Company's studies:

1. The building rental rate; and
2. The Space Construction Charge.

It should be noted that the electrical costs Mr. Lathrop is referring to in this segment of his testimony are related to the AC power network. DC power, which is discussed below, is used to power telecommunications equipment. Most other equipment is designed to use AC power, the form of power that is generated by the power companies. AC power is used to power most equipment and appliances that are not specifically designed for deployment in the telecommunications network.

Q. HOW HAS QWEST DISSAGREGATED THESE COSTS BETWEEN THE TWO RATE ELEMENTS?

A. HVAC is the system that is used to heat or cool the office to insure that the telecommunications equipment functions properly. It consists of a centralized heating and cooling facility and ducts that distribute the air throughout the building. The AC electrical network consists primarily of the wires and outlets that provide access to AC power throughout the office. For purposes of the study, these costs were disaggregated between the central systems that serve the whole office and the facilities that distribute the warm and cool air and AC power throughout the office. Costs for the centralized systems were included in the calculation of the rent charge. The distribution network was included in the cost of the space construction for physical collocation.

Q. IS MR. LATHROP CORRECT IN HIS ASSESSMENT THAT THE RENT CHARGE INCLUDES HVAC AND ELECTRICAL COSTS THAT ARE INCLUDED IN THE SPACE CONSTRUCTION CHARGE?

A. No. A specific adjustment was made to the building rent calculation to remove the cost of the HVAC and electrical distribution systems. Mr. Dunkel discusses this adjustment when he states Qwest "then backed out certain costs for electrical and air conditioning." He goes on to state that the Company then includes a specific charge for these elements in its Space Construction Charge. Mr. Dunkel goes on to argue that the two adjustments are not offsetting in that the level of costs removed from one study are less than the costs included in the second. Despite this criticism, the Company did make specific provisions to insure these costs were not "double counted."

Q. WHAT IS YOUR CONCLUSION IN REGARDS TO MR. LATHROP'S PROPOSED TREATMENT OF THE HVAC AND ELECTRICAL DISTRIBUTION COSTS IN THIS PROCEEDING?

A. In his efforts to eliminate a supposed duplication of costs between studies, Mr. Lathrop has insured that the Company will receive no recovery of HVAC and electrical distribution costs. He removes the same costs from the Space Construction Charge that the Company previously removed from the calculation of the rent charge, insuring that these costs will never be recovered. Denying recovery of a legitimate cost a company must incur to provide collocation is a direct violation of the cost provisions of the 1996 Telecommunications Act.

Q. DO YOU AGREE WITH MR. DUNKEL'S ASSESSMENT THAT THE HVAC AND ELECTRICAL DISTRIBUTION COSTS THE COMPANY INCLUDES IN ITS SPACE CONSTRUCTION ARE EXCESSIVE?

A. No. Mr. Dunkel compares the average per foot cost for placing these distribution systems in a normal office to a specific estimate of the cost that would be incurred to extend these networks to a particular location in the office. It is normal that a specific cost estimate will vary from an average cost for an office that is developed on a per foot basis. Both are useful in certain circumstances, however, seldom will they produce the same exact cost.

Q. DO YOU AGREE WITH MR. DUNKEL'S APPROACH OF BUILDING THE COST OF THESE NETWORKS INTO THE RENTAL RATE FOR FLOOR SPACE?

A. No. Every cage requires electrical outlets and access to the temperature control system. Extending these networks to these cages is most appropriately recovered through nonrecurring charges for the reasons I expressed previously in this testimony.

Entrance Facility

Q. HAVE THE INTERVENORS EXPRESSED SPECIFIC CONCERNS REGARDING QWEST'S PROPOSED COSTS FOR ITS ENTRANCE FACILITIES?

A. Yes. Mr. Lathrop and Mr. Knowles both argue that it is unreasonable to include the cost of a dedicated manhole in the calculation of the TELRIC price for this element. Mr. Knowles also criticizes the use of the assumption that the cost of certain facilities is spread over only three collocators.

Q. WHAT IS YOUR RESPONSE TO THESE CRITICISMS?

A. The majority of their concerns are addressed by the changes to the Entrance Facility costs I have proposed previously in this testimony. Although Qwest has in the past, and may in the future, constructed additional manholes to facilitate collocation, the Company is no longer seeking recovery of these costs in the Entrance Facility prices. This change addresses virtually all the concerns expressed by Mr. Lathrop in his analysis.

Q. WHAT HAVE YOU DONE TO ADDRESS MR. KNOWLES' CONCERN THAT THERE ARE SEVEN COLLOCATORS PER OFFICE AS OPPOSED TO THE THREE ASSUMED IN THE QWEST MODEL?

A. Removing the manhole costs from the study largely mitigated his concern. Most of the costs that were distributed using the three-collocator assumption were removed from the study through this adjustment. However, throughout his analysis, Mr. Knowles continues to refer to the assumption that there are three collocators in each office as being contrary to the Company's actual experiences in Arizona. Mr. Knowles is basically misrepresenting the Company's position and the assumptions underlying the Qwest sponsored cost models. Qwest's studies were constructed using the assumption that there are on average three cageless and three caged collocations in every office. Thus, the Company sponsored collocation model assumes that there will be, on average, six collocators per office. The assumption that there will be six collocators per office is basically consistent with the average of seven collocators per office frequently cited by Mr. Knowles.

Q. WHY DOES MR. KNOWLES ARGUE THAT THE COMPANY HAS ONLY MODELED THREE COLLOCATORS PER OFFICE?

A. In many instances, the cost model spreads the cost associated with building out a collocation area over three collocators. This distribution of costs is completely consistent with the assumption of six collocations per office - three caged and three cageless. Caged and cageless collocations have significantly different characteristics, such as space requirements. For this reason, they are generally located in separate areas of the central office. Facilities built to serve cageless collocations can seldom serve the caged facilities located in a different area in the office. The Company's model reflects this fact by correctly assigning costs related to cageless collocation to the number of cageless collocations in the office. Conversely, costs associated with caged collocations are assigned based on the number of caged collocations in the office. Costs incurred to accommodate a particular type of collocation are recovered from providers that opt for that form of collocation.

Q. WHY DID THE COMPANY ASSIGN ENTRANCE FACILITY COSTS TO ONLY THREE COLLOCATIONS WHEN THESE FACILITIES CAN SERVE ALL TYPES OF COLLOCATION?

A. Obviously, the facilities used to provide cable access to a central office are available for use by all collocators in that office. However, only collocators who have their own switch POPs use entrance facilities to access their collocation site. In fact, of the 41 cageless collocations jobs studied by the Company to develop its collocation model, not one requested the use of an entrance facility. Based on this study, the Company determined that, for

1 the purposes of developing the cost study, approximately half the
2 collocators in the office would purchase entrance facilities.
3
4 **Q. WOULD YOU HAVE ANY CONCERNS WITH A COMMISION**
5 **REQUIREMENT THAT THE STUDY REFLECT THE ARIZONA AVERAGE**
6 **OF SEVEN COLLOCATORS PER OFFICE AS OPPOSED TO THE SIX**
7 **CONTAINED IN THE COMPANY MODEL?**
8 A. No. However, the Commission must specify the type of collocation it wants
9 to include. The assumptions apply separately to caged and cageless
10 collocation jobs. Any changes to the assumptions must reflect the type of
11 collocation to which it applies.
12
13 **Q. DO YOU HAVE ANY OTHER CONCERNS WITH THE PARTIES'**
14 **RECOMMENDATIONS?**
15 A. Yes. Similar to my concerns with Mr. Dunkel's recommendation, throughout
16 the joint collocators' testimony, they identify what they claim are specific
17 faults with the Company's inputs and assumptions. Rather than modify the
18 model inputs to correct this perceived error, they adjust all costs in the study
19 by some high level unsupported factor. For instance, in regards to entrance
20 facilities, Mr. Lathrop's testimony focuses on a single assumption in the
21 study. He states that including the cost of a dedicated manhole in the study
22 cannot be justified. Mr. Lathrop could have recommended that the
23 dedicated manhole cost be eliminated. Instead, Mr. Lathrop recommends
24 reducing all elements of the study by 33%. This reduction is applied to
25 among other items, the fiber cable connecting the collocation site to the
26 Company's cables outside the office. Not one witness stated a concern

with the cost of these specific cables. Mr. Lathrop adjusts the cost of these cables without identifying a single concern with the assumptions and inputs used to develop these costs. Specific criticisms should be accompanied by specific adjustments. A specific criticism should not be used as the basis for large, unsubstantiated and arbitrary adjustments.

Power Cable

Q. DID MR. LATHROP PROPOSE ANY SPECIFIC CHANGES TO THE COMPANY'S CALCULATION OF POWER CABLE COSTS?

A. Yes. Mr. Lathrop recommends that the cost for power cable in the Company study be replaced by an average of similar cable costs from the RS Means and Cobra Cable and Wire manuals. He states these costs are "several percent" (for power cable) to fifteen percent (for ground cable) lower than the costs for these same cables in the Qwest sponsored costs models. The power cable costs used in the Qwest study were taken directly from the actual receipts for the 41 jobs Qwest studied in compiling its model. The actual verifiable costs of the cables used in constructing a particular facility is a better gauge of the cost a company incurs than a price list in a manual.

Q. DID MR. KNOWLES HAVE ANY CRITICISMS OF THE COMPANY'S CALCULATION OF POWER CABLE COSTS?

A. Yes. Mr. Knowles again criticizes the lack of Arizona specific data in Qwest's development of the power cable cost. He then proceeds on a discussion of power cable lengths in Washington, assuming again that they

are indicative of Arizona's. Obviously I disagree with another of Mr. Knowles quantum leaps in logic.

Q. HAVE YOU PREPARED AN EXHIBIT IDENTIFYING THE ACTUAL POWER CABLE LENGTHS FOR ARIZONA SPECIFIC COLLOCATION JOBS?

A. Yes. Exhibit 7 shows actual power cable lengths for all Arizona collocation jobs. As illustrated on the exhibit, the average length of cables running to a BDFB is 80 feet. The average length of cables running directly to the power board is 177 feet. The average length for these two cables in the model is 83 feet and 183 feet, respectively. The model seems to be reasonably reflective of actual results in Arizona.

Q. DO YOU HAVE ANY OTHER CONCERNS WITH THE JOINT INTERVENORS' RECOMMENDATIONS REGARDING POWER CABLE COSTS?

A. Yes. The joint intervenors are recommending that power cable costs be recovered through recurring rates. As stated above, the use of recurring rates for nonrecurring charges can only be justified if the Commission can ensure that the Company will recover the cost it incurs in providing the facilities. As discussed above, based on the recent history of abandoned collocations, this standard cannot be met with regards to any dedicated collocation facilities. However, in regards to power cable costs, AT&T's own witnesses have in numerous proceedings indicated concerns about whether these facilities are, in fact, reusable. In his testimony in the current Utah docket, Dr. England, in testifying for AT&T, recommended recovering

these costs through nonrecurring charges. In his rebuttal testimony in Utah (page 7), Dr. England states that the initial power feed "is not necessarily reusable". In Minnesota AT&T, using the same reuse standard, proposed nonrecurring rates for power cable. This is the first proceeding in which AT&T has adopted the position that power cable charges should be recovered through recurring rates. They make the claim that these facilities can be reused, at the same time they are expressing concerns about the ability to reuse this equipment in another state. AT&T is unsure whether these facilities will be reused. Clearly, this Commission cannot find that adopting the use of recurring rates for power cable will ensure Qwest recovers these costs.

Terminations

Q. DO THE JOINT INTERVENORS AND THE STAFF EXPRESS CONCERNS WITH THE COMPANY'S PROPOSED COSTS FOR TERMINATIONS?

A. Yes. Mr. Lathrop argues that the costs for the connection blocks contained in the models are excessive. He bases this conclusion on a comparison the block cost in the Qwest sponsored cost analysis and costs he obtained from Verizon Supply and Power & Telephony Supply. Mr. Dunkel argues that the 89 block costs included in the study are vastly different than the block costs included in the Qwest DSL study provided to the FCC in 1999. Again, Mr. Lathrop claims that Qwest does "nothing more than give conclusory cost numbers without providing any data on how those numbers were derived." He then reverts to his standard recommendation that the Commission defer to the Verizon cost studies filed in the Washington cost docket.

Q. WHAT ARE TERMINATIONS?

A. Terminations are the connections between the CLEC collocation arrangement and the Qwest network. For instance, if a CLEC purchases an unbundled loop and wishes to route that loop through its collocation facilities to its own network, it will require a cable to route that loop from the Qwest network to its collocation cage. These connections to the Qwest network are terminations.

Q. IS MR. KNOWLES CORRECT WHEN HE STATES THAT QWEST PROVIDED NO INFORMATION SUPPORTING ITS TERMINATION COSTS EXCEPT "CONCLUSORY COST NUMBERS"?

A. Qwest based the calculation of the cost of terminations, similar to the majority of the costs in its model, on its study of 41 actual collocation jobs. The material prices for this element were taken directly from the actual material receipts for the jobs. These receipts were provided. The receipts for each individual item used in constructing the facilities were accumulated into a worksheet to develop the average cost for the item. This worksheet was provided. Placement costs were derived by applying a weighting of internal labor rates and external contractor prices to the actual average number of specific materials placed in building the 41 collocations. This labor weighting was supplied.

Q. DO YOU AGREE WITH MR. LATHROP'S RECOMMENDATION REGARDING THE COSTS OF BLOCKS?

A. No. As stated previously, I believe that the actual expenditures from receipts are a better gauge of costs than standardized price lists.

Q. HAVE YOU BEEN ABLE TO REVIEW THE CHANGES MADE BY MR. LATHROP TO QWEST'S COLLOCATION MODEL?

A. No. Qwest requested electronic copies of all model runs. (Interrogatory 2a) The file that we received was corrupt. The joint intervenors have not yet replaced the file. Qwest believes that the inability of the joint intervenors to provide a readable file removes from consideration any rates proposed by the joint intervenors until which time Qwest is given a readable copy and is allowed to comment on the file.

VII. HAI SWITCHING

Q. WHY IS THE HAI 5.2A INAPPROPRIATE FOR USE IN DETERMINING THE COST OF SWITCHING?

A. The HAI 5.2a switching costs do not meet a test of basic reasonability and are unreasonably below actual cost. This can be determined from a simple comparison test. Based on the Density Zone Report from the default run advocated by AT&T, the investment in the Digital Electronic Switching account (account 2212) from the ARMIS Inputs tab (of the HAI 5.2a results workbook) is $985,074,000. The USOA Detail tab (of the HAI 5.2a results workbook) reports that the total account 2212 investment computed by the HAI 5.2a is only $287,554,000. HAI 5.2a is intended to

estimate TELRIC costs and, as such, the investment on the books may differ from the TELRIC based investments. However, estimating the investment to replace the same network to be less than 30% of the actual booked investment raises the red flag that there is something clearly wrong with the model.

The Digital Electronic Switching prices may have decreased over the last decade or so, but they have not come down by any percentage resembling the 70% that the HAI 5.2a implies. The Telephone Plant Indices (TPIs) developed by Joel Popkin and Associates show that the cost of digital switching has actually increased 6.7% from 1988 to 2000. Furthermore, much of the booked investment has been made in recent years in Arizona (almost one third of the lines in Arizona have been digital replacements of analog lines installed within the 4 year period ending December 2000). Therefore, the booked investment ought to be much closer to the current or forward-looking investment than HAI 5.2a estimates

Q. WHY ARE THE DIGITAL SWITCHING INVESTMENTS SO LOW IN HAI 5.2A?

A. Primarily because HAI 5.2a estimates its switching investments using the algorithm that the FCC ordered in its USF Inputs Order[8] (see 4.1.9 and 4.1.10 of the HAI Release 5.2a Input Portfolio documentation).

Q. WHAT IS WRONG WITH BASING THE SWITCHING COSTS ON THE FCC'S SWITCH INVESTMENT ALGORITHM?

A. The FCC's algorithm does not include the ongoing upgrade investments necessary to keep a switch technologically current once it is installed. Nor does it properly reflect the costs of those lines that need to be added to a switch as customer demand increases over the life of the switch. According to Appendix C of the FCC USF Inputs Order, this algorithm is a result of a regression analysis performed on data from depreciation rate reports filed by LECs for switches installed from 1983 to 1995 and upon similar data from LEC reports to the RUS. However, a large proportion (70 percent) of the nearly 3,600 observations were excluded from the study data so that only 1,085 observations were actually employed. The cause of most of the excluded observations was that the switches were installed more than three years prior to the reporting of their book-value costs. This adjustment was made by the FCC to reflect the cost associated with the purchase of a new switch. As a result, the investment associated with adding lines to existing switches and with upgrades to

[8] CC Docket 96-45 10th Report and Order released November 2, 1999.

existing switches is effectively – and intentionally - omitted. Generally little, if any, investment is made to add capacity to or upgrade a switch within 3 years of its initial installation. Also, the FCC data was not adjusted for certain accounting anomalies that would allow it to reflect a more complete view of switch cost.

Q. WHY IS IT INAPPROPRIATE TO EXCLUDE THESE INVESTMENTS?

A. Because any efficiently run telecommunications company faced with real world circumstances makes these prudent investments.

Q. WHY ARE THE INVESTMENTS ASSOCIATED WITH ADDING LINES TO AN EXISTING SWITCH EFFICIENT?

A. Once Qwest has invested in a given vendor's switch, it cannot add another vendor's lines to that switch. This is analogous to the razor company selling the razor and providing the only blades that fit the razor. Over the life of an initially installed switch many lines will need to be purchased to accommodate growth to that switch. This is a real and significant cost to Qwest, especially in Arizona where line growth is almost 5% per year. Assuming the average switch life of 10 years at 5% growth per year, a switch with 40,000 lines installed initially would have another 20,000 lines installed at the price per growth line (i.e.,

40,000 lines x 5% x 10 years, assuming non-compounded growth).[9] Adding lines later does avoid the need to pay for unused excess capacity in the initial order.

Q. DOES HAI 5.2A INCLUDE THE COST OF ADDING LINES TO A SWITCH?

A: It doesn't include them entirely. It computes the unit switching costs – the Analog Line Port and the Per Switch Minute of Use (MOU) - assuming all lines are purchased at the lower initial price. This, it may be argued, is because HAI 5.2a is trying to determine the initial cost of a switch. However, per the Telecommunications Act of 1996, the providers of UNEs are entitled to recover their costs. Adding capacity (processor, memory, or lines) to a switch over its life is a legitimate cost of doing business. So clearly this is one reason that the HAI 5.2a inappropriately understates digital switching investments.

Q. ARE THE COSTS OF UPGRADING SWITCHES SIGNIFICANT?

A. Yes. In the 4 years ending in December of 2000, Qwest spent over $235 million upgrading its digital switches. This translates to $3.71 per line per

[9] In other words, 33% of the lines installed over the life of a switch are purchased as growth lines. In Exhibit 10 a more sophisticated approach estimates this to be 28.4% of the lines. This is done by applying time value of money techniques to reflect that the growth lines will be purchased at a later date than the lines initially installed.

year. Again, assuming the average life of a switch is 10 years, this adds $37.10 per line to the HAI 5.2a's assumed per line investment of $87.

Q. WHY SHOULD THESE UPGRADE COSTS BE INCLUDED IN THE TELRIC COSTS?

A. These costs are a legitimate cost of doing business and are necessary. Upgrades are triggered by operating system software upgrades which in turn may require hardware upgrades, too. (For example, operating software upgrades require more memory hardware. Furthermore, after multiple upgrades, the memory capacity of the processor in the switch may be exceeded and the processors themselves will need to be replaced.) The trigger for these upgrades is often a regulatory or legislative mandate. Some examples over the last few years are: the Communications Assistance for Law Enforcement Act requirements that could only be met by upgrading to the 5E14 Generic operating software in its 5ESS switches, number pooling requirements – assigning blocks of telephone numbers to carriers in increments of 1,000 rather than 10,000 in order to conserve telephone numbers, international direct digit dialing expansion to 15 digits, inter-lata equal access implementation, and flexible automatic number identification (ANI) implementation to facilitate a 2 digit ANI code identifying payphone owners for carrier compensation purposes.

Even if one of these mandates doesn't come along for a few years, Qwest has learned that it is less costly to keep current with the vendor's operating software than to have to catch up when a mandate does come along. When CIC code software was mandated, for example, Qwest (U S WEST at the time) was four generics behind in its 5ESSs. In order to get the CIC code software, U S WEST was required to purchase all four upgrades at a higher cost than had it purchased them closer to the time they were released. Furthermore, by keeping relatively current on the operating software, Qwest is able to offer new features and functionality to its customers that would otherwise be unavailable.

Q. HOW DO YOU KNOW THAT THE HAI 5.2A IS NOT INCLUDING THE UPGRADE COSTS?

A. These costs are operating software upgrades and hardware upgrades. It has already been established that the FCC methodology used to estimate the switching investment in the HAI 5.2a was designed to eliminate upgrade costs. Furthermore, the operating software upgrades were expense items - not investment items. Therefore, the operating software upgrades were not included in the depreciation reports filed with the FCC because software that is expensed is not depreciated. Therefore, no operating software upgrades were included in the FCC switch study data.

Q. YOU SAY THE OPERATING SOFTWARE UPGRADES WERE EXPENSE ITEMS. IS IT POSSIBLE TO INCLUDE THE SOFTWARE EXPENSE IN THE HAI 5.2A WITH AN EXPENSE FACTOR?

A. Yes, it could. However, the HAI 5.2a expense calculations are based on year 2000 data. Beginning in 1999, Qwest began to capitalize the operating software upgrades. Therefore, unless the HAI sponsors made undocumented expense adjustments to include operating software upgrades, those expenses are not included in HAI 5.2a switch costs. I think it is safe to say that these costs are not included in the HAI 5.2a expenses.

Q. ARE THERE OTHER PROBLEMS WITH THE HAI 5.2A'S USE OF THE FCC SWITCHING INVESTMENT ALGORITHM?

A: Yes. The run of the HAI 5.2a which AT&T is advocating sets the "Analog Line Circuit Offset for DLC lines, per Line" equal to $30. In 4.1.7 of the HAI 5.2a Inputs Portfolio documentation, this input is described as "The reduction in per line switch investment resulting from the fact that line cards are not required in both the switch and remote terminal for DLC-served lines". The default value of $30, which is used in AT&T's

advocacy, is supported as being "Calculated in FCC Inputs Order". This is not correct. The FCC specifically rejected the use of this input.[10]

This offset of $30 per line is significant, especially when one considers that the per line cost in the FCC switch investment algorithm is only $87. Since the depreciation data upon which the switch costs were based already reflects the use of digital lines, we agree with the FCC that, if the switch investment algorithm is used, the offset should be set to zero.

Q. IS THE HAI SWITCHING MODEL LOGIC DIFFICULT TO FOLLOW?

A. Yes. Though HAI may not be a black box, it is at least a gray box. It is a gray box because of its convoluted, undocumented algorithms. It is very difficult to track logic from cell to cell inside the model. For example, in the "wire center investment" tab of the "R52_switching_io.xls" spreadsheet, the autonomous switch investment per line is calculated as follows:

```
=IF(F2=0,0,IF(sw_type="A",B2/F2*VLOOKUP(F2/B2/line_fill,sw_inv
_tbl,IF(OR(BY2=8,BY2=1),2,8))+VLOOKUP(F2/B2/line_fill,sw_inv_t
bl,IF(OR(BY2=8,BY2=1),5,11))/line_fill-inputs!$C$24*((BE2)/C2-
inputs!$C$26)+(Z2*inputs!$C$97/2)*0,IF(AND(sw_type="H",B2>1),(
B2-1)/F2*VLOOKUP(F2*(1-
```

[10] Paragraph 325 of the order states: "In the Inputs Further Notice, we tentatively concluded that the "Analog Line Circuit Offset for Digital Lines" input should be set at zero. We now affirm that conclusion". Paragraph 327 of the order goes on to say: " The record contains no basis on which to quantify savings beyond those taken into consideration in developing the switch cost. We also note that the depreciation data used to determine the switch costs reflect the use of digital lines. The switch investment value will therefore reflect savings associated with digital lines."

```
1/B2)/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),2,8))+VLOOKUP
(F2*(1-
1/B2)/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),5,11))/line_fill-
inputs!$C$24*((BE2)/C2-
inputs!$C$26)+(Z2*inputs!$C$97/2)*0,0)))*sw_install_mult
```

It is difficult to determine if this calculation is even used in AT&T's advocacy, let alone what it means if it is.

Q. DESPITE THESE DIFFICULTIES, ARE THERE ANY OTHER PROBLEMS WITH THE HAI 5.2A'S USE OF THE FCC SWITCHING INVESTMENT ALGORITHM THAT YOU WERE ABLE TO IDENTIFY?

A. Yes. The HAI 5.2a appropriately divides the working lines by a fill factor before multiplying by the variable per line switch investment of $87. However, HAI 5.2a uses a fill factor of 94 percent. There are two reasons the use of a 94 percent fill factor is problematic. First, the DLC fill factor is significantly lower than this and does not appear to be reflected at all in this 94%. Based on Arizona actuals, the ratio of digital working lines to digital lines of capacity is 43%. The second reason the use of a 94 percent fill factor is problematic is that even if only the analog line fill were appropriate, 94% is much too high. Perhaps if this was only an administrative fill it would be reasonable. The HAI 5.2a model deceptively calls this input Switch Port Administrative Fill because it is close to the industry standard and Qwest's objective for administrative fill - about 95%. However, HAI 5.2a defines this fill as "the percent of lines in a switch that

are assigned to subscribers compared to the total equipped lines in a switch" (see 4.1.4 of the HAI 5.2a Inputs Portfolio documentation). The overall fill , as the HAI 5.2a definition implies, is much lower because it must also reflect that enough switch capacity must be purchased to allow for growth (i.e., lines need to be available for new customers) in addition to the administrative lines. It should also be noted that the only place fill is taken into consideration in the switching algorithms within the HAI 5.2a is with this single fill factor. So, unless lines that are purchased in anticipation of providing timely service for future new customers are reflected in this fill, they are not accounted for at all in the HAI 5.2a.[11] The actual analog line fill for the state of Arizona is 80%.

Q. IS THIS OVERSTATED FILL A SIGNIFICANT UNDERSTATEMENT OF COST IN THE HAI 5.2A?

A. Yes. The HAI 5.2a divides the working lines by this 94% fill to get total lines of capacity. The HAI 5.2a estimates 2,959,791 switched working lines so, after dividing by 94% the model estimates that there are 3,148,714 lines of capacity which it then multiplies by $87 to get the variable switching investment of $273,938,103. If the actual analog line fill

[11] The fact that lines are installed in anticipation of growth is not accounted for by acknowledging that growth lines cost more than initial lines. Both need to be considered. Lines do cost more on average than initial lines and not all lines purchased, regardless of the price paid, will generate revenue. Thus, it is appropriate to take the average price per line – both growth lines and initial lines – and divide by the average fill to get the cost per revenue producing line. See Exhibit 9 lines 10 and 14.

of 80% were used, the cost would be $321,877,271 (2,959,791 lines / 80% fill * $87 per line of capacity). Thus, even without taking into consideration the lower digital line fill of 43%, the HAI 5.2a still understates the switch investment by $47,939,168.

Q. OTHER THAN THE SWITCHING INVESTMENTS THAT THE FCC SWITCH ALGORITHM NEGLECTS, ARE THERE OTHER LEGITIMATE SWITCHING COSTS THAT THE HAI 5.2A DOES NOT INCLUDE?

A. Yes. In addition to operating software, Qwest must also purchase application software. This is the software that enables the switch to provide vertical features. This software is not included in the switch investment algorithm because until 1992 it was expensed. At that time Qwest began capital leasing this software which resulted in booking it to account 2681.4 Intangible Capital. The other RBOCs continued to expense it. As such, there is no way the depreciation reports upon with the FCC's switch costs could have included this software.

Q. IS THIS SOFTWARE INCLUDED IN THE HAI 5.2A IN SOME OTHER WAY THAN THROUGH THE SWITCH INVESTMENTS?

A. Again, considering the gray box, the answer to this appears to be no. Intangible Capital is not included in the computation for depreciation/amortization, so these costs are not included in that

calculation. Furthermore, amortization expense is not included in the expense factors in the HAI 5.2a.

Q. IS THIS SOFTWARE SIGNIFICANT.

A: Yes. In 1998 through 2000 Qwest spent over $78 million per year on application software. (This excludes amounts spent for wireless and Local Number Portability).[12] Based on the 17,379,681 working lines in Qwest switches, this translates into $4.53 per line per year. Again, assuming a 10 year life of a switch, this translates into another $45.30 per line that the HAI 5.2a does not include in its $87 per line investment.

Q. WHAT OTHER CONCERNS DO YOU HAVE WITH THE COMPUTATION OF THE END OFFICE SWITCH UNE COST PER MINUTE OF USE IN THE HAI 5.2A?

A. HAI does not use billable minutes of use as the denominator in its calculation of the end office switching cost per minute. The minutes used in the denominator are based on dial equipment minutes (DEMs). Originating DEMs are measured from the time the calling party picks up the phone. However, originating UNE minutes of use are not billed until the called party answers for intraLATA calls or until the trunk to the IXC is seized in the case of interLATA calls. The DEMs are 4.4% more than the

billable minutes, which implies that the cost per minute should be 4.4% higher in HAI if the denominator were properly calculated. (See Exhibit 8).

Q. ARE THERE OTHER PROBLEMS WITH THE WAY THE HAI 5.2A TREATS SWITCHING RELATED COSTS?

A. Yes. The HAI 5.2a does not include many vertical feature related costs. These are the application software costs, SS7 costs and some feature hardware related costs. As discussed above, the applications software costs are not included in the HAI 5.2a..

Q. AREN'T FEATURE HARDWARE INVESTMENTS INCLUDED IN THE DEPRECIATION STUDIES UPON WHICH THE FCC SWITCH ALGORITHM IS BASED?

A. What is included in the FCC depreciation reports is not definitive. However, since the early 1990's, when those depreciation reports were filed with the FCC, input/output ports, recorded announcements and conference circuits have had to be added due to new features and increased demand for existing features. So clearly the FCC Switch Algorithm does not include these investments.

[12] LAMS reports, which detail the application software purchases made over the study period, were used to identify and exclude these costs.

Q. PLEASE SUMMARIZE WHAT ADJUSTMENTS WOULD HAVE TO BE MADE TO AT&T'S END OFFICE SWITCHING ADVOCACY TO ADDRESS YOUR CONCERNS?

A. Please refer to Exhibit 9. The "HAI as Filed" column shows approximately how HAI computes the AT&T advocated switching UNEs.[13] The "HAI Adjusted" column shows most of the adjustments that I have advocated above. Finally, the last column shows comparable values from Qwest's ICM model that I am advocating. In summary, if most of the appropriate adjustments I have discussed in this testimony are made to the HAI run that AT&T is advocating, the cost per minute is $.00221 versus. ICM's $.00260 and the cost per line port is $1.59 versus. ICM's $1.28 (see lines 37 and 41 of exhibit). The bottom of the exhibit shows the adjustment that needs to be included should the feature applications software be included in the per line UNE rate. This would increase the cost per port to $1.96.

Q. DO YOU HAVE ANY COMMENTS ON THE TANDEM COSTS IN THE HAI 5.2A?

A. Yes. The total investment in tandem switching is significantly understated. The HAI 5.2a estimates only 31,125 tandem trunks (sum of HAI 5.2A Density Zone Report, Investment Inputs tab, cells BU21, BW21

[13] Again, due to the gray box effect and AT&Ts inadequate response to Data Request No. 101, it is hard to precisely determine how HAI computes its switching costs. However, Line 19 – Total Investment Before Upgrades - is within 4% of the comparable value in HAI found in cell K6 of the EO Switching tab of the HAI 5.2a Density Zone Report.

and BY21). Exhibit 11 is a reasonability check showing that the number of tandem trunks should be more than three times this amount. This Exhibit 11oes not purport to be an actual trunk count, but is offered as a reasonable estimate to point out that the HAI 5.2a must have some significant errors and inconsistencies in the tandem trunk calculations. The calculations in the HAI 5.2a for tandem trunks are so cryptic they are very close to being a black box. Suffice it to say that the outcome of the calculations is ridiculously low.

The HAI 5.2a estimates the investment per tandem trunk to be $100. While this is a questionable value, it can be used to show how significantly the tandem costs are understated. Based in the 97,273 tandem trunks computed in the reasonability check above, and the 31,125 trunks upon which the HAI 5.2a computes its tandem investment, the HAI 5.2a is short 66,148 trunks. Multiplying by $100 per trunk gives a understatement of $6,614,800. The total investment in tandem switching in the HAI 5.2a is $3,999,023 (see cell K6 of Tand Switching tab of the HAI 5.2A Density Zone Report). This means that the tandem switching costs should have been $10,613,870 or 2.65 times what the HAI 5.2a computes.

VIII. MULTIPLE DWELLING UNITS

Q. HAVE YOU REVIEWED DR. COLLINS' TESTIMONY IN THIS PROCEEDING?

A. Yes. Dr. Collins recommends a separate rate for multiple tenant environments (MTEs). He also recommends that Qwest reconfigure their distribution plant on MTEs to provide a single Minimum Point of Entry (MPOE) within 12 inches of the property line. He further advocates that the cabling from the MPOE to the individual buildings should be sold to the building owners at net book value.

Q. WHAT IS A MULTIPLE TENANT ENVIRONMENT?

A. A multiple tenant environment is a building or a single piece of property with numerous buildings, owned by one person or entity, in which there are numerous tenants. If the MTE is a single piece of property with numerous buildings attached to a common terminal, I will refer to it as a campus arrangement. The tenants in an MTE can be either individuals or businesses, the key factor being there are a large number of customers in one or more buildings owned by a single entity.

Q. DOES QWEST PROVIDE CLECS ACCESS TO MULTIPLE TENANT ENVIRONMENTS?

A. Yes. The FCC requires ILECs to allow for loop access at any accessible terminal. CLECs can technically access a MTE at several different terminals in the network. In virtually all multiple tenant environments,

there is a building terminal or complex NID attached to or inside the building. In addition, at times there is a separate terminal or feeder distribution interface that serves numerous buildings on a single piece of property. Since both of these two points are accessible terminals, Qwest provides CLECs the opportunity to interconnect at these terminals or NIDs.

Q. PLEASE EXPLAIN WHAT IS MEANT BY THE TERM "INTRA-BUILDING CABLE"?

A. Intra-building cable consists of the Qwest owned facilities inside of a building that the company serves. This charge would only apply when Qwest owns some or all of the cable located inside the building. The cost of this element includes building terminal and any Qwest owned cable and wire located on the customer side of that terminal. When Qwest does not own the intra-building cable this charge would not apply.

Q. WHAT IS AN "UNBUNDLED DISTRIBUTION SUB-LOOP"?

A. The Unbundled Distribution Sub-Loop is a facility that extends from Serving Area Interface (SAI) or Feeder Distribution interface (FDI) to the Network Interface Device or other point of demarcation at the customer location. The point of demarcation is where the Qwest owned facilities

end and the customer owned facilities begin. This distribution sub-loop consists of:

1. The facilities required to cross connect at the serving area interface (SAI) or feeder distribution interface (FDI);
2. The wires between the FDI and the customer NID or building terminal;
3. The simple or complex NID or building terminal at the customer residence; and
4. Any Qwest owned intra-building cable that may exist in the customers' premises.

The Company proposes de-averaging this element using the same method used to de-average the unbundled loop.

B. Pricing Principles for Interconnecting at a Multiple Tenant Environment

Q. WHAT APPROACH SHOULD THIS COMMISSION USE IN PRICING THE ELEMENTS YOU JUST DEFINED?

A. The TELRIC principles established by the FCC as modified by the Eighth Circuit Court of Appeals must be used to cost all unbundled network elements. Section 251 ©(2) of the 1996 Telecommunications Act requires that incumbent local exchange carriers allow competitors to interconnect with their networks at any technically feasible point. In return Section 251©(2) provides that the ILEC will be compensated on rates and terms that are reasonable as defined by sections 251 and 252 of the Act.

Section 252(d)(1) states that reasonable rates are those that "are based on the cost ... of providing the interconnection or network element...".

Q. DO YOU RECOMMEND THAT CAMPUS WIRE BE PRICED AT A LEVEL THAT IS DIFFERENT FROM A NORMAL DISTRIBUTION SUB-LOOP?

A. No. There are three primary reasons I would not recommend costing these arrangements any differently than any other campus or multiple tenant arrangement that is fed from a normal feeder distribution interface (FDI):

1. It would be unreasonable to design a rate structure that has different prices for two similarly configured distribution arrangements simply because the terminal serving one of the areas is the feeder distribution interface;
2. No cost models offered to this Commission include the design for a campus arrangement that includes multiple buildings fed from a terminal that is not the FDI; and
3. Competition will be impaired in non-MTE distribution areas if MTE's are removed from the calculation of the average subloop distribution costs and priced separately.

It is important to remember that numerous loop or subloop configurations exist in the current network. In certain instances there may be more than one terminal between a central office and a specific building or premise.

The variations in these designs can be purely a product of when the facilities were planned or placed. In some instances a campus arrangement could develop in an area that is served by an existing feeder distribution interface. In such an instance, the Company may decide to place a terminal between the existing FDI and the buildings on the property. Across town there may be an identical situation, however, the location of the campus arrangement is identified prior to placing the original FDI. In this instance, the Company would place a separate FDI to serve the campus arrangement assuming it meets the characteristics of a normal serving area (e.g. was large enough to qualify as a serving area). In these two examples the method for serving identical areas varied solely as a consequence of when in the planning process the plan to build the campus arrangement was identified. As the Qwest network was developed, numerous circumstances could lead to different designs for the facilities serving very similar types of areas. The design of the facilities used to serve these similarly situated areas should not be the driving force in how these facilities should be priced.

Q. WHAT ARE THE COMPONENTS OF DISTRIBUTION PLANT IN DG1 OR HIGH RISE DISTRIBUTION AREAS?

A. Distribution plant in DG1 consists of the FDI or building terminal located in the basement of the building and any intra-building cable or riser cable owned by The cost to serve these distribution areas is very small.

Q. HOW DOES THE TREATMENT OF MTES IN THE MODELS AFFECT THE COMMISSION'S DECISION IN THIS CASE?

A. All models include MTEs as just one more form of distribution facilities. They are served directly from the SAI or FDI and the costs of serving these areas are included in the calculation of the average cost of all distribution designs in the model. There is no doubt that the cost of serving MTEs whether they consist of a single large building or numerous smaller building on a single contiguous piece of property is relatively low when compared to the costs of serving many other types of distribution areas. Including the low cost of serving MTEs in the calculation of the average cost of distribution reduces the overall amount that Qwest can charge for distribution facilities. There is no problem with this approach if the average cost that is derived is used to price all facilities that were included in the calculation of those average costs. However, if, as Cox suggests, the Commission determines that the price for MTEs must be set at a level that reflects just the cost of serving these areas, then the cost of serving other distribution areas must be revised to eliminate the lower cost of serving MTEs.

Q. HOW SHOULD THE COMMISSION HANDLE THIS ISSUE?

A. It is my recommendation that the Commission separately price interconnection at a building terminal, however, all other forms of distribution plant, including MTEs consisting of numerous buildings, should be priced at the average distribution rate. Companies must be able to interconnect with Qwest's facilities at a building NID. These terminals may be the feeder distribution interface (FDI) or they may just be a terminal on the side of a building which is just one portion of a larger distribution area. It would not make sense to price access to a building terminal at different levels solely on the basis of whether the building terminal was also the feeder distribution interface. Since in many instances a building terminal is not the serving area interface it makes sense that these arrangements should be separately priced.

Q. HAVE YOU REVIEWED THE MODIFIED HAI5.2A DISTRIBUTION MODULE MR. DENNEY USED TO ESTIMATE THE BUILDING CABLE AND TERMINAL COSTS?

A. No. Qwest requested an electronic copy of the modified distribution module. We were unable to open the file on the CD provided by AT&T. In reviewing the standard module it appears that there are only nine

clusters (all in the Phoenix Main wire center) that generate riser cable and indoor SAIs (building terminals). If the module was modified to develop more clusters with riser cable and building terminals, Mr. Denney should provide a new adjusted average distribution cost. By removing the low cost clusters for the building cable and terminal scenario, he has created a new average for the remaining clusters. It is inappropriate to include the low cost clusters in the overall average distribution when they are also available on a de-averaged basis.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO	)	
QWEST CORPORATION'S COMPLIANCE	)	
WITH CERTAIN WHOLESALE PRICING	)	DOCKET NO. T-00000A-00-0194
REQUIREMENTS FOR UNBUNDLED	)	PHASE II
NETWORK ELEMENTS AND RESALE	)	
DISCOUNTS	)	

EXHIBITS OF

GARRETT Y. FLEMING

QWEST CORPORATION

JUNE 27, 2001

GARRETT Y FLEMING

WITNESS QUALIFICATION STATEMENT

NAME: Garrett Y. Fleming

EMPLOYED BY: Qwest Communications

TITLE: Executive Director Policy and Law

ADRESS: 1801 California St
Denver, CO 80202

TELEPHONE: (303) 896-5178

EDUCATION: Graduated from the University of Colorado in 1976 with a Bachelor of Business Science Degree

EXPERIENCE: Employed by the Colorado Public Utilities Commission as a Financial Analyst from 1977 to 1983. Presented financial testimony to the Commission on numerous occasions.

Employed by Mountain Bell in 1983 as a Staff Manager in the Finance and Comptroller Organization. Developed Exhibits and Testimony for filings in NM, CO, AZ and UT.

1986-1994 I was the State Finance Director for CO, WY and NM. In this position I provided financial testimony on numerous occasions before the commissions in CO, NM, WY, UT and AZ.

1994-1995 I was a Director of Technical Accounting at U S West, Inc.

1996-2000 I was the Director in charge of the Marketing Services and Economic Development Organization. In this position I was in charge of preparing the company's long run incremental cost studies for filing in retail and wholesale cost dockets throughout the states served by USWEST. I presented testimony on these studies in the Colorado Cost Docket.

In 2000 I assumed my current duties as an Executive Director in Policy and Law organization. In my current position I oversee the operations of both the long run incremental cost and the embedded cost organizations.

Exhibit 2: Impact of Proposed Changes to the Entrance Facilities

Arizona			
Col A	Col B	Col C	Col D
	QWEST Original Filing	QWEST Revised Model	
	Total Direct	Total Direct	Percent Change
Collocation Model			
1.2 Entrance Facility			
1.2.1 Entrance Facility - 90 Day Installation			
Standard Shared Per Fiber	$ 934.46	$ 474.60	50.79%
Cross Connect per Fiber	$ 1,256.74	$ 555.77	44.22%
Express per Cable	$ 6,657.09	$ 6,951.92	104.43%
1.2.2 Entrance Facility - Monthly Charge			
Standard Shared Per Fiber per month	$ 11.50	$ 12.10	105.24%
Cross Connect per Fiber per month	$ 17.24	$ 12.22	70.88%
Express per Cable per month	$ 182.10	$ 209.22	114.89%

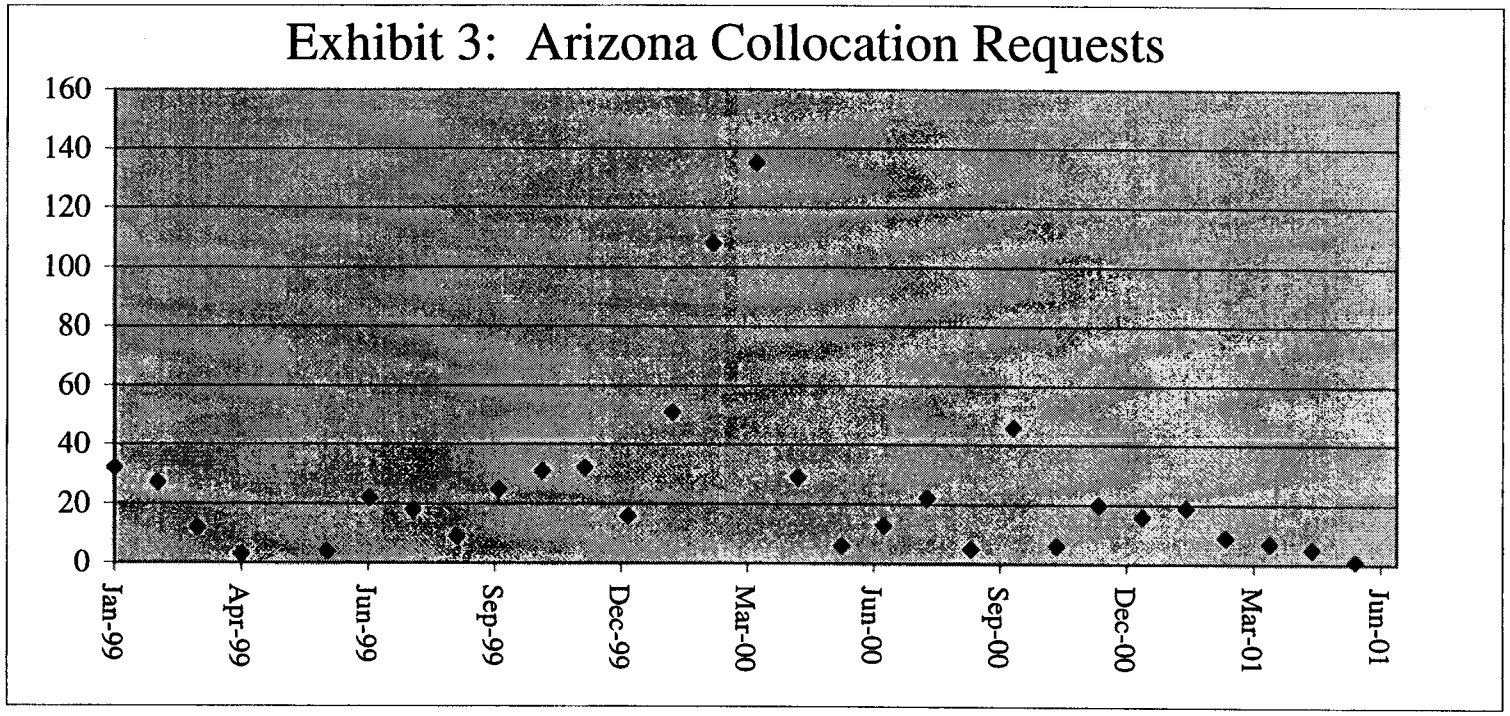
Exhibit 3: Arizona Collocation Requests
160
140
120
100
80
60
40
20
0
Jan-99
Apr-99
Jun-99
Sep-99
Dec-99
Mar-00
Jun-00
Sep-00
Dec-00
Mar-01
Jun-01

monthandyear	SumOfNumber	Month	Year	Date	Occurrence
101997	3	10	1997	10/1/97	3
111997	12	11	1997	11/1/97	12
31997	4	3	1997	3/1/97	4
41997	1	4	1997	4/1/97	1
51997	3	5	1997	5/1/97	3
61997	1	6	1997	6/1/97	1
81997	2	8	1997	8/1/97	2
91997	3	9	1997	9/1/97	3
11998	4	1	1998	1/1/98	4
101998	7	10	1998	10/1/98	7
111998	14	11	1998	11/1/98	14
121998	9	12	1998	12/1/98	9
21998	2	2	1998	2/1/98	2
31998	3	3	1998	3/1/98	3
41998	8	4	1998	4/1/98	8
51998	9	5	1998	5/1/98	9
71998	3	7	1998	7/1/98	3
11999	32	1	1999	1/1/99	32
101999	25	10	1999	10/1/99	25
111999	31	11	1999	11/1/99	31
121999	32	12	1999	12/1/99	32
21999	27	2	1999	2/1/99	27
31999	12	3	1999	3/1/99	12
41999	3	4	1999	4/1/99	3
61999	4	6	1999	6/1/99	4
71999	22	7	1999	7/1/99	22
81999	18	8	1999	8/1/99	18
91999	9	9	1999	9/1/99	9
12000	16	1	2000	1/1/00	16
102000	46	10	2000	10/1/00	46
112000	6	11	2000	11/1/00	6
122000	20	12	2000	12/1/00	20
22000	51	2	2000	2/1/00	51
32000	108	3	2000	3/1/00	108
42000	135	4	2000	4/1/00	135
52000	29	5	2000	5/1/00	29
62000	6	6	2000	6/1/00	6
72000	13	7	2000	7/1/00	13
82000	22	8	2000	8/1/00	22
92000	5	9	2000	9/1/00	5
12001	16	1	2001	1/1/01	16
22001	19	2	2001	2/1/01	19
32001	9	3	2001	3/1/01	9
42001	7	4	2001	4/1/01	7
52001	5	5	2001	5/1/01	5
62001	1	6	2001	6/1/01	1

Exhibit 4: Actual 41 Collocation Jobs Comparison

A	Material B	Labor C	Engineering D	Taxes E	Bldgs F	Miscellaneous G	Shipping H	Total I
Power Cable	$ 2,960.96	$ 3,355.73		$ 450.85			$ 429.40	$ 7,197.05
								$ -
Terminations								$ -
Blocks	$ 1,293.09	$ 1,721.72		$ 196.89			$ 187.53	$ 3,399.27
Placement		$ 5,048.91						$ 5,048.91
Subtotal	$ 1,293.09	$ 6,770.62						$ 8,448.18
								$ -
Engineering			$ 12,383.23					$ 12,383.23
								$ -
Cable Hole	$ 95.77	$ 228.35		$ 14.58			$ 13.89	$ 352.59
								$ -
Motor Vehicle	$ 228.52						$ -	$ 228.52
								$ -
Ground Wire	$ 231.81	$ 702.64		$ 35.30			$ 33.62	$ 1,003.36
								$ -
Total Dedicated	**$ 4,810.15**	**$ 11,057.34**	**$ 12,383.23**	**$ 697.62**	**$ -**	**$ -**	**$ 664.43**	**$ 29,612.78**
								$ -
Cable Racking	$ 2,006.84	$ 2,884.36		$ 305.57			$ 291.03	$ 5,487.88
								$ -
Overall Aerial Support	$ 1,448.57	$ 3,785.09		$ 220.57			$ 210.07	$ 5,664.36
								$ -
Ground Bar	$ 6.09	$ 8.21		$ 0.93			$ 0.88	$ 16.12
								$ -
Lighting	$ 823.39	$ 973.33		$ 125.37			$ 119.41	$ 2,041.52
								$ -
Bay Construction	$ 1,590.34	$ 819.27		$ 242.15			$ 230.63	$ 2,882.46
								$ -
Total Dedicated Shared	**$ 5,875.24**	**$ 8,470.26**	**$ -**	**$ 894.60**	**$ -**	**$ -**	**$ 852.03**	**$ 16,092.13**
								$ -
Miscellaneous		$ 4.86		$ 217.04		$ 1,425.39	$ 206.71	$ 1,854.06
Total NonRecurring	**$ 10,685.39**	**$ 19,532.46**	**$ 12,383.23**	**$ 1,809.26**	**$ -**	**$ 1,425.39**	**$ 1,723.18**	**$ 47,558.91**
Buildings				$ -	$ 3,388.14		$ -	$ 3,388.14
								$ -
BDFB and Power Plant	$ 4,453.55	$ 2,226.77		$ 678.12			$ 645.86	$ 8,004.46
								$ -
Cable EICT	$ 4,009.58	$ 5,384.83		$ 610.52			$ 581.47	$ 10,586.55
								$ -
Network Blocks	$ 544.14	$ 2,927.57		$ 82.85			$ 78.91	$ 3,633.50
								$ -
Panel EICT	$ 7,490.79	$ 2,047.84		$ 1,140.59			$ 1,086.32	$ 11,765.80
								$ -
Total Recurring	**$ 16,498.06**	**$ 12,587.01**	**$ -**	**$ 2,512.09**	**$ 3,388.14**	**$ -**	**$ 2,392.57**	**$ 37,378.45**
Total Costs	**$ 27,183.45**	**$ 32,119.47**	**$ 12,383.23**	**$ 4,321.35**	**$ 3,388.14**	**$ 1,425.39**	**$ 4,115.74**	**$ 84,936.78**
Total Receipts	**$ 29,677.46**	**$ 35,287.30**	**$ 12,383.23**	**$ 4,321.35**	**$ 3,388.14**	**$ 1,420.00**	**$ 4,115.74**	**$ 90,593.22**

Exhibit 5: Impact of Proposed Revisions

Arizona

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J
	QWEST Original Filing	QWEST Revised Model	Dunkel Partial Mods 1	Dunkel Total Mods 2	QWEST Original vs QWEST Revised	Dunkel Partial % QWEST Original	Dunkel Partial % QWEST Revised	Dunkel Total % QWEST Original	Dunkel Total % QWEST Revised
	Total Direct	Total Direct	Total Direct	Total Direct	Percent Change	Percent Change	Percent Change	Percent Change	Percent Change
Collocation Model									
1 Standard Collocation									
1.1 Terminations									
1.1.1 Terminations - 45 Day Installation									
1.1.2 Terminations - 90 Day Installation									
DS0 - 90 Day Installation									
DS0 Cable Placement per 100 Pair Block - 90 Day	$ 184.45	$ 184.72	$ 109.78	$ 109.78	100.15%	59.52%	59.43%	59.52%	59.43%
DS0 Cable Placement per Termination - 90 Day	$ 3.46	$ 3.47	$ 2.06	$ 2.06	100.15%	59.52%	59.43%	59.52%	59.43%
DS0 Cable per 100 Pair Block - 90 Day	$ 237.26	$ 237.61	$ 237.61	$ 237.61	100.15%	100.15%	100.00%	100.15%	100.00%
DS0 Cable per Termination - 90 Day	$ 3.25	$ 3.25	$ 3.25	$ 3.25	100.15%	100.15%	100.00%	100.15%	100.00%
DS0 Blocks per 100 Pair Block - 90 Day	$ 413.68	$ 414.29	$ 409.34	$ 409.34	100.15%	98.95%	98.81%	98.95%	98.81%
DS0 Blocks per Termination - 90 Day	$ 5.67	$ 5.68	$ 5.61	$ 5.61	100.15%	98.95%	98.81%	98.95%	98.81%
DS0 Block Placement per 100 Pair Block - 90 Day	$ 191.30	$ 191.58	$ 119.78	$ 119.78	100.15%	62.61%	62.52%	62.61%	62.52%
DS0 Block Placement per Termination - 90 Day	$ 2.62	$ 2.62	$ 1.64	$ 1.64	100.15%	62.61%	62.52%	62.61%	62.52%
DS1 - 90 Day Installation									
DS1 Cable Placement per 28 DS1s - 90 Day	$ 306.78	$ 307.23	$ 162.45	$ 162.45	100.15%	52.96%	52.88%	52.96%	52.88%
DS1 Cable Placement per Termination - 90 Day	$ 32.99	$ 33.04	$ 17.47	$ 17.47	100.15%	52.96%	52.88%	52.96%	52.88%
DS1 Cable per 28 DS1s - 90 Day	$ 273.91	$ 274.31	$ 274.31	$ 274.31	100.15%	100.15%	100.00%	100.15%	100.00%
DS1 Cable per per Termination - 90 Day	$ 29.45	$ 29.50	$ 29.50	$ 29.50	100.15%	100.15%	100.00%	100.15%	100.00%
DS1 Panel per 28 DS1s - 90 Day	$ 312.54	$ 313.00	$ 313.00	$ 313.00	100.15%	100.15%	100.00%	100.15%	100.00%
DS1 Panel per Termination - 90 Day	$ 37.73	$ 37.79	$ 37.79	$ 37.79	100.15%	100.15%	100.00%	100.15%	100.00%
DS1 Panel Placement per 28 DS1s - 90 Day	$ 65.46	$ 65.56	$ 40.10	$ 40.10	100.15%	61.27%	61.18%	61.27%	61.18%
DS1 Panel Placement per Termination - 90 Day	$ 7.04	$ 7.05	$ 4.31	$ 4.31	100.15%	61.27%	61.18%	61.27%	61.18%
DS3 - 90 Day Installation									
DS3 Cable Placement per Termination - 90 Day	$ 124.90	$ 125.08	$ 61.26	$ 61.26	100.15%	49.05%	48.98%	49.05%	48.98%
DS3 Cable per Termination - 90 Day	$ 176.88	$ 177.14	$ 177.14	$ 177.14	100.15%	100.15%	100.00%	100.15%	100.00%
DS3 Connector per Termination - 90 Day	$ 182.24	$ 182.51	$ 182.51	$ 182.51	100.15%	100.15%	100.00%	100.15%	100.00%
DS3 Connector Placement per Termination - 90 Day	$ 18.80	$ 18.83	$ 6.00	$ 6.00	100.15%	31.93%	31.89%	31.93%	31.89%

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Arizona									
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1.2 Entrance Facility									
1.2.1 Entrance Facility - 90 Day Installation									
Standard Shared Per Fiber	$ 934.46	$ 474.60	$ 474.60	$ 474.60	50.79%	50.79%	100.00%	50.79%	100.00%
Cross Connect per Fiber	$ 1,256.74	$ 555.77	$ 555.77	$ 555.77	44.22%	44.22%	100.00%	44.22%	100.00%
Express per Cable	$ 6,657.09	$ 6,951.92	$ 6,951.92	$ 6,951.92	104.43%	104.43%	100.00%	104.43%	100.00%
1.2.2 Entrance Facility - Monthly Charge									
Standard Shared Per Fiber per month	$ 11.50	$ 12.10	$ 12.10	$ 12.10	105.24%	105.24%	100.00%	105.24%	100.00%
Cross Connect per Fiber per month	$ 17.24	$ 12.22	$ 12.22	$ 12.22	70.88%	70.88%	100.00%	70.88%	100.00%
Express per Cable per month	$ 182.10	$ 209.22	$ 209.22	$ 209.22	114.89%	114.89%	100.00%	114.89%	100.00%
					104.43%				
1.4 Power Usage									
1.4.1 Power Plant per Amp Ordered									
Power Plant per Amp Ordered	$ 8.61	$ 8.27	$ 8.27	$ 8.27	96.01%	96.01%	100.00%	96.01%	100.00%
Power Usage-Less than 60 AMPS per Amp Ordered	$ 2.79	$ 2.80	$ 2.80	$ 2.80	100.15%	100.15%	100.00%	100.15%	100.00%
Power Usage-More than 60 AMPS per Amp Ordered	$ 5.59	$ 5.60	$ 5.60	$ 5.60	100.15%	100.15%	100.00%	100.15%	100.00%
1.4.2 Backup AC Power Feed Usage - Monthly Charges									
120 V per Amp per Month	$ 14.60	$ 14.38	$ 14.38	$ 14.38	98.51%	98.51%	100.00%	98.51%	100.00%
208 V, Single Phase per Amp per Month	$ 25.30	$ 24.93	$ 24.93	$ 24.93	98.51%	98.51%	100.00%	98.51%	100.00%
208 V, Three Phase per Amp per Month	$ 43.77	$ 43.12	$ 43.12	$ 43.12	98.51%	98.51%	100.00%	98.51%	100.00%
240 V, Single Phase per Amp per Month	$ 29.20	$ 28.76	$ 28.76	$ 28.76	98.51%	98.51%	100.00%	98.51%	100.00%
240 V, Three Phase per Amp per Month	$ 50.51	$ 49.76	$ 49.76	$ 49.76	98.51%	98.51%	100.00%	98.51%	100.00%
480 V, Three Phase per Amp per Month	$ 101.02	$ 99.51	$ 99.51	$ 99.51	98.51%	98.51%	100.00%	98.51%	100.00%
1.4.3 Backup AC Power Cable - 90 Day Installation									
20 Amp, Single Phase - Initial Charge per Foot	$ 6.05	$ 6.06	$ 6.06	$ 6.06	100.15%	100.15%	100.00%	100.15%	100.00%
20 Amp, Three Phase - Initial Charge per Foot	$ 7.50	$ 7.51	$ 7.51	$ 7.51	100.15%	100.15%	100.00%	100.15%	100.00%
30 Amp, Single Phase - Initial Charge per Foot	$ 6.52	$ 6.53	$ 6.53	$ 6.53	100.15%	100.15%	100.00%	100.15%	100.00%
30 Amp, Three Phase - Initial Charge per Foot	$ 8.96	$ 8.97	$ 8.97	$ 8.97	100.15%	100.15%	100.00%	100.15%	100.00%
40 Amp, Single Phase - Initial Charge per Foot	$ 7.67	$ 7.68	$ 7.68	$ 7.68	100.15%	100.15%	100.00%	100.15%	100.00%
40 Amp, Three Phase - Initial Charge per Foot	$ 10.56	$ 10.57	$ 10.57	$ 10.57	100.15%	100.15%	100.00%	100.15%	100.00%
50 Amp, Single Phase - Initial Charge per Foot	$ 9.10	$ 9.11	$ 9.11	$ 9.11	100.15%	100.15%	100.00%	100.15%	100.00%
50 Amp, Three Phase - Initial Charge per Foot	$ 12.70	$ 12.72	$ 12.72	$ 12.72	100.15%	100.15%	100.00%	100.15%	100.00%
60 Amp, Single Phase - Initial Charge per Foot	$ 10.29	$ 10.30	$ 10.30	$ 10.30	100.15%	100.15%	100.00%	100.15%	100.00%
60 Amp, Three Phase - Initial Charge per Foot	$ 14.62	$ 14.65	$ 14.65	$ 14.65	100.15%	100.15%	100.00%	100.15%	100.00%
100 Amp, Single Phase - Initial Charge per Foot	$ 12.74	$ 12.76	$ 12.76	$ 12.76	100.15%	100.15%	100.00%	100.15%	100.00%
100 Amp, Three Phase - Initial Charge per Foot	$ 19.89	$ 19.92	$ 19.92	$ 19.92	100.15%	100.15%	100.00%	100.15%	100.00%

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1.7 Interconnection Tie Pair									
DS0 Per Connection	$ 0.38	$ 0.36	$ 0.36	$ 0.36	95.18%	95.18%	100.00%	95.18%	100.00%
DS1 Per Connection	$ 1.20	$ 1.15	$ 1.10	$ 1.10	96.01%	92.34%	96.18%	92.34%	96.18%
DS3 Per Connection	$ 12.06	$ 11.58	$ 11.48	$ 11.48	96.01%	95.16%	99.12%	95.16%	99.12%
Space Construction - General									
2 Cageless Collocation									
2.1 Space Construction									
2.1.2 Space Construction - 90 Day Installation									
Space Construction for 2 Bays and 1 - 40A Power Feed - 90 Day	$ 22,604.24	$ 22,637.37	$ 22,027.60	$ 19,070.14	100.15%	97.45%	97.31%	84.37%	84.24%
Space Construction Adjustment for 20A Initial Power Feed - 90 Day	$ (1,650.52)	$ (1,652.94)	$ (1,652.94)	$ (1,652.94)	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 30A Initial Power Feed - 90 Day	$ (1,053.35)	$ (1,054.90)	$ (1,054.90)	$ (1,054.90)	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 60A Initial Power Feed - 90 Day	$ 1,446.02	$ 1,448.14	$ 1,448.14	$ 1,448.14	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional Bay - 90 Day	$ 2,292.65	$ 2,296.01	$ 2,138.55	$ 659.82	100.15%	93.28%	93.14%	28.78%	28.74%
Space Construction Adjustment for Each Additional 20A Power Feed - 90 Day	$ 4,190.27	$ 4,196.41	$ 4,196.41	$ 4,196.41	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 30A Power Feed - 90 Day	$ 4,787.44	$ 4,794.45	$ 4,794.45	$ 4,794.45	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 40A Power Feed - 90 Day	$ 5,840.79	$ 5,849.35	$ 5,849.35	$ 5,849.35	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 60A Power Feed - 90 Day	$ 7,286.81	$ 7,297.49	$ 7,297.49	$ 7,297.49	100.15%	100.15%	100.00%	100.15%	100.00%
2.1.3 Space Monthly Charge									
Space Monthly Charge for 2 Bays and 1 - 40A Power Feed per Month	$ 41.25	$ 33.08	$ 32.19	$ 27.87	80.20%	78.04%	97.31%	67.56%	84.24%
Space Monthly Charge Adjustment for 20A Initial Power Feed per Month	$ (3.01)	$ (2.42)	$ (2.42)	$ (2.42)	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for 30A Initial Power Feed per Month	$ (1.92)	$ (1.54)	$ (1.54)	$ (1.54)	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for 60A Initial Power Feed per Month	$ 2.64	$ 2.12	$ 2.12	$ 2.12	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for Each Additional Bay per Month	$ 4.18	$ 3.36	$ 3.12	$ 0.96	80.20%	74.70%	93.14%	23.05%	28.74%
Space Monthly Charge Adjustment for Each Additional 20A Power Feed per Month	$ 7.65	$ 6.13	$ 6.13	$ 6.13	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for Each Additional 30A Power Feed per Month	$ 8.74	$ 7.01	$ 7.01	$ 7.01	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for Each Additional 40A Power Feed per Month	$ 10.66	$ 8.55	$ 8.55	$ 8.55	80.20%	80.20%	100.00%	80.20%	100.00%
Space Monthly Charge Adjustment for Each Additional 60A Power Feed per Month	$ 13.30	$ 10.66	$ 10.66	$ 10.66	80.20%	80.20%	100.00%	80.20%	100.00%
2.2 Rent									
Rent per Square Foot	$ 3.00	$ 2.79	$ 2.79	$ 2.79	92.78%	92.78%	100.00%	92.78%	100.00%
2.3 Quote Preparation Fee - Cageless Construction									
Quotation Preparation Fee	$ 3,320.31	$ 3,325.17	$ 3,325.17	$ 3,325.17	100.15%	100.15%	100.00%	100.15%	100.00%
3 Caged Collocation									
3.1 Space Construction									

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3.1.1 Space Construction - 90 Day Installation									
Cage-Up to 100 Sq Ft - 90 Day	$ 39,166.85	$ 39,224.25	$ 33,295.99	$ 26,790.47	100.15%	85.01%	84.89%	68.40%	68.30%
Cage-101 Sq Ft to 200 Sq Ft - 90 Day	$ 40,643.82	$ 40,703.39	$ 34,587.61	$ 27,817.07	100.15%	85.10%	84.97%	68.44%	68.34%
Cage-201 Sq Ft to 300 Sq Ft - 90 Day	$ 41,792.35	$ 41,853.60	$ 35,490.60	$ 28,456.07	100.15%	84.92%	84.80%	68.09%	67.99%
Cage-301 Sq Ft to 400 Sq Ft - 90 Day	$ 43,231.66	$ 43,295.02	$ 36,363.20	$ 29,063.65	100.15%	84.11%	83.99%	67.23%	67.13%
3.1.2 Initial Power Feed Adjustments - 90 Day									
Space Construction Adjustment for 20A Initial Power Feed - 90 Day	$ (6,400.45)	$ (6,409.83)	$ (6,409.83)	$ (6,409.83)	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 30A Initial Power Feed - 90 Day	$ (5,827.06)	$ (5,835.60)	$ (5,835.60)	$ (5,835.60)	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 40A Initial Power Feed - 90 Day	$ (4,628.30)	$ (4,635.08)	$ (4,635.08)	$ (4,635.08)	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 100A Initial Power Feed - 90 Day	$ 7,085.40	$ 7,095.79	$ 7,095.79	$ 7,095.79	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 200A Initial Power Feed - 90 Day	$ 22,620.05	$ 22,653.20	$ 22,653.20	$ 22,653.20	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 300A Initial Power Feed - 90 Day	$ 41,502.27	$ 41,563.10	$ 41,563.10	$ 41,563.10	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for 400A Initial Power Feed - 90 Day	$ 63,833.69	$ 63,927.24	$ 63,927.24	$ 63,927.24	100.15%	100.15%	100.00%	100.15%	100.00%
3.1.3 Each Additional Power Feed Adjustments - 90 Day									
Space Construction Adjustment for Each Additional 20A Power Feed - 90 Day	$ 5,285.79	$ 5,293.54	$ 5,293.54	$ 5,293.54	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 30A Power Feed - 90 Day	$ 5,859.18	$ 5,867.77	$ 5,867.77	$ 5,867.77	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 40A Power Feed - 90 Day	$ 7,057.94	$ 7,068.28	$ 7,068.28	$ 7,068.28	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 60A Power Feed - 90 Day	$ 11,686.24	$ 11,703.37	$ 11,703.37	$ 11,703.37	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 100A Power Feed - 90 Day	$ 18,771.64	$ 18,799.16	$ 18,799.16	$ 18,799.16	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 200A Power Feed - 90 Day	$ 34,306.29	$ 34,356.57	$ 34,356.57	$ 34,356.57	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 300A Power Feed - 90 Day	$ 53,188.51	$ 53,266.46	$ 53,266.46	$ 53,266.46	100.15%	100.15%	100.00%	100.15%	100.00%
Space Construction Adjustment for Each Additional 400A Power Feed - 90 Day	$ 75,519.92	$ 75,630.61	$ 75,630.61	$ 75,630.61	100.15%	100.15%	100.00%	100.15%	100.00%
3.2 Grounding									
Grounding - 90 Day Installation									
#2 AWG per Foot - 90 Day	$ 9.55	$ 9.56	$ 9.56	$ 9.56	100.15%	100.15%	100.00%	100.15%	100.00%
1/0 AWG per Foot - 90 Day	$ 15.88	$ 15.91	$ 15.91	$ 15.91	100.15%	100.15%	100.00%	100.15%	100.00%
4/0 AWG per Foot - 90 Day	$ 18.05	$ 18.07	$ 18.07	$ 18.07	100.15%	100.15%	100.00%	100.15%	100.00%
350 KCMIL per Foot - 90 Day	$ 25.04	$ 25.08	$ 25.08	$ 25.08	100.15%	100.15%	100.00%	100.15%	100.00%
500 KCMIL per Foot - 90 Day	$ 27.90	$ 27.94	$ 27.94	$ 27.94	100.15%	100.15%	100.00%	100.15%	100.00%
750 KCMIL per Foot - 90 Day	$ 42.75	$ 42.81	$ 42.81	$ 42.81	100.15%	100.15%	100.00%	100.15%	100.00%
3.3 Rent									
Rent per Square Foot	$ 3.00	$ 2.79	$ 2.79	$ 2.79	92.78%	92.78%	100.00%	92.78%	100.00%

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3.4 Quote Preparation Fee - Caged Construction									
Quotation Preparation Fee - Caged Construction	$ 3,610.14	$ 3,615.43	$ 3,615.43	$ 3,615.43	100.15%	100.15%	100.00%	100.15%	100.00%
4 Virtual Collocation									
4.1 Equipment Bay									
Equipment Bay per Shelf	$ 2.84	$ 2.73	$ 2.73	$ 2.73	96.01%	96.01%	100.00%	96.01%	100.00%
4.2 Labor									
Maintenance - Regular Business Hours Per 1/2 Hour	$ 21.20	$ 21.23	$ 21.23	$ 21.23	100.15%	100.15%	100.00%	100.15%	100.00%
Maintenance - Outside Regular Business Hours Per 1/2 Hour	$ 28.37	$ 28.41	$ 28.41	$ 28.41	100.15%	100.15%	100.00%	100.15%	100.00%
Training - Regular Business Hours Per 1/2 Hour	$ 21.20	$ 21.23	$ 21.23	$ 21.23	100.15%	100.15%	100.00%	100.15%	100.00%
Inspector - Regular Business Hours Per 1/2 Hour	$ 24.17	$ 24.21	$ 24.21	$ 24.21	100.15%	100.15%	100.00%	100.15%	100.00%
Inspector - Outside Regular Business Hours Per 1/2 Hour	$ 31.13	$ 31.17	$ 31.17	$ 31.17	100.15%	100.15%	100.00%	100.15%	100.00%
Installation - Regular Business Hours Per 1/2 Hour	$ 24.17	$ 24.21	$ 24.21	$ 24.21	100.15%	100.15%	100.00%	100.15%	100.00%
Installation - Outside Regular Business Hours Per 1/2 Hour	$ 31.13	$ 31.17	$ 31.17	$ 31.17	100.15%	100.15%	100.00%	100.15%	100.00%
Engineering - Regular Business Hours Per 1/2 Hour	$ 22.88	$ 22.91	$ 22.91	$ 22.91	100.15%	100.15%	100.00%	100.15%	100.00%
Engineering - Outside Regular Business Hours Per 1/2 Hour	$ 29.53	$ 29.57	$ 29.57	$ 29.57	100.15%	100.15%	100.00%	100.15%	100.00%
4.3 Quote Preparation Fee - Virtual									
Quotation Preparation Fee - Virtual	$ 3,320.31	$ 3,325.17	$ 3,325.17	$ 3,325.17	100.15%	100.15%	100.00%	100.15%	100.00%

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	Total Direct	Total Direct	Total Direct	Total Direct	Percent Change	Percent Change	Percent Change	Percent Change	Percent Change
Line Sharing Cost Study - Recurring									
Splitter Shelf Charge	$ 5.03	$ 4.87	$ 4.18	$ 4.18	96.97%	83.12%	85.71%	83.12%	85.71%
Splitter TIE Cable Connections									
Splitter in the Common Area - Data to 410 Block	$ 6.50	$ 6.50	$ 2.72	$ 2.72	100.15%	41.84%	41.78%	41.84%	41.78%
Splitter in the Common Area - Data Direct to CLEC	$ 6.82	$ 6.83	$ 2.99	$ 2.99	100.15%	43.91%	43.85%	43.91%	43.85%
Splitter on the MDF - Data to 410 Block	$ 2.13	$ 2.13	$ 0.80	$ 0.80	100.15%	37.79%	37.74%	37.79%	37.74%
Splitter on the MDF - Data Direct to CLEC	$ 4.57	$ 4.57	$ 2.07	$ 2.07	100.15%	45.32%	45.25%	45.32%	45.25%
Splitter on the IDF - Data to 410 Block	$ 2.07	$ 2.07	$ 0.76	$ 0.76	100.15%	36.93%	36.88%	36.93%	36.88%
Splitter on the IDF - Data Direct to CLEC	$ 3.87	$ 3.88	$ 1.72	$ 1.72	100.15%	44.53%	44.47%	44.53%	44.47%
Line Sharing Cost Study - Non-recurring									
Splitter Shelf Charge	$ 403.16	$ 403.75	$ 403.75	$ 252.81	100.15%	100.15%	100.00%	62.71%	62.62%
Splitter TIE Cable Connections									
Splitter in the Common Area - Data to 410 Block	$ 2,407.21	$ 2,410.74	$ 1,489.39	$ 1,489.39	100.15%	61.87%	61.78%	61.87%	61.78%
Splitter in the Common Area - Data Direct to CLEC	$ 2,526.39	$ 2,530.09	$ 1,640.45	$ 1,640.45	100.15%	64.93%	64.84%	64.93%	64.84%
Splitter on the MDF - Data to 410 Block	$ 788.13	$ 789.28	$ 440.42	$ 440.42	100.15%	55.88%	55.80%	55.88%	55.80%
Splitter on the MDF - Data Direct to CLEC	$ 1,692.55	$ 1,695.03	$ 1,134.27	$ 1,134.27	100.15%	67.02%	66.92%	67.02%	66.92%
Splitter on the IDF - Data to 410 Block	$ 766.16	$ 767.28	$ 418.43	$ 418.43	100.15%	54.61%	54.53%	54.61%	54.53%
Splitter on the IDF - Data Direct to CLEC	$ 1,434.50	$ 1,436.60	$ 944.62	$ 944.62	100.15%	65.85%	65.75%	65.85%	65.75%
Engineering	$ 966.10	$ 967.51	$ 967.51	$ 967.51	100.15%	100.15%	100.00%	100.15%	100.00%

1 - Total Direct costs from original Collocation Model (3/16/01)
2 - Total Direct costs from updated Collocation Model (6/21/01)
3 - Total Direct from Collocation Model (6/21/01), using 100% QWEST Labor and $44 89-Block. Also, no Power, Land, Building, and IDC factors used. Finally, No HVAC nor Electric inputs.
4 - Same as (3), but also does not include Aerial Support, Cable Racking, or Lighting.

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE - Caged								
ADD								
-PRODUCT MANAGEMENT IMPLEMENTATION (PMI)								
REVIEW EIC REQUEST, ENTER INTO AQCB SYSTEM, MONITOR REQUEST PROGRESS								
1.75 HOURS PER REQUEST								
Review EIC request, enter AQCB, monitor	105	1.000				105.00	$56.97	$99.70
Subtotal - PRODUCT MANAGEMENT IMPLEMENTATION (PMI)						**105.00**		**$99.70**
-INFRASTRUCTURE AVAILABILITY CENTER (IAC)								
REVIEW INFORMATION FROM OSP, CSPEC, BRI, AND SEND TO PMI,								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
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Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE - Caged (con't)								
PUT TOGETHER INVESTMENT PACKAGE								
Review for completeness resolve discrepancies	60	1.000				60.00	$56.97	$56.97
Determine engineering contacts	30	1.000				30.00	$56.97	$28.49
Make copies and distribute	60	1.000				60.00	$56.97	$56.97
Log to master tracking spreadsheet w/appropriate dates	30	1.000				30.00	$56.97	$28.49
Host meeting w/USW reps and co-provider	60	1.000				60.00	$56.97	$56.97
Serve as point of contact between engr and customer	120	1.000				120.00	$56.97	$113.94
Track, escalate, ensure feasibility time frames are met	60	1.000				60.00	$56.97	$56.97
Prepare feasibility letter, send to AE, prod mgmt and file	60	1.000				60.00	$56.97	$56.97
Subtotal - INFRASTRUCTURE AVAILABILITY CENTER (IAC)						**480.00**		**$455.76**
-OUTSIDE PLANT ENGINEERING - PLANNING (OSP)								
CHECK CONDUIT AND INNERDUCT AVAILABILITY								
ALSO, CHECK LOCATION OF POI MANHOLE								
Check OSP (Outside Plant) records, identify const req., req field engr	120	1.000				120.00	$51.76	$103.52
Check spare conduit/innerduct, space for fiber splice	60	1.000				60.00	$51.76	$51.76
Check for standard architecture, models, configs	60	1.000				60.00	$51.76	$51.76
Complete preliminary cost and quote preparation	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - PLANNING (OSP)						**420.00**		**$362.32**

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE - Caged (con't)								
-OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)								
Make field visit, verify/identify issues with POI location	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)						**180.00**		**$155.28**
-COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)								
DETERMINE RISER AND DUCT REQUIREMENTS AND DETERMINE POWER CABLING REQUIREMENTS								
Receive order; evaluate, distribute, work w/EPOC and OSP (Outside Plant)	150	1.000				150.00	$46.18	$115.45
Create CPD	120	1.000				120.00	$46.18	$92.36
Evaluate office drawings, call field, determine space	180	1.000				180.00	$46.18	$138.54
CSPEC power planner evaluation and fix drawings	180	1.000				180.00	$46.18	$138.54
Quote racking of fiber, update CPD with OSP (Outside Plant) additions	180	1.000				180.00	$46.18	$138.54
Evaluate location, complete COEFM, work w/real estate	480	1.000				480.00	$46.18	$369.44
Create CPD spreadsheet and marketing worksheet	960	1.000				960.00	$46.18	$738.88
Subtotal - COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)						**2,250.00**		**$1,731.75**
-REAL ESTATE								
PROJECT ENGINEER REVIEW COLLOCATION REQUIREMENTS								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE - Caged (con't)								
AND PREPARE QUOTE.								
Determine scope of work, prepare quote for CSPEC/CPD	360	1.000				360.00	$46.18	$277.08
Subtotal - REAL ESTATE						**360.00**		**$277.08**
-TRANSMISSION ENGINEERING/VENDORS								
REVIEW REQUEST AND DESIGN WORK, PREPARE COSTS FOR IAC								
SOME OF THE DESIGN WORK IS BEING COMPLETED BY VENDORS								
Review inquiry and design work	480	1.000				480.00	$46.18	$369.44
Subtotal - TRANSMISSION ENGINEERING/VENDORS						**480.00**		**$369.44**
Total For Service:						**4,275.00**		**$3,451.33**

Direct Cost	**$3,451.33**

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE CAGELESS (Excludes Real Estate)								
****ADD****								
-PRODUCT MANAGEMENT IMPLEMENTATION (PMI)								
REVIEW EIC REQUEST, ENTER INTO AQCB SYSTEM, MONITOR REQUEST PROGRESS								
1.75 HOURS PER REQUEST								
Review EIC request, enter AQCB, monitor	105	1.000				105.00	$56.97	$99.70
Subtotal - PRODUCT MANAGEMENT IMPLEMENTATION (PMI)						**105.00**		**$99.70**
-INFRASTRUCTURE AVAILABILITY CENTER (IAC)								
REVIEW INFORMATION FROM OSP, CSPEC, BRI, AND SEND TO PMI,								
PUT TOGETHER INVESTMENT PACKAGE								
Review for completeness resolve discrepancies	60	1.000				60.00	$56.97	$56.97
Determine engineering contacts	30	1.000				30.00	$56.97	$28.49
Make copies and distribute	60	1.000				60.00	$56.97	$56.97
Log to master tracking spreadsheet w/appropriate dates	30	1.000				30.00	$56.97	$28.49
Host meeting w/USW reps and co-provider	60	1.000				60.00	$56.97	$56.97
Serve as point of contact between engr and customer	120	1.000				120.00	$56.97	$113.94
Track, escalate, ensure feasibility time frames are met	60	1.000				60.00	$56.97	$56.97

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE CAGELESS (Excludes Real Estate) (con't)								
Prepare feasibility letter, send to AE, prod mgmt and file	60	1.000				60.00	$56.97	$56.97
Subtotal - INFRASTRUCTURE AVAILABILITY CENTER (IAC)						**480.00**		**$455.76**
-OUTSIDE PLANT ENGINEERING - PLANNING (OSP)								
CHECK CONDUIT AND INNERDUCT AVAILABILITY								
ALSO, CHECK LOCATION OF POI MANHOLE								
Check OSP (Outside Plant) records, identify const req., req field engr	120	1.000				120.00	$51.76	$103.52
Check spare conduit/innerduct, space for fiber splice	60	1.000				60.00	$51.76	$51.76
Check for standard architecture, models, configs	60	1.000				60.00	$51.76	$51.76
Complete preliminary cost and quote preparation	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - PLANNING (OSP)						**420.00**		**$362.32**
-OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)								
Make field visit, verify/identify issues with POI location	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)						**180.00**		**$155.28**
-COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)								
DETERMINE RISER AND DUCT REQUIREMENTS AND DETERMINE								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE CAGELESS (Excludes Real Estate) (con't)								
POWER CABLING REQUIREMENTS								
Receive order; evaluate, distribute, work w/EPOC and OSP (Outside Plant)	150	1.000				150.00	$46.18	$115.45
Create CPD	120	1.000				120.00	$46.18	$92.36
Evaluate office drawings, call field, determine space	180	1.000				180.00	$46.18	$138.54
CSPEC power planner evaluation and fix drawings	180	1.000				180.00	$46.18	$138.54
Quote racking of fiber, update CPD with OSP (Outside Plant) additions	180	1.000				180.00	$46.18	$138.54
Evaluate location, complete COEFM, work w/real estate	480	1.000				480.00	$46.18	$369.44
Create CPD spreadsheet and marketing worksheet	960	1.000				960.00	$46.18	$738.88
Subtotal - COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)						**2,250.00**		**$1,731.75**
-TRANSMISSION ENGINEERING/VENDORS								
REVIEW REQUEST AND DESIGN WORK, PREPARE COSTS FOR IAC								
SOME OF THE DESIGN WORK IS BEING COMPLETED BY VENDORS								
Review inquiry and design work	480	1.000				480.00	$46.18	$369.44
Subtotal - TRANSMISSION ENGINEERINGIVENDORS						**480.00**		**$369.44**
Total For Service:						**3,915.00**		**$3,174.25**
Direct Cost								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE CAGELESS (Excludes Real Estate) (con't)								
		3174.248						

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE Virtual (Excludes Real Estate)								
ADD								
-PRODUCT MANAGEMENT IMPLEMENTATION (PMI)								
REVIEW EIC REQUEST, ENTER INTO AQCB SYSTEM, MONITOR REQUEST PROGRESS								
1.75 HOURS PER REQUEST								
Review EIC request, enter AQCB, monitor	105	1.000				105.00	$56.97	$99.70
Subtotal - PRODUCT MANAGEMENT IMPLEMENTATION (PMI)						**105.00**		**$99.70**
-INFRASTRUCTURE AVAILABILITY CENTER (IAC)								
REVIEW INFORMATION FROM OSP, CSPEC, BRI, AND SEND TO PMI,								
PUT TOGETHER INVESTMENT PACKAGE								
Review for completeness resolve discrepancies	60	1.000				60.00	$56.97	$56.97
Determine engineering contacts	30	1.000				30.00	$56.97	$28.49
Make copies and distribute	60	1.000				60.00	$56.97	$56.97
Log to master tracking spreadsheet w/appropriate dates	30	1.000				30.00	$56.97	$28.49
Host meeting w/USW reps and co-provider	60	1.000				60.00	$56.97	$56.97
Serve as point of contact between engr and customer	120	1.000				120.00	$56.97	$113.94
Track, escalate, ensure feasibility time frames are met	60	1.000				60.00	$56.97	$56.97

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE Virtual (Excludes Real Estate) (con't)								
Prepare feasibility letter, send to AE, prod mgmt and file	60	1.000				60.00	$56.97	$56.97
Subtotal - INFRASTRUCTURE AVAILABILITY CENTER (IAC)						**480.00**		**$455.76**
-OUTSIDE PLANT ENGINEERING - PLANNING (OSP)								
CHECK CONDUIT AND INNERDUCT AVAILABILITY								
ALSO, CHECK LOCATION OF POI MANHOLE								
Check OSP (Outside Plant) records, identify const req., req field engr	120	1.000				120.00	$51.76	$103.52
Check spare conduit/innerduct, space for fiber splice	60	1.000				60.00	$51.76	$51.76
Check for standard architecture, models, configs	60	1.000				60.00	$51.76	$51.76
Complete preliminary cost and quote preparation	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - PLANNING (OSP)						**420.00**		**$362.32**
-OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)								
Make field visit, verify/identify issues with POI location	180	1.000				180.00	$51.76	$155.28
Subtotal - OUTSIDE PLANT ENGINEERING - FIELD ENGR. (OSP)						**180.00**		**$155.28**
-COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)								
DETERMINE RISER AND DUCT REQUIREMENTS AND DETERMINE								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

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Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)
QUOTATION PREPARATION FEE Virtual (Excludes Real Estate) (con't)								
POWER CABLING REQUIREMENTS								
Receive order; evaluate, distribute, work w/EPOC and OSP (Outside Plant)	150	1.000				150.00	$46.18	$115.45
Create CPD	120	1.000				120.00	$46.18	$92.36
Evaluate office drawings, call field, determine space	180	1.000				180.00	$46.18	$138.54
CSPEC power planner evaluation and fix drawings	180	1.000				180.00	$46.18	$138.54
Quote racking of fiber, update CPD with OSP (Outside Plant) additions	180	1.000				180.00	$46.18	$138.54
Evaluate location, complete COEFM, work w/real estate	480	1.000				480.00	$46.18	$369.44
Create CPD spreadsheet and marketing worksheet	960	1.000				960.00	$46.18	$738.88
Subtotal - COMMON SYSTEMS PLANNING ENGINEERING CENTER (CSPEC)						**2,250.00**		**$1,731.75**
-TRANSMISSION ENGINEERING/VENDORS								
REVIEW REQUEST AND DESIGN WORK, PREPARE COSTS FOR IAC								
SOME OF THE DESIGN WORK IS BEING COMPLETED BY VENDORS								
Review inquiry and design work	480	1.000				480.00	$46.18	$369.44
Subtotal - TRANSMISSION ENGINEERINGIVENDORS						**480.00**		**$369.44**
Total For Service:						**3,915.00**		**$3,174.25**
Direct Cost								

NONRECURRING COST DETAIL SUMMARY

Study Name: ARIZONA COLLOCATION
Study Year: 2001
Analyst: Deffley
Product Group: Interconnection

ENRC Version: 2.10
Date: 02/13/01

State: Arizona

Work Item	Time Minutes	Prob #1	Prob #2	Prob #3	Prob #4	Applied Time (Minutes)	Labor /Hour	Cost
A	B	C	D	E	F	G	H	I
						B * (C Thru F)		H * (G/60)

QUOTATION PREPARATION FEE Virtual (Excludes Real Estate) (con't)

3174.248

Exhibit 7: CLEC Power Cable Lengths in Arizona

	AZ Specific Study	Collocation Model
BDFB to Cage Distance Average	79.9 ft.	82.7 ft.
PBD to Cage Distance Average	176.7 ft.	183.1 ft.

Arizona Specific Power Cable Lengths Study

BAN	STATE	CLLI	YEAR	Info	Distance
C71LP02	AZ	PHNXAZGR	1997	BDFB	65
C71LS01	AZ	CHNDAZWE	1997	BDFB	145
C71LS02	AZ	DRVYAZNO	1997	BDFB	55
C71LS03	AZ	PHNXAZSE	1997	BDFB	20
C71LS04	AZ	SCDLAZTH	1997	BDFB	25
C81LP01	AZ	PHNXAZNO	1998	BDFB	50
C81LP02	AZ	PHNXAZMA	1998	BDFB	60
C81LP04	AZ	SCDLAZMA	1998	BDFB	90
C81LP16	AZ	TEMPAZMA	1998	BDFB	100
C81LS03	AZ	PHNXAZGR	1998	BDFB	50
C81LS04	AZ	DRVYAZNO	1998	BDFB	65
C81LS06	AZ	PHNXAZNW	1998	BDFB	55
C81LS07	AZ	SCDLAZMA	1998	BDFB	55
C81LS08	AZ	SCDLAZTH	1998	BDFB	75
C81LS09	AZ	TEMPAZMA	1998	BDFB	85
C81LS10	AZ	MESAAZMA	1998	BDFB	80
C81LS12	AZ	PHNXAZCA	1998	BDFB	148
C81LS14	AZ	MESAAZGI	1998	BDFB	50
C81LS15	AZ	PHNXAZSE	1998	BDFB	58
C81LS16	AZ	PHNXAZEA	1998	BDFB	55
C81LS17	AZ	PHNXAZWE	1998	BDFB	70
CL1282E	AZ	TEMPAZMA	1997	BDFB	200
CL1283E	AZ	PHNXAZNW	1997	BDFB	65
CL1284E	AZ	PHNXAZNO	1997	BDFB	45
CL1285E	AZ	PHNXAZMA	1997	BDFB	170
CL1286E	AZ	PHNXAZSY	1997	BDFB	35
CL1287E	AZ	PHNXAZGR	1997	BDFB	70
CL1289E	AZ	SCDLAZMA	1997	BDFB	117
CL1290E	AZ	MESAAZMA	1997	BDFB	50
CL1291E	AZ	PHNXAZEA	1997	BDFB	82
CL1292E	AZ	MESAAZGI	1997	BDFB	110
CL1293E	AZ	PHNXAZWE	1997	BDFB	82
CL1281E	AZ	CHNDAZMA		BDFB	55
CL1229E	AZ	MESAAZMA		BDFB	70
CL1230E	AZ	PHNXAZEA		BDFB	50
CL1228E	AZ	SCDLAZMA		BDFB	140
CL1227E	AZ	TEMPAZMA		BDFB	160
C71LP06	AZ	TCSNAZMA	1997	NO BDFB	120
C71LP08	AZ	PHNXAZNE	1997	NO BDFB	225
C71LP12	AZ	TCSNAZFW	1997	NO BDFB	120
C71LP13	AZ	PHNXAZMA	1997	NO BDFB	170
C71LP14	AZ	PHNXAZMA	1997	NO BDFB	170
C81LP03	AZ	TCSNAZRN	1998	NO BDFB	150
C81LP06	AZ	PHNXAZMA	1998	NO BDFB	170
C81LP09	AZ	TCSNAZSO	1998	NO BDFB	75
C81LP13	AZ	PHNXAZNO	1998	NO BDFB	260
C81LS02	AZ	PHNXAZNO	1998	NO BDFB	110
CL1227E	AZ	TEMPAZMA	1997	NO BDFB	300
CL1288E	AZ	PHNXAZCA	1997	NO BDFB	250

Exhibit 8: Derivation of the Denominator Adjustment to DEMS

The time from the when the called party goes off-hook until the time a trunk is seized is about 12 seconds. The total length of the average call is 5 minutes (see support for Switch Traffic Limit, BHCCS in 4.1.2 of the HAI 5.2a Inputs Portfolio documentation) or 300 seconds. So generally 4% (i.e., 12 seconds per 300 second call) is spent dialing. The interLATA DEMs need to be divided by 1.04 to get the billable UNE minutes since billing doesn't begin until immediately following dialing. The intraLATA DEMs need to be adjusted further to reflect that from the completion of dialing (i.e., when access minutes begin) until the called party answers (i.e., until UNE billing begins on intraLATA calls) there is additional setup time. The ratio of billable UNE intraLATA minutes to equvalent access minutes is 1.07 based on the following from an FCC document on Telecommunications Relay Service.[1]

"The estimates of conversation or billed minutes are based on access minute data reported by NECA for access minutes .... The typical domestic direct dialed (DDD) call results in both originating and terminating access minutes. The relationship is not one-to-one for these calls because toll carriers are billed on the originating end for call set-up time and time associated with non-completed calls.

[1] Telecommunications Industry Revenue: TRS Fund Worksheet Data, November 1997, Jim Lande and Katie Rangos, Industry Analysis Division, Common Carrier Bureau, FCC, pages 9 and 10.

Thus, one ordinary DDD minute generates about 1.07 originating access minutes, but just one terminating access minute. ..."

So intraLATA DEMs need to be divided by 1.04 to get access minute equivalents and then by 1.07 (or about 1.11 in total) to get intraLATA billable UNE minutes. These ratios can be applied to the 62,141,633,323 minutes that the HAI 5.2a uses in its denominator and the following breakdown of those minutes from the Inputs tab in the HAI 5.2a Density Zone Report, lines 102-106 of column C.

Intraoffice Local Actual Min	13,594,365,677
Interoffice Local Actual Min	33,274,339,645
Intrastate Toll Actual Min	3,006,928,000
Interstate Toll Actual Min	12,266,000,000
Total Min	62,141,633,323

Assuming that about 50% of the minutes are originating, that the local minutes are roughly the same as intraLATA minutes and toll minutes are roughly the same as interLATA minutes, these ratios result in the following adjustments.

Conversion of DEM Based Minutes to Billable Minutes (Minutes are in Millions)						
Service	Total DEM Based Min	Terminating (50%)	Originating (50%)	Orig Min Adjustment Factor	Orig Billable Minutes	Total Billable Min
A	B	C = B * 50%	D = B * 50%	E	F = D / E	G = C + F
Intraoffice Local	13,594	6,797	6,797	1.11	6,124	12,921
Interoffice Local	33,274	16,637	16,637	1.11	14,988	31,626
Intrastate Toll	3,007	1,503	1,503	1.04	1,446	2,949
Interstate Toll	12,266	6,133	6,133	1.04	5,897	12,030
Total	62,142	31,071	31,071		28,455	59,526

Thus, the corrected denominator for the end office UNE per minute is 59,526 million billable minutes which results in a unit cost that is 4.4% higher (62,142 / 59,526 less 1) due to this one correction.

Exhibit 9: HAI Switch Model Adjustments

Line No.	Line Description	HAI as Filed	Source or Calculation	HAI Adjusted	ICM as Filed
1	End Office Amalgamated Switching Investment *Constant Term*	$ 336,181	HAI	$ 336,181	
2	Number of Switches	136	HAI	136	
3	Total Fixed Investment	$ 45,720,616	L1 * L2	$ 45,720,616	
4					
5	End Office Amalgamated Switching Investment per Line Term	$ 87	HAI	$ 87	
6	Analog Line Circuit Offset for DLC lines, per line	$ 30	HAI	na	
7	Percent of Lines in HM that are Integrated DLC	75.9%	HAI	na	
8	Basic DLC penetration value for switch investment inputs	18.3%	HAI	na	
9	DLC Adjusted Variable Cost per Line	$ 69.72	L5-L6*(L7-L8)	$ 87.00	
10	Growth Price Additive per Line	na	Exhibit 10	$ 8.38	
11	Fully Adjusted Variable Cost per Line	$ 69.72	L9+L10	$ 95.38	
12					
13	Working Lines in Arizona	2,959,791	HAI	2,959,791	
14	Fill Factor: Working Lines / Installed Lines	94%	HAI	80%	
15	Installed Lines	3,148,714	L13/L14	3,680,279	
16					
17	Total Variable Cost	$ 219,518,705	L11*L15	$ 351,026,364	
18					
19	Total Investment *Before Upgrades*	265,239,321	L3+L17	$ 396,746,980	
20					
21	Average Investment per Year per Line for Upgrades	na	Text of Testimony	$ 3.71	
22	Working Lines in Arizona	na	HAI	2,959,791	
23	Average Investment per Year for Upgrades in AZ	na	L21*L22	$ 10,978,200	
24	Years Upgrades Needed (Economic Life)	na		10	
25	Cost of Money	na		9.61%	
26	Present Worth of Annual Upgrade Investment	na	P/A of L23	$ 68,601,421	
27					
28	Total Investment	$ 265,239,321	L19+L26	$ 465,348,401	$ 392,738,756
29	Ratio of Annual Cost to 377C End Office Investment from HM	0.404	HAI	0.404	
30	Total Annual Costs	$ 107,029,446	HAI	$ 187,777,519	
31					
32	EO non-port fraction from HM	70%	HAI	70%	
33	Total Annual Costs - Usage Related	$ 74,920,612	L30*L32	$ 131,444,263	
34	DEM based MOUs	62,141,633,323	HAI	62,141,633,323	
35	Ratio: DEMs to Billable MOUs	na	Exhibit 8	1.044	
36	Billable MOUs	62,141,633,323		59,525,599,932	
37	**Cost per MOU**	**$ 0.00121**	**L33/L36**	**$ 0.00221**	**$ 0.00260**
38					
39	Total Annual Costs - Port Related	$ 32,108,834	L30-L33	$ 56,333,256	
40	Working Lines in Arizona	2,959,791	HAI	2,959,791	
41	**Monthly Cost per Port Before Application RTU**	**$ 0.90**	**L39/L40/12**	**$ 1.59**	**$ 1.28**
42	**IF NO SEPARATE RATE ELEMENT FOR FEATURES**				
43	Applications Software Purchased per Year per Line	na		$ 4.53	
44	Applications Software Per Line Port per Month	na		$ 0.38	Inc'd in Features
45	**Monthly Cost per Switch Line Port**	**$ 0.90**	**L41+L44**	**$ 1.96**	

Exhibit 10: Computation of Growth Price Additive Per Line.

Year	1	2	3	4	5	6	7	8	9	10	11
Lines Demanded - Beginning of Year	1,000	1,050	**1,103**	1,158	1,216	1,276	**1,340**	1,407	1,477	1,551	**1,629**
Growth per Year	5%										
Total Installed Lines for 2 Years Growth	**1,103**		1,216		**1,340**		1,477		**1,629**		
Lines Installed - Beginning of Year	1,103		113		125		137		151		
Cost of Money	9.61%										
Present Worth of Lines Installed Initially	1,103										
Present Worth of Growth Lines by Year			94		86		79		73		
Present Worth of ALL Growth Lines	332										
Time Value of Money Adjusted % of Lines Installed as Growth	**23.2%**	=	332	/	(	1,103	+	332	)		
Additional Price per Line for Growth Lines	$ 45										
Growth Price Additive per Line - SW1	$ 10.42	=	$ 45	*	23.2%						
Percent of AZ Lines that are SW1	80.4%										
Growth Price Additive per Line	$ 8.38	=	$10.42	*	80.4%						

Exhibit 11: Reasonability Check in HAI Tandem Trunks

Ref	Description	Value	Source
A	Number of working lines in AZ	2,959,791	HAI
B	Line to end office trunk ratio	8	Typical configurations in Qwest
C	Estimated end office trunks	369,974	A / B
D	Interoffice Local Actual Minutes	33,274,339,645	HAI DZ Report, Inputs tab, cell C103
E	Toll Actual Minutes	15,272,928,000	HAI DZ Report, Inputs tab, cells C104+C105
F	Total Trunk Minutes	48,547,267,645	D + E
G	Local % of end ofc trunks	0.69	D / F
H	Local end ofc trunks	253,580	C * G
I	Tandem fraction of intraLATA	0.20	HAI DZ Report, Inputs tab, cells C32
J	Tandem trks for IntraLATA	50,716	H * I
K	Toll end ofc trunks	116,393	C - H
L	Tandem fraction of interLATA	0.20	HAI DZ Report, Inputs tab, cells C33
M	End ofc to tdm trks for InterLATA	23,279	K * L
N	Tandem to IXC trunks	23,279	Assumed same a M
O	Total tandem trunks	97,273	J + M + N

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JAMES M. IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194 PHASE II

REBUTTAL TESTIMONY OF

D. M. (MARTI) GUDE

QWEST CORPORATION

JUNE 27, 2001

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EXECUTIVE SUMMARY

D. M. (Marti) Gude is employed by Qwest Corporation. In her position as Director - Cost Accounting, she is responsible for various regulatory and management accounting functions. Her responsibilities include preparing and analyzing embedded cost studies and information relating to cost studies that Qwest uses for purposes such as deregulation, cost accounting, regulatory filings, and the development of TELRIC-based cost study factors.

Her testimony first describes adjustments that Qwest has made to its TELRIC-based cost factors that are used in the cost studies that Qwest has presented in this docket. These adjustments to Qwest's factors recognize the Arizona Commission's latest authorized rate of return, incorporate the depreciation salvage values that the Commission has established, incorporate the appropriate Arizona sales tax rates, and exclude sales tax where appropriate for the development of the total installation or "TIF" factor.

Her rebuttal testimony then responds to the testimony of Mr. Thomas H. Weiss, Mr. Michael Hydock, and Mr. Roy Lathrop, presented on behalf of AT&T Communications of the Mountain States, Inc., WorldCom, Inc., and XO Arizona, Inc., and the testimony of Dr. Francis R. Collins, presented on behalf of Cox Arizona Telecom, L.L.C., as well as the testimony of Mr. William Dunkel, presented on behalf of the Arizona Commission Staff.

Her testimony responds to various challenges that these witnesses have raised concerning the TELRIC-based cost studies that Qwest presented in its direct case. The issues relating to the cost studies that Ms. Gude addresses in this testimony include:

- The inclusion in Qwest's studies of costs relating to product management, sales, uncollectible, network operations, planning, research and development, and other general and administrative costs (Weiss);
- The appropriate treatment of potential productivity changes arising from the merger between Qwest and U S WEST (Weiss and Hydock);
- Expense trends relating to network-related operations expenses (Hydock);
- Qwest's use of the TPI Inflation Index (Hydock);
- Power and Land and Building cost factors (Lathrop);
- The Cox proposal relating to capital costs (Collins);
- Overhead factors (Dunkel);
- "Current to Book" cost application for maintenance factors (Dunkel);

In addition, Ms. Gude's rebuttal testimony addresses the testimony of Mr. Douglas Denney, presented on behalf of AT&T Communications of the Mountain States, Inc., WorldCom, Inc., and XO Arizona, Inc. She responds to erroneous inputs, factors and/or assumptions employed by Mr. Denney in his run of the HAI 5.2a model. The issues that Ms. Gude addresses relating to the HAI model include:

- Depreciation and capital costs associated with investments relating to network interface devices, serving area interfaces, and drops;
- The exclusion of product management and sales costs;
- The use of cost reduction factors for general support costs;
- The use of a cost reduction factor of 50% for plant operations expenses; and
- The use of a corporate overhead factor of 10.4 percent.

Finally, Ms. Gude's rebuttal testimony sets forth and discusses numerous concerns that Qwest has regarding the Arizona Staff wholesale discount testimony sponsored by Mr. William Dunkel. Ms. Gude's rebuttal testimony discusses why Mr. Dunkel's resale discount result cannot, and should not, be relied upon by the Arizona Commission in establishing resale discounts in this proceeding. Ms. Gude responds to and clarifies incorrect information that underlies the Staff analysis. She corrects Mr. Dunkel's testimony and incorrect representations concerning:

- Instructions from the federal district court concerning the calculation of wholesale discounts;
- The adequacy of accounting data for use in calculating discounts;
- The reliance of other commissions on Qwest data for calculating discounts;
- TA96 Requirements;
- Audits and use of Qwest data by other regulatory commissions;
- The proper administration of wholesale discounts; and
- The proper assignment of loop costs for the purpose of calculating wholesale or resale discounts.

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is D. M. (Marti) Gude. My business address is 1314 Douglas-on-the-Mall, Omaha, Nebraska.

Q. ARE YOU THE SAME D. M. (MARTI) GUDE WHO FILED DIRECT TESTIMONY IN PHASE II OF THIS PROCEEDING?

A. Yes. I filed Phase II Direct Testimony on March 15, 2001, which presented Qwest's avoided cost model and proposed resale discounts for the State of Arizona.

II. PURPOSE OF TESTIMONY

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

A. The purpose of my testimony is fourfold. First, I identify and explain certain updates and adjustments that Qwest has made to the TELRIC studies that it presented with its direct testimony.[1]. Second, I respond to issues and concerns that Qwest has regarding the testimony of Mr. Thomas H. Weiss, Mr. Michael Hydock, and Mr. Roy Lathrop,

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1 These updates are presented and discussed in more detail in the rebuttal testimony of Qwest witnesses, Ms. Teresa K. Million and Mr. Garrett Fleming.

presented on behalf of AT&T Communications of the Mountain States, Inc., WorldCom, Inc., and XO Arizona, Inc.; the testimony of Dr. Francis R. Collins, presented on behalf of Cox Arizona Telecom, L.L.C.; and the testimony of Mr. William Dunkel, presented on behalf of the Arizona Commission Staff. In particular, I respond to criticisms from these witnesses relating to inputs and cost factors that Qwest uses in its studies and show that the criticisms are unfounded and incorrect. Third, I address the testimony of Mr. Douglas Denney, presented on behalf of AT&T Communications of the Mountain States, Inc., WorldCom, Inc., and XO Arizona, Inc., for the purpose of responding to erroneous inputs, factors and/or assumptions used in his run of the HAI 5.2a model. Finally, I conclude by addressing numerous issues and concerns that Qwest has regarding the Arizona Staff's wholesale discount testimony sponsored by Mr. William Dunkel. I correct information that Mr. Dunkel has presented to the Commission and show why his positions relating to the calculation of resale discounts for Arizona are wrong.

III. UPDATES TO QWEST TELRIC STUDY FACTORS

Q. YOU INDICATED THAT QWEST IS PROVIDING UPDATED TELRIC COST FACTORS FOR USE IN ITS COST STUDIES AS PART OF THIS FILING. PLEASE EXPLAIN THESE UPDATES AND ADJUSTMENTS TO QWEST'S STUDIES.

A. In Qwest's review of the intervenor testimony, it was determined that Qwest's March 15, 2001 filing should be updated to reflect the rate of return and capital structure established by the Arizona Corporation Commission (ACC) in Docket No. T-01051B-99-0105 et al. The March 30, 2001 stipulated resolution of that proceeding occurred after Qwest originally filed its TELRIC Study in this proceeding. Thus, Qwest is now updating its study factors to reflect the stipulated agreement capital structure and rate of return of 9.61%.[2]

In addition to updating the cost of capital factors, Qwest also made the following minor changes to its TELRIC study factors: (1) a correction of the depreciation cost factors to incorporate the proper Net Salvage values as approved by the ACC in Docket No. T-010518-97-0689 (Qwest's original March 15, 2001 filing inadvertently used "average" salvage values rather than "net salvage values); (2) an update to the composite tax rate factor used in the capital cost calculation, from 39.7 to 39.5292, in order to reflect a January 1, 2001 state tax rate change; and (3) an adjustment to the total installation factors ("TIF") to recognize the 0% Arizona-specific state sales tax rate for certain types of equipment purchases.

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2 See page 9 of the ACC Decision No. 63487 in Docket No. T-01051B-99-0105 et al. (dated March 30, 2001), which approved the stipulated settlement and a 9.61% overall cost of capital.

IV. ISSUES RELATING TO QWEST'S TELRIC STUDIES

Issues Regarding the Testimony of Mr. Thomas H. Weiss

- **Inclusion of Product Management, Sales, Uncollectible, Network Operations, Planning, Research and Development, and Other General and Administrative Costs in Factor Development**

Q. MR. WEISS ASSERTS THAT COSTS RELATING TO PRODUCT MANAGEMENT, SALES, NETWORK OPERATIONS, UNCOLLECTIBLES, PLANNING, RESEARCH AND DEVELOPMENT, AND OTHER GENERAL AND ADMINISTRATIVE COSTS ARE PURELY RETAIL IN NATURE AND SHOULD NOT BE INCLUDED IN WHOLESALE COST STUDIES RELATING TO LOCAL INTERCONNECTION SERVICES AND UNBUNDLED NETWORK ELEMENTS. IS MR. WEISS CORRECT?

A. No. Mr. Weiss' position regarding the treatment of Product Management, Sales, Network Operations, Uncollectible, Planning, Research and Development, and Other General and Administrative costs as stated on pages 31 – 41 of his direct testimony, is misguided. His position reflects the faulty assumptions employed in the HAI 5.2a model that he supports in this proceeding. Mr. Weiss's asserted position that these costs are purely *retail* costs that ILECs do not incur in the sale of unbundled network elements ("UNEs") and other wholesale services to carriers is supported only with broad-based characterizations, not by any factual evidence concerning whether Qwest actually incurs these types of costs in connection with the wholesale services that it

provides to competitive local exchange carriers ("CLECs"). A review of the facts concerning how Qwest provides interconnection services and UNEs demonstrates that these types of costs[3] are essential to providing wholesale services. It is wholly unrealistic and inaccurate to assume these costs away, as Mr. Weiss does.

While Mr. Weiss states that it would be "manifestly unfair" for CLECs to pay Qwest's retail costs, the true "manifest unfairness" would arise from the adoption of Mr. Weiss' proposals for the use of "zero" values for multiple cost factors that are used in Qwest's cost studies. Mr. Weiss totally ignores the *wholesale* service-related costs that Qwest incurs to provide interconnection services and UNEs, thereby significantly understating Qwest's costs of providing wholesale services. I hasten to point out that even the ARMIS 43-04 data relied upon for HAI 5.2a Model inputs clearly identify a portion of such costs as being related to *wholesale* switched access services provided to CLECs today.

Mr. Weiss also argues that CLECs will incur these types of costs themselves and, thus, they should not be required to pay Qwest for wholesale-related costs it incurs. But costs that CLECs may incur are irrelevant to the determination of the costs that Qwest incurs to provide local interconnection and UNEs.

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3 See Mr. Weiss' direct testimony, page 32, lines 13 –13.

Q. DESCRIBE WHY QWEST INCURS SIGNIFICANT MARKETING / PRODUCT MANAGEMENT COSTS IN PROVIDING WHOLESALE SERVICES AND WHY THESE COSTS SHOULD BE INCLUDED IN THE DEVELOPMENT OF UNE COSTS?

A. A variety of Account 6611 - Product Management type functions are "wholesale" in nature and would be required even if Qwest had no retail operations. For years, Qwest has employed product managers to serve the wholesale access service needs of interexchange carriers. Today, Qwest's Wholesale Carrier market unit is dedicated to serving the needs of interexchange carriers and CLECs in order to provide these customers with wholesale switched and dedicated access, as well as unbundled products. This market unit incurs wholesale costs that are characterized and recorded as "Marketing - Product Management" costs under Part 32 accounting rules. Actual recorded costs for wholesale services (i.e., Interexchange Access, Wireless Interconnect, and Wholesale Unbundled Services) that Qwest uses in determining the appropriate cost factors for wholesale product management and sales demonstrate that Qwest actually incurs many types of product management and sales costs to provide <u>wholesale</u>, not retail, services. I described in detail many of these specific product management functions in my direct testimony.

Q. PLEASE DESCRIBE THE SALES COSTS THAT QWEST INCURS IN SELLING WHOLESALE PRODUCTS AND EXPLAIN WHY THESE COSTS SHOULD BE USED IN DEVELOPING UNE COSTS.

A. In the wholesale environment, end-user costs are replaced by costs relating to the daily interactions with CLECs that Qwest must have to provide wholesale unbundled services. Qwest must perform many of the same sales functions it performs for its retail end-users in connection with servicing CLECs. For example, Qwest sales employees must negotiate contracts with the CLECs and respond to their service-related inquiries and requests.[4] Qwest's actual experience and recorded costs for dealing with unbundled-related cost functions need to be recognized when determining factors for Account 6612 Marketing - Sales. Accordingly, Qwest's TELRIC Studies properly identify sales costs that relate to unbundled services utilizing the methodology I previously described.

Q. DOES QWEST INCUR UNCOLLECTIBLE COSTS ASSOCIATED WITH THE DELIVERY OF WHOLESALE SERVICES TODAY?

A. Yes. In 2000, the FCC ARMIS Report 43-04, line 4040, for Arizona clearly shows that Qwest incurred uncollectible costs associated with wholesale interstate carrier services. Other Qwest accounting records also show uncollectibles to be associated with intrastate carrier services and resale of retail services. Although wholesale service uncollectibles associated with carriers is less than the comparable cost associated with retail end-user customers, there is nevertheless a real cost to Qwest arising from carrier-

---

4 An example of this complex activity can be seen in the Statement of Generally Available Terms (SGAT) workshops, where many hours have been undertaken for this category of costs.

related uncollectible accounts. In the post-Act environment, as the number of wholesale providers has increased, so has their failure to pay for services provided. This experience is not unique to Qwest. For example, Sprint, the long-distance carrier with the third largest market share, cut profit projections for 2001, citing sluggish wholesale sales and ***higher*** bad debt. A recent article stated that:

> "For the most part, Sprint has been hurt by declining wholesale sales amid bankruptcy filings by some of its large customers, which resell long-distance service. In turn, that's also increased the carrier's bad debt because some of those customers drew on Sprint loans or were unable to pay for their purchases."[5]

Even in the wholesale environment, uncollectible costs are a reality of doing business for Qwest and most companies. Particularly in view of the large number of recent business failures in the telecommunications industry, uncollectibles are an undeniable reality. If companies knew in advance which customer accounts would not be collectible, then individual customer collection processes, as suggested by Mr. Weiss, could certainly be used. Unfortunately, Qwest does not have such a crystal ball and, thus, has incurred uncollectible losses in the past and will continue to do so in the future. Uncollectibles expense is a general cost of doing business for all companies. Mr. Weiss' "good corporate citizen"[6] approach is unrealistic, and his exclusion of these costs from Qwest's local interconnection and unbundled network element costs is inappropriate. I doubt he would advocate having the uncollectible costs that his CLEC clients incur excluded from their costs of service. For Qwest and CLECs alike,

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5 CBS MarketWatch.com article "Sprint stock slides after profit warning", by Jeffry Bartash, May 16, 2001.

6 See Mr. Weiss' direct testimony, page 38, line 1.

uncollectibles are a real cost of doing business that must be factored into the costs of providing service.

Q. DESCRIBE THE TYPES OF COSTS THAT RELATE TO NETWORK OPERATIONS AND EXPLAIN WHY THESE COSTS SHOULD BE INCLUDED IN DETERMINING INTERCONNECTION AND UNBUNDLED NETWORK ELEMENT COSTS.

A. Network Operations costs, as defined by Mr. Weiss, consist of Network Administration (Account 6532), Plant Operations Administration (Account 6534), and Engineering (Account 6535) expenses. Mr. Weiss states that none of these costs pertain to local interconnection and unbundled network elements and thus, they should not be included in Qwest's cost study. This assertion is peculiar in light of the fact that the parties that Mr. Weiss is representing assign all Network Operations costs, including Power (Account 6531) and Testing (Account 6534), to local interconnection and unbundled network elements, albeit at a 50% reduced level, in the HAI model they sponsor in this proceeding. Second, and more importantly, Mr. Weiss makes the following unsupported statements regarding his reasons for not including these expense accounts:

> Account 6532: "Local interconnection and unbundled elements typically are not traffic-sensitive for the most part and, therefore, they do not cause a need for, nor do they benefit from traffic administration activity."
> Account 6534: " . . . the cost of the plant administration activities that are charged to that account do not benefit local interconnection and unbundled network elements."
> Account 6535: "Typically, the costs charged to this account pertain to studies of a specific engineering problem, such as locating a wire center. In general,

> such activities involve facilities on the public switched network and not facilities such as unbundled network elements."

Local interconnection and unbundled network elements most definitely involve traffic-sensitive activity, as demonstrated by all the various switching and transport UNEs. Furthermore, these UNEs, particularly if purchased as UNE-Ps, involve the public switched network (in fact, UNE-Ps are as much a part of the public switched network as are Qwest's resale or retail services). Plant administration expenses relate to the general administration of the company's entire plant facilities, whether purchased on a UNE, UNE-P, resale, or retail basis. Mr. Weiss has provided no empirical or factual data to support his claim that interconnection and unbundled elements do not require, incur, nor benefit from, the activities associated with these costs. As the group expense title suggests, these costs support all types of network facilities and thus, are properly treated as network support costs allocable to all network direct cost components.

Q. ON PAGES 38-41 OF HIS DIRECT TESTIMONY, MR. WEISS ASSERTS THAT QWEST'S PLANNING, RESEARCH AND DEVELOPMENT, AND OTHER GENERAL AND ADMINISTRATIVE COSTS ARE RETAIL COSTS. PLEASE EXPLAIN WHY THESE COSTS ARE NOT EXCLUSIVELY RELATED TO RETAIL AND WHY THEY SHOULD BE INCLUDED IN DETERMINING THE COSTS OF INTERCONNECTION AND UNBUNDLED NETWORK ELEMENT.

1 **A.** Mr. Weiss' assumption that Account 6712 - Planning, Account 6727 - Research and
2 Development, and Account 6728 - Other General and Administrative costs are incurred
3 solely for Qwest's retail operations is demonstrably wrong and is not supported by his
4 reliance on 47 C.F.R. § 51.609(c). [7] First, as I discussed in my direct testimony at pages
5 7-9, decisions from the United States Court of Appeals for the Eighth Circuit and the
6 United States Supreme Court invalidate the assumption implicit in Mr. Weiss' analysis
7 that avoidable costs – as opposed to avoided costs – should be factored into resale
8 discounts. Second, even if Rule 51.609(c) had not been invalidated, Mr. Weiss'
9 interpretation of it is insupportable. The rule establishes that the accounts and costs Mr.
10 Weiss references are considered to be "indirect" costs, which are presumed to be only
11 "partially avoided," not "totally avoided" in the delivery of wholesale service. The
12 FCC recognized that these costs are, in large measure, required in the delivery of
13 wholesale service. Thus, the creation and application of overhead factors for these
14 costs, in the development of Qwest's TELRIC costs associated with wholesale local
15 interconnection and unbundled element costs is appropriate.
16
17 Furthermore, Mr. Weiss' description and characterization of these costs is inaccurate; a
18 reasonable allocation of forward-looking common costs would include these costs.
19 Planning functions are necessary in the delivery of wholesale services. Development
20 and evaluation of long-term actions and operation of the Company can surely have an
21 effect of the delivery of wholesale services, as can long-range planning and the

---

7 See Mr. Weiss' direct testimony, page 28, lines 8-9.

development of contingency plans. Without such planning, wholesale service deliverables could be jeopardized. The same is true for research and development activities. If technology designs, solutions and improvements were not evaluated and integrated into Qwest's network and service offerings, retail and wholesale offerings would become antiquated in short order. In regard to other general and administrative costs, Mr. Weiss' examples are off base. Approximately 40% of the costs recorded in Account 6728 are related to corporate communications costs, and another approximately 14% are related to pension and short and long-term disability costs. Qwest incurs these types of costs for all employees, regardless whether the employees are associated with the company's wholesale or retail operations. Thus, common overhead factors that include these types of costs are appropriate and necessary under FCC Rule 51.505(c)(2). They are not pure retail costs, as Mr. Weiss suggests through his reliance on FCC Rules 51.505 and 51.609.

- **Merger Related Productivity Adjustment**

Q. IS MR. WEISS' RECOMMENDATION RELATING TO A MERGER-RELATED PRODUCTIVITY ADJUSTMENT [8]FLAWED?

A. Yes. It is flawed for several reasons. First, Mr. Weiss assumes that the merger-related cost savings he refers to are a certainty. His assumption ignores the significant risk statements outlined by Qwest and U S WEST in their joint-company disclosure

8 See Mr. Weiss' direct testimony, pages 29-31.

statements, which indicated that no assurance could be given that expected operating efficiencies, cost savings, and other benefits could be realized.[9] Second, Mr. Weiss fails to provide specific support for his assumption that potential savings would accrue equally to the operations and businesses of the pre-merger Qwest and U S WEST companies, rather than disproportionately accruing to Qwest's pre-merger business operations. Third, and perhaps most important, Mr. Weiss' recommendation assumes that a 6.85% productivity gain is incremental to, and sustainable year after year, on top of the 5%, which he states Qwest has already properly included in its TELRIC studies. By treating his recommendation as an annual occurrence, he is assuming an 11.85% productivity factor year after year. This assumption is plainly unrealistic, and Mr. Weiss provides no evidence of how he expects Qwest would be able to realize gains in productivity of this magnitude year after year. Aside from the impractical nature of sustaining productivity growth of this magnitude, nowhere in Qwest's merger documentation was such an assumption ever implied.

Issues Regarding the Testimony of Mr. Michael Hydock

- **Network-Related and Other Expense Trends**

Q. DOES MR. HYDOCK'S REVIEW OF QWEST'S PROVISIONING AND NETWORK OPERATIONS EXPENSES, NETWORK EXPENSES, NETWORK SERVICE EXPENSES, AND CORPORATE OVERHEAD EXPENSES, AS DISCUSSED ON PAGES 32-34 OF HIS DIRECT TESTIMONY, SUPPORT HIS

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9 See Qwest/USWC Joint Proxy Statement, e.g. pages I-8, I-20, and I-22.

CONCLUSIONS AND RECOMMENDATIONS RELATING TO PRODUCTIVITY GAINS AND THE SUBSEQUENT EFFECT ON QWEST"S LOOP COSTS?

A. No. Mr. Hydock's high level review of Qwest's Provisioning and Network Operations expenses (Plant Non-Specific Operations expenses), Network expenses (Plant Specific expenses), Network Service expenses (Network Support expenses), and Corporate Overhead expenses (6700 series accounts), as reported via the FCC's ARMIS reporting process for the period of 1996-2000, does not properly support his conclusion regarding productivity gains and his subsequent recommendation regarding an anticipated loop cost reduction of up to 40% from the current levels. First of all, the Arizona total ARMIS data (state and interstate) does not show the magnitude of the changes advocated by Mr. Hydock. Second, Mr. Hydock treats any observed changes as the absolute difference between two points in time (1996 and 2000) rather than as an evolving trend over time. I will further elaborate upon and discuss each of these individual expense groups and demonstrate why Mr. Hydock's conclusions are inaccurate.

Q. LET'S START WITH THE PROVISIONING AND NETWORK OPERATIONS EXPENSES. WHAT ARE THESE EXPENSES AND WHAT DID YOU OBSERVE IN EVALUATING THEM?

A. This category, as defined by Mr. Hydock, consists of the following expenses:

1 Account 6512 - Provisioning

2 Account 6531 - Power

3 Account 6532 - Network Administration

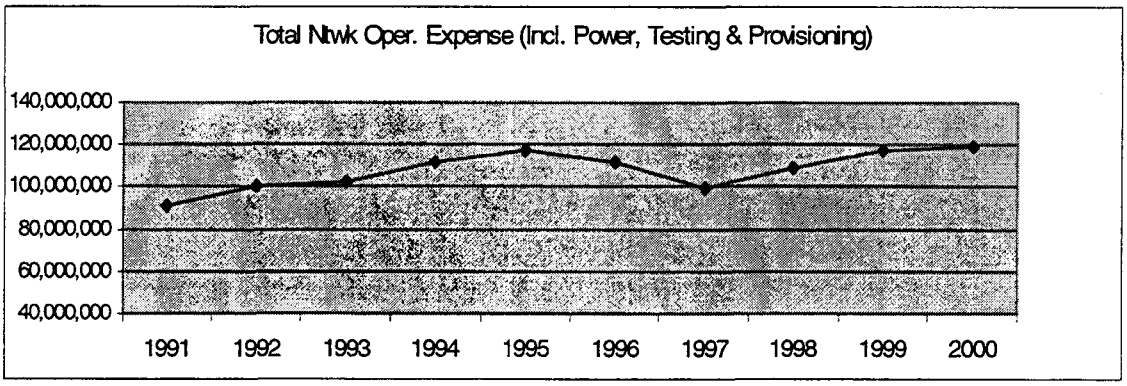
4 Account 6533 - Testing

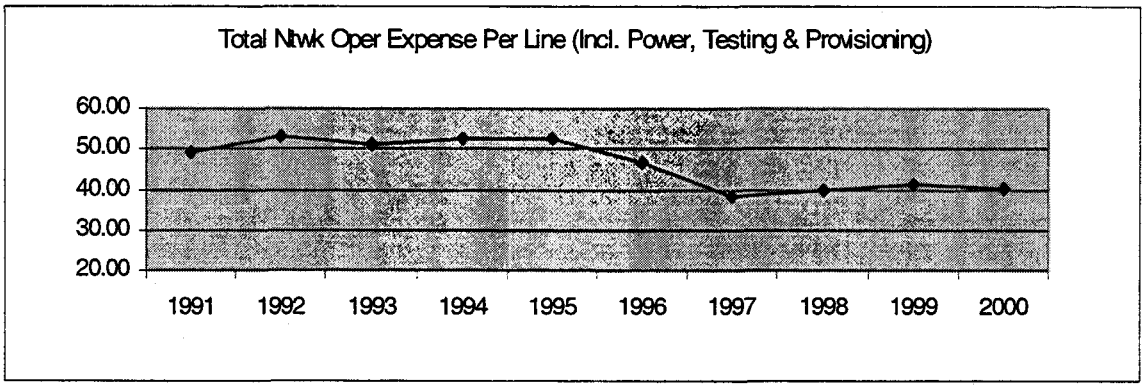
5 Account 6534 - Plant Operations

6 Account 6535 - Engineering

7 The graphs shown below illustrate the trend over the time period 1991-2000 for these
8 expenses, both on a total expense basis and on a cost per switched access line basis.
9 This in-depth review of Qwest's cost changes between 1991 and 2000 reveals that
10 network operations costs decreased significantly between 1995 and 1997, but that they
11 have stabilized since 1997, and are now even trending up. In fact, during the 1996-
12 2000 time period, Power and Testing costs actually increased 50% and 43%
13 respectively, and recent national changes in demand, supply and pricing for energy and
14 power will likely cause this trend to continue. The remaining Network Operations
15 expenses have been relatively flat. During the initial period of Mr. Hydock's review
16 (1996 – 1997), Network Administration and Engineering related costs did decline, but
17 this decline was primarily attributable to the company's regional consolidation and
18 subsequent workforce reductions in the network operations area, which occurred during
19 the 1995-97 timeframe, and a change in accounting procedures, which capitalized more
20 engineering support costs. The one-time nature of the decline in costs reflected in these
21 accounts cannot be considered a continuing trend, and, thus, the 30% per line decline
22 suggested by Mr. Hydock does not reasonably constitute a measure of productivity.
23 The charts below depict these changes and show that Network Operations costs per

access line gradually increased from 1991 to 1995, declined from 1995-1997, then stabilized with an upturn once again between 1997-2000. Assuming that the 1996-97 reduction, which contains one-time, non-repeatable activity, can be achieved each year, as Mr. Hydock has done, significantly understates the level of costs that Qwest is likely to achieve in the future.





Q. HOW DOES THE HAI MODEL TREAT THESE COSTS, AND IS THAT TREATMENT APPROPRIATE IN LIGHT OF THE ACTUAL EXPENSE TREND EXPERIENCED BY QWEST?

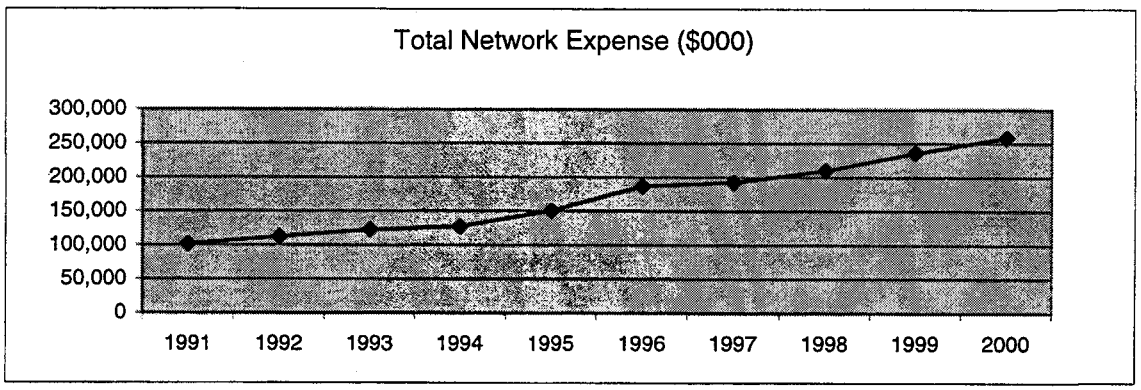
A. The HAI Model reduces Qwest's network operations costs by 50% from the 2000-year level, as discussed in the testimony of joint intervenor witness Mr. Denney on page 37, line 13. Based on the analysis I previously discussed, I see no justifiable reason for cutting these expenses in half. In fact, this assumption would present a significant risk to the provisioning of service and the adequacy of the network that CLECs seek to use. A 50% reduction in the costs that Qwest incurs to operate its network would have numerous practical implications relating to the quality of service and level of customer responsiveness that Qwest would be able to provide to both its own customers and to CLECs. Recognizing that in the HAI Model this expense category includes Power and Testing as well as Network Administration, Plant Operations, and Engineering costs, a 50% reduction in total costs, in the face of potentially significant increases in power costs, would actually result in reductions of existing expenses in excess of the HAI 50% assumption. Reductions of this magnitude would very likely affect dispatch and testing operations, network transmission quality, plant engineering issues, including ILEC-CLEC interface coordination, and a myriad of other network-related items. While CLECs properly demand a high level of quality in the wholesale services that Qwest provides, they should not, at the same time, expect Qwest to cut the costs of operating its network in half. This assumption is a classic case of trying to have it both ways.

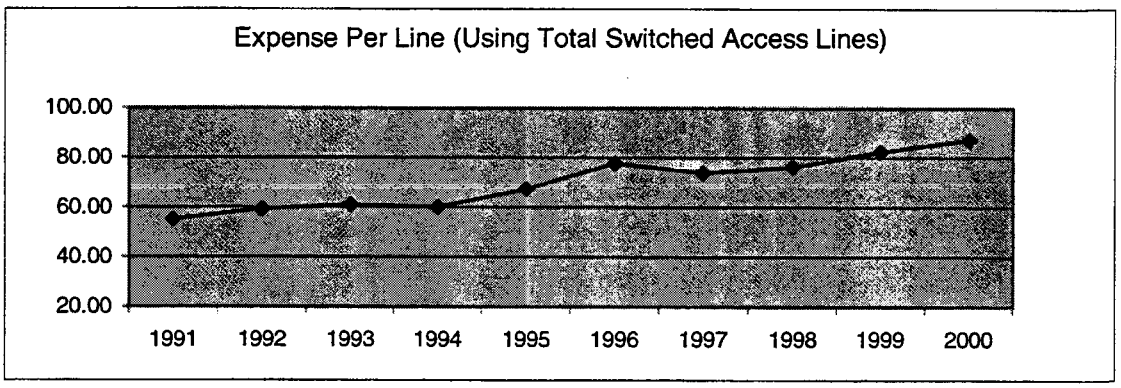
Q. MR. HYDOCK ALSO ARGUES THAT THE COST STUDIES SHOULD ASSUME A DECREASE OF EIGHT PERCENT IN NETWORK EXPENSES. PLEASE DESCRIBE THE TYPES OF EXPENSES TO WHICH HE IS REFERRING, AND PROVIDE AN OVERVIEW OF QWEST'S RECENT EXPERIENCE RELATING TO THESE EXPENSES.

A. Network Expenses, as defined by Mr. Hydock, encompass the following Maintenance expense accounts:

6212 - Digital Electronic Switching
6230 - Central Office Transmission (including Circuit Equipment)
6351 - Public Telephone Terminal Equipment
6362 - Other Terminal Equipment
6411 - Poles
6421 - Aerial Cable
6422 - Underground Cable
6423 - Buried Cable
6426 - Intrabuilding Network Cable
6431 - Aerial Wire
6441 - Conduit System

As depicted in the graphs shown below, the Qwest's booked Arizona expenses for these accounts show a sustained increase on both a total expense and cost per switched access line basis for the period 1996-2000.





Q. WITH RESPECT TO EXPENSES RELATING TO NETWORK SERVICE (SUPPORT), WHERE MR. HYDOCK ALLEGES A 30% DECREASE, PLEASE DESCRIBE THE RELEVANT COST ACCOUNTS AND QWEST'S RECENT EXPERIENCE RELATING TO THESE EXPENSES.

A. The specific maintenance accounts for network support assets consist of the following expenses:

6112 - Motor Vehicles

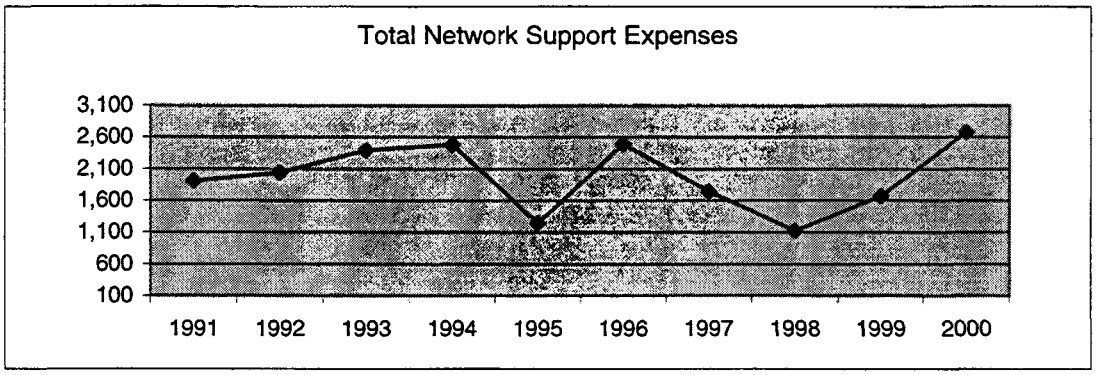
6113 - Aircraft

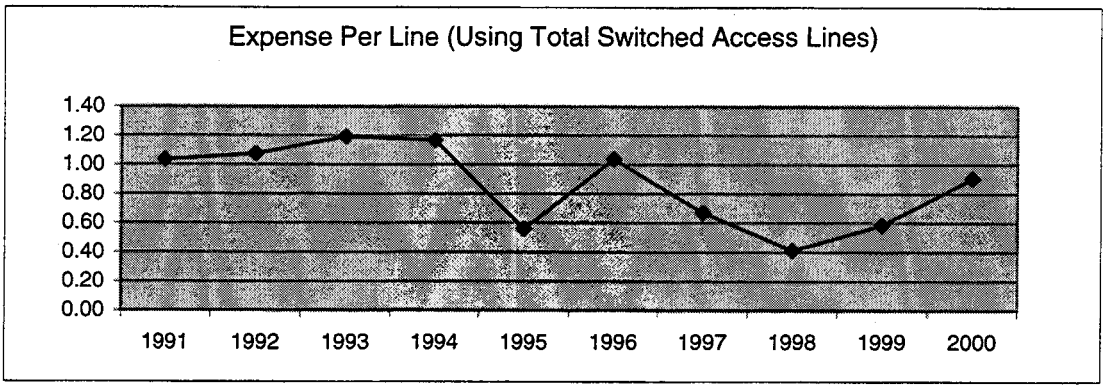
6114 - Special Purpose Vehicles

6115 - Garage Work Equipment

6116 - Other Work Equipment

Most expenses booked to these accounts are eventually cleared out to final accounts. Thus, the remaining dollars are more volatile from year to year and, in the overall scheme of total Arizona operating expenses, are quite minimal ($2.5M in 1996 and $2.7M in 2000). But, regardless of the magnitude of these costs, Mr. Hydock's assumption of a 30% decrease is clearly erroneous, as shown in the following graphs.



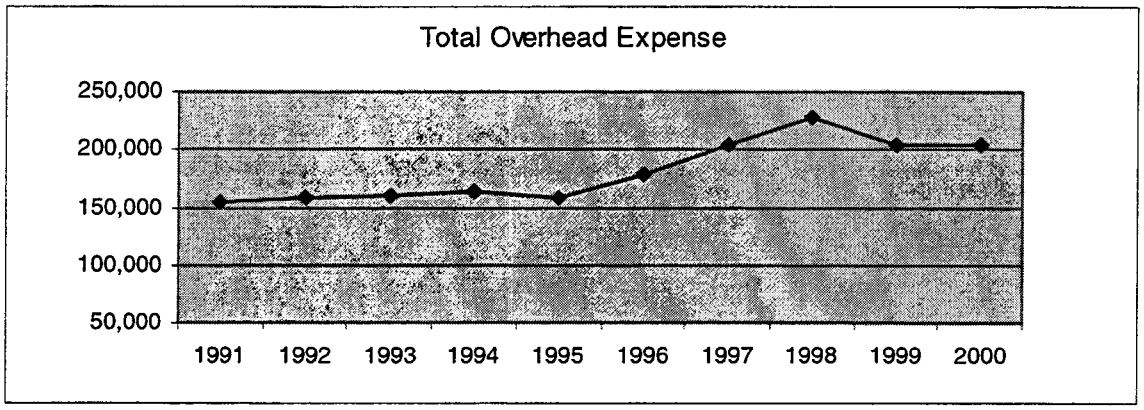


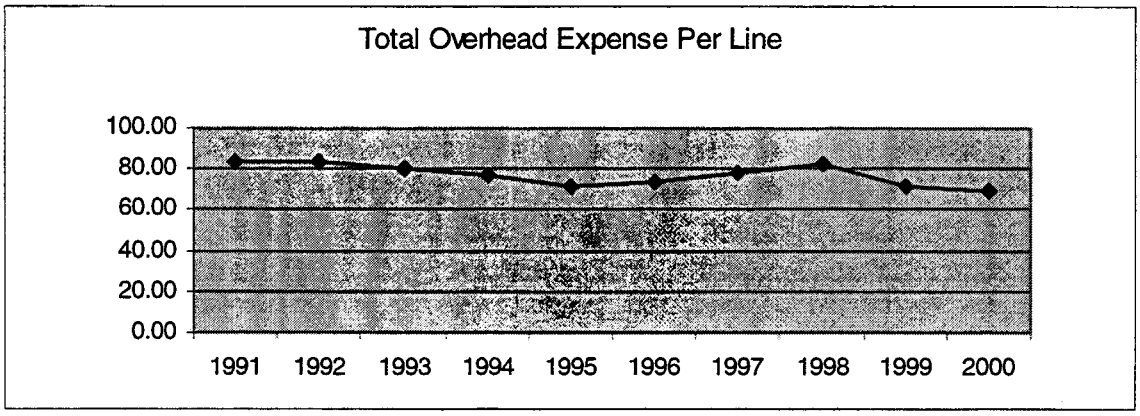
Q. MR. HYDOCK'S FINAL EXPENSE "SAVINGS" ANALYSIS IS IN THE AREA OF OVERHEAD ACCOUNTS. DOES YOUR ANALYSIS OF ARIZONA OVERHEAD COSTS SUPPORT THE 7% DECREASE ADVOCATED BY MR. HYDOCK?

A. No. On a per access line basis, Arizona operations have experienced a slight decrease in overhead operating expenses (the 6700 Account series), starting in 1999 as shown on the graphs below, despite some fairly substantial increases in Legal and External Relations expenses. However, the overall decrease in this expense category is primarily due to Information Management expense (Account 6724), which comprises roughly 50% of this expense category. SOP 98-1,[10] which was adopted by the FCC for use in ARMIS reporting in 1999, required the company to capitalize certain software

10 American Institute of Certified Public Accountants (AICPA) Statement of Position 98-1, Accounting For the Costs of Computer Software Developed or Obtained for Internal Use, issued by the Accounting Standards Executive Committee, March 4, 1998.

development costs. As a result, this rather substantial expense account decreased by 20%. [11] The graphs below illustrate the expense trend for Arizona's Overhead Expense accounts.[12]





11 Although representing a permanent decline in Account 6724, this booking treatment results in only a temporary decline in the Company's total expenses. Capitalized software costs are booked to Account 2690.5 – Intangibles – Software Development Costs and amortized over a 5-year period in Account 6564 – Amortization Expense – Intangibles.

12 The 2000 ARMIS booked amounts for Account 6728 have been adjusted to normalize for non-recurring merger, out-of-period, and other adjustments.

Q. IN YOUR ANALYSIS, YOU USED THE ARMIS TOTAL SWITCHED ACCESS LINES, RATHER THAN TOTAL ACCESS LINES, AS YOUR DENOMINATOR BASE. WHY?

A. Total lines in ARMIS include special access lines, which are reported as channel equivalents. Special access channels in relation to switched lines have increased dramatically, and disproportionately, from 1991 through 2000. Therefore, to properly and consistently analyze past and future cost trends, the use of switched access lines provides a more representative trend. In addition, switched lines bear a closer relationship to the physical line count to be utilized in the HAI model, than do total access lines, as discussed in the testimony of Dr. William Fitzsimmons. Since the loop cost determination in the HAI model is based upon physical lines, the related expense analyses should be prepared on the same basis.

Q. PLEASE RESPOND TO MR. HYDOCK'S RECOMMENDATION OF A 40% REDUCTION IN LOOP COSTS THAT IS PREMISED UPON HIS ASSUMPTIONS RELATING TO PRODUCTIVITY AND EFFICIENCY GAINS. IS HIS RECOMMENDATION REASONABLE?

A. No. As I have described, Mr. Hydock's "productivity analysis" of Qwest's operating expenses for 1996-2000 in no way supports a 40% loop cost reduction for Arizona, and his generalized statements regarding anticipated future efficiencies as a result of the

Qwest/U S WEST merger are not supported by evidence or substance. The merger may indeed yield cost savings for Qwest as a whole, but what is not at all clear is the extent to which any cost savings will be realized by Qwest's 14-state, in-region operation - an operation that already has substantial efficiencies resulting from economies of scale – and the extent to which any cost savings will be realized by Qwest's out-of-region and overseas operations. Furthermore, any productivity gains realized as a result of future operating efficiencies and/or the merger will be offset, at least to some extent, by higher wage and price increases.

- **Use of TPI Inflation Index**

Q. DO YOU AGREE WITH MR. HYDOCK'S ASSESSMENT OF QWEST'S TELRIC STUDIES REGARDING WHAT HE TERMS AS THE "DOUBLE – COUNTING OF INFLATION"?

A. No. Mr. Hydock states that "double-counting for inflation can occur if investments in telephone plant that serve as inputs to the cost models are grown from some previous year, using some sort of inflation index,"[13] at the same time that "inflation in prices is accounted for in the nominal cost of capital.". [14]However, Mr. Hydock is wrong in his assertion that the Qwest TELRIC cost studies utilize an inflation index in the determination of direct investment (i.e. Central Office Equipment and Cable and Wire

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13 See Mr. Hydock's direct testimony, page 49, lines 6-8.

14 See Mr. Hydock's direct testimony, page 49, line 4.

Facilities) costs. Inflation indices are only used in the Expense Factors Module. They are used in connection with developing operating *expense* factors for the purpose of relating current period operating expenses (which have been adjusted for both inflation and productivity) to related Telephone Plant Index (TPI)-adjusted investment. As a result, Qwest's TELRIC studies do not double-count inflation. Mr. Hydock's expressed concern relating to this issue is unfounded.

- **Other Issues**

Q. DO YOU HAVE ANY OTHER ISSUES REGARDING THE TESTIMONY OF MR. HYDOCK?

A. Yes, there is one additional issue that should be clarified for the record. That issue deals with Mr. Hydock's statement regarding loop conditioning. He states in his testimony that: "Moreover, if the charge [for loop conditioning] has been 'hidden' in the maintenance factor used to develop recurring loop costs, as appears to be the case, the rate proposed by Qwest in Arizona - $649.98 - constitutes blatant double recovery." [15] This statement by Mr. Hydock is unwarranted and has no factual basis. There is no "blatant double recovery," as implied by Mr. Hydock, since any non-recurring revenues received by Qwest for work performed and charged to the various maintenance expense

15 See direct testimony of Mr. Michael Hydock, at page 24, lines 14-16.

accounts are specifically deducted from the expense numbers used in the development of Qwest's maintenance factors.

Issues Regarding The Testimony Of Mr. Roy Lathrop

- **Power and Land and Building Factors**

Q. DO YOU AGREE WITH MR. LATHROP'S STATEMENT THAT QWEST SHOULD NOT BE APPLYING POWER AND LAND AND BUILDING FACTORS TO ANY COLLOCATION-RELATED INVESTMENTS?[16]

A. No, I do not. Mr. Lathrop's recommendation makes no distinction between joint-use collocation facilities (i.e. facilities owned and used by Qwest, and also rented out by Qwest for use by collocators) and CLEC "owned" investment (i.e. facilities installed by Qwest on behalf of a collocator for which the collocator has paid up-front non-recurring "startup" charges). The application of power and land and building investment factors to joint-use central office collocation facilities is entirely appropriate. On the other hand, these same factors would not be applicable to CLEC "owned" collocation facilities and, to the best of my knowledge Qwest has not applied them to those facilities in its current studies.[17] Qwest has no intention of "over-recovering" its power and land and building costs as implied by Mr. Lathrop. If Qwest has inadvertently done

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16 See Mr. Lathrop's direct testimony, page 40, lines 2-23.

17 An error was discovered in the Collocation: Line Sharing Study ID #4702, as identified by Mr. William Dunkel, in his testimony Schedule WD – 5 whereby power and testing and land and building factors were inappropriately applied. That study has subsequently been revised as discussed in the testimony of Qwest witness Garrett Fleming.

so in any specific studies, appropriate adjustments can and should be made.

Q. YOU INDICATED THAT IT IS ENTIRELY APPROPRIATE TO APPLY POWER AND LAND AND BUILDING INVESTMENT FACTORS TO JOINT-USE CENTRAL OFFICE COLLOCATION FACILITIES. PLEASE EXPLAIN WHY THIS IS SO.

A. The direct collocation space rental and power charges paid by collocators only covers the rental charge for having their "own" space, and the power used by their "own" equipment. These charges do not cover any facilities costs *outside* a collocator's "own" space. When collocators use, and are charged for, joint-use facilities such as cable racking, which is located *outside* their "own" space, the related recurring charges appropriately include land and building cost factors to cover the space associated with these joint-use facilities. A power investment loading is also made on collocation joint-use facilities, since the Qwest TELRIC power factor is developed based on *total* COE investment.[18] In Qwest's studies, all Qwest COE facilities are assessed power investment costs. From an overall cost study perspective, attempting to identify and isolate COE facilities by power and non-power usage, in order to build a corresponding power factor for only the power-usage facilities, would not be efficient from a time or cost perspective.

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18 The development of the power cost factor specifically excludes the Power costs used in Qwest's direct Collocation Power studies.

With this clarification and description of Qwest's handling of Land and Building and Power factors in mind, it should be clear that Mr. Lathop's assertion of cost "over-recovery" is misguided. Qwest is entitled to be compensated for its power and land and building costs on joint-use facilities via the monthly recurring charges for joint-use facilities.

Q. IN THE ANALYSIS THAT YOU PERFORMED RELATING TO THESE FACTORS, DID YOU ALSO LOOK AT THE POWER AND LAND AND BUILDING <u>EXPENSE</u> FACTORS FOR APPROPRIATE COST STUDY APPLICATION?

A. Yes, I did. As a result of that analysis, I determined that the expense factors applied to joint-use facilities were appropriately handled in the study. I did find one error, however, in the cost studies dealing with the application of the maintenance expense factor to "owned" collocation facilities. The maintenance factor utilized in these few studies had inadvertently included a power expense component. These studies have now also been revised, as described by Qwest witness Mr. Garrett Fleming, to correct for that error.

1

2 **Issues Regarding the Testimony of Dr. Francis R. Collins**

3

4 • **Capital Cost Inputs and Maintenance Factors**

5 **Q. DO ISSUES RAISED BY DR. COLLINS[19] REGARDING QWEST'S TELRIC**
6 **STUDY FACTORS REFLECT AN INFORMED UNDERSTANDING OF THE**
7 **FACTORS EMPLOYED IN QWEST'S TELRIC STUDIES?**

8

9 **A.** No, they do not. The weighted average cost of capital ("WACC") and depreciation
10 lives and salvage value issues raised by Dr. Collins were, or now have been, handled in
11 Qwest's TELRIC Study in a manner consistent with the Commission's order in Docket
12 No. T-01051B-99-0105 et al.

13

14 Dr. Collins accepted the use of a 10.37% cost of capital. However, like Qwest, he
15 should now accept and reflect the more current (March 30, 2001) stipulated weighted
16 cost of capital (WACC) of 9.61% approved by the Commission in Docket No. T-
17 01051B-99-0105 et al.

18

19 Dr. Collins' concerns regarding depreciation lives and salvage values input to the
20 Qwest study are also based upon outdated discovery information from Qwest's original
21 cost study filing, which was subsequently withdrawn and substituted with its March 15,

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19 See Dr. Collin's direct testimony, pages 18-20.

2001 filing. Qwest's current TELRIC studies are based on Commission-prescribed depreciation lives, and with Qwest's correction from "average" salvage values to "net" salvage values, Qwest's studies reflect the Commission's rulings relating to depreciation lives and salvage values in Docket No. T-01051B-99-0105 et al. Dr. Collins' suggested substitution and use of general FCC depreciation lives and salvage values, which don't even reflect the FCC's approach to rates for Arizona, is without merit or support and his recommendation runs counter to the Commission's most recent decision regarding depreciation lives and salvage values.

Dr. Collins' position regarding the reasonableness of Qwest's maintenance factors is also meritless. In its ruling in Decision 60635, cited by Dr. Collins, the Commission made an adjustment to plant operations expenses, but no such adjustment or allowance was ever made regarding maintenance costs. Thus, Dr. Collins has misinterpreted and misapplied the Commission's decision.

Issues Regarding the Testimony of Mr. William Dunkel

• Overhead Cost Factors

Q. MR. DUNKEL RECOMMENDS THAT THIS COMMISSION NOT USE THE OVERHEAD COST FACTORS AS DEVELOPED AND APPLIED IN QWEST'S COST STUDIES. DO YOU AGREE WITH THE BASIS THAT UNDERLIES MR. DUNKEL'S RECOMMENDATION?

A. No, I do not. Mr. Dunkel's sole justification for his recommendation stems from his review of Qwest's "Collocation: Line Sharing Study", which he attaches as Schedule WD-5 to his direct testimony. Based solely on his review of the factor application process in this particular study he concluded that: "The Qwest overhead calculations certainly are not usable as demonstrated in my discussion pertaining to Schedule WD-5." [20] Although Qwest concurs with Mr. Dunkel that this particular study contained a flawed factor application; Qwest has now corrected this study for the factor application problem that was isolated to this particular study[21]. This was an inadvertent error that did not impact any of Qwest's other studies. Thus, Mr. Dunkel's finding, and Qwest's subsequent correction, does not impugn Qwest's entire overhead cost factor application process.

Furthermore, the testimony of other intervenor witnesses, such as Mr. Weiss, is in direct conflict with the position taken by Mr. Dunkel. Mr. Weiss, although he does not endorse the results produced by Qwest's Expense Factor module, concludes that: "As to the mechanics behind Qwest's Expense Factor module, my review did not reveal any major faults in the mathematical logic. I found the model to include means to properly adjust cost factor results as necessary to conform TELRIC studies to the FCC's requirements."[22] Other than his review of one particular study, which Qwest has

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20 See Mr. Dunkel's direct testimony, page 17, lines 15-16.

21 This particular study has now been corrected, as described in the testimony of Qwest witness Mr. Garrett Fleming.

corrected and re-filed, Mr. Dunkel offers no empirical or factual evidence of any systematic errors in Qwest's calculation process, or the results produced, that support his conclusion that Qwest's overhead factor application process should not be used in calculating local interconnection and unbundled network element costs.

- **Maintenance Factors "Current to Book" Application**

Q. ON PAGES 24-28 OF HIS DIRECT TESTIMONY, MR. DUNKEL CRITICIZES THE METHODOLOGY UTILIZED BY QWEST TO CALCULATE THE MAINTENANCE FACTORS USED IN ITS COST STUDY, SPECIFICALLY RELATING TO THE ISSUE OF "CURRENT TO BOOK" COST ADJUSTMENTS. IS THIS A VALID CRITICISM?

A. No. Mr. Dunkel's arguments, and thus their rebuttal, can be condensed into three key points. First, and easiest to address, is Mr. Dunkel's allegation that Qwest "selectively" adjusts its investment base for the current cost to book cost ratio and that it does so generally ". . . on those accounts where making the adjustment would increase the maintenance expense factor, but did not make this adjustment on those accounts where making this adjustment would decrease the maintenance expense factor." [23] The obvious second argument, which follows from the first, is that it is proper to use a book

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22 Direct Testimony of Thomas H. Weiss on Behalf of the Joint Case of AT&T Communications of the Mountain States, Inc., WorldCom, Inc. and XO Arizona, Inc. in Arizona Docket No. T-00000A-00-0194, page 25, lines 12-15.

23 See Mr. Dunkel's direct testimony, page 27, lines 10-13.

cost to current cost (BC-to-CC) adjustment on all accounts. And the third item deals with the assumptions used in Mr. Dunkel's "simple example" wherein he attempts to illustrate the supposed problem with the Qwest maintenance factor development process.

Q. IS MR. DUNKEL CORRECT IN HIS STATEMENT THAT QWEST SELECTIVELY UTILIZES BC-TO-CC RATIOS AND ONLY WHERE IT IS TO THE COMPANY'S BENEFIT TO DO SO?

A. Not at all. His assertion in this regard suggests that he could not have carefully analyzed Qwest's Expense Factor Module. In the current development of maintenance factors, BC-to-CC ratios are used only for Land and Building investments, which are support investments. BC-to-CC ratios are not used for any of the central office equipment or cable and wire facilities accounts, contrary to Mr. Dunkel's statements that Qwest adjusted the digital switching equipment account but not the pole account.[24]

Q. WHY DID QWEST NOT USE BC-TO-CC RATIOS ON ALL OF ITS INVESTMENT ACCOUNTS IN DEVELOPING THE ASSOCIATED MAINTENANCE FACTORS?

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24 See Mr. Dunkel's direct testimony, page 25, lines 4-10.

1 **A.** As I explain and illustrate in detail in my Exhibit DMG – Rb 1, BC-to-CC ratios can
2 create significant expense to investment relationship distortions if they are developed
3 using Telephone Plant Index ("TPI") replacement cost methodology and then are
4 applied to TELRIC reproduction-based investment amounts that differ significantly
5 from the TPI-developed investments. Because the use of historical investment amounts
6 in the development of expense factor relationships yields results that are more
7 representative of TELRIC reproduction-based investment relationships, Qwest does not
8 use the BC-to-CC ratios for any of its directly calculated investments (i.e., central
9 office equipment and cable and wire facilities). BC-to-CC ratios are still used for
10 support investments (land and buildings) because, unlike the direct investments where
11 separate TELRIC studies calculate reproduction cost amounts, land and building
12 current cost investment amounts are determined using TPI factors. Thus, there is a
13 match between the investment used in the denominator of the BC-to-CC calculation
14 (TPI-based replacement cost) and the investment to which the factor is applied
15 (replacement cost).
16
17 **Q. DO YOU HAVE ANY COMMENTS REGARDING THE EXAMPLE USED BY**
18 **MR. DUNKEL IN HIS ATTEMPT TO ILLUSTRATE WHAT HE SAW AS A**
19 **"PROBLEM" WITH QWEST'S DEVELOPMENT OF ITS MAINTENANCE**
20 **FACTORS?**
21
22 **A.** Yes, I do. Actually, I was rather interested in Mr. Dunkel's example. In his
23 illustration, he assumed that current cable and wire facilities ("CWF") investments (as

represented by a pole, in his example) would cost twice as much as booked CWF investments. He then used this illustration to show that the maintenance expense factors developed based on the historical investment level would overstate the maintenance expenses when applied to current (higher) investment amounts. I would assume the reverse to also be true – i.e., that maintenance expense factors developed based on historical investment levels which are greater than current cost levels would result in maintenance expenses being <u>understated</u> when applied to current (lower) investment amounts. This reverse example perfectly illustrates the concern that Qwest has with the HAI model presented in this proceeding and its level of loop investments and resulting expenses.

Q. WOULD YOU PLEASE ELABORATE?

A. Certainly. Qwest's 1999 per loop investment amount, using the company's embedded cost accounting system (CAAS), is approximately $1,004.[25] The related loop investment amount as calculated via Qwest's TELRIC study is approximately $936. The HAI Model, as sponsored in the testimony of Mr. Douglas Denney, produces a loop investment amount of approximately $442. This is the perfect real-life "example" to Mr. Dunkel's hypothetical situation. Qwest's maintenance expense factors for the loop investment, calculated using the booked (historical) investment amount, would

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25 This amount includes non-traffic sensitive central office equipment, cable and wire facilities, and estimated related land and building investments, but excludes investments associated with the MDF (Main Distribution Frame).

yield a significantly understated maintenance expense amount when applied to the HAI model investment amount, which is less than half of the historical amount. Although I would agree with Mr. Dunkel that there is cause for concern here, the concern is actually with the fact that Qwest should be adequately compensated for its maintenance-related expenses incurred in providing local interconnection and unbundled network services.

Q. DOESN'T THIS EXAMPLE ALSO ILLUSTRATE WHY IT WOULD NOT BE PRACTICAL TO APPLY BC-TO-CC RATIOS TO LOOP-RELATED INVESTMENTS IN A TELRIC INVESTMENT CALCULATION SITUATION?

A. Yes, it does. As an illustration, the 1999 BC-to-CC ratio for 45C (buried cable) investment, which comprises a large portion of the total loop investment amount, is 1.3695.[26] Using the formulas shown in my Exhibit DMG- Rb 1, and assuming that $40 is the historic maintenance expense, $1,004 is the historic investment level, $936 is the projected replacement (TELRIC) cost using Qwest's TELRIC study, $442 is the projected replacement (TELRIC) cost using the HAI study, and $1375 is the projected reproduction cost ($1,004 x 1.3695 CC/BC), the following maintenance expense results are obtained using the various scenarios for the calculation of the maintenance factors:

(a) Using no BC-to-CC, historical applied to Qwest TELRIC =

($40 / $1004) x $936 = $37.29

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26 Refer to Dunkel Schedule WD-9, Account 2423 – Buried Cable Metallic.

(b) Using no BC-to-CC, historical applied to HAI TELRIC =

($40 / $1004) x $442 = $17.61

(c) Using BC-to-CC, applied to Qwest TELRIC =

($40 / $1375) x $936 = $27.23

(d) Using BC-to-CC, applied to HAI TELRIC =

($40 / $1375) x $442 = $12.86

Remembering that the actual incurred loop maintenance cost is $40, it becomes very evident why it is incorrect to use BC-to-CC ratios in calculating maintenance factors for Qwest's direct investment amounts ("a" vs. "c" result). Furthermore, Qwest will not be adequately compensated for its loop maintenance expenses if HAI investment amounts are used in this type of scenario; inadequate compensation would occur regardless of whether a BC/CC factor approach was employed ("d" result) or not ("b" result).

V. HAI 5.2A - TELRIC STUDY ISSUES

Issues Regarding The Testimony of Mr. Douglas Denney

- **Depreciation/Capital Cost Associated With Network Interface Devices ("NIDs"), Serving Area Interfaces ("SAIs"), and Drops**

Q. DOES THE HAI 5.2A MODEL PRESENTED IN THIS PROCEEDING EMPLOY UNAUTHORIZED DEPRECIATION PARAMETERS FOR NID, SAI, AND DROP FACILITIES?

A. Yes. The KF depreciation parameters input into the HAI model in this proceeding for determining NID, SAI, and Drop capital carrying charge costs do not reflect the depreciation parameters that were authorized by this Commission for the type of investments required. Although the HAI model appears to isolate investments associated with NID, SAI and Drop, the capital carrying costs for the investments should still reflect the depreciation parameters for the proper investment accounts as they were authorized by the Commission in its most recent order relating to depreciation. By segregating NID, SAI and Drop investments from other investments accounted for primarily as 45C, 52C and 5C in the following accounts; Account 2423 – Buried Cable Metallic, Account 2421 – Aerial Cable – Metallic, and Account 2422 – Underground Cable Metallic, HAI employs carrying charge inputs that reflect different, i.e. "adjusted", depreciation parameters. HAI uses an adjusted depreciation "projection life" of 19 years for NID, SAI and Drop, rather than employing the Commission's designated depreciation life and related "adjusted projection life" values of 11.21 years for 45C, Account 2423 – Buried Cable Metallic; 9.45 years for 52C, Account 2421 – Aerial Cable Metallic; and 14.15 years for 5C – Account 2422 – Underground Cable Metallic. This departure from Commission-approved depreciation parameters is a substantial, improper change from the lives that the Commission authorized. By modifying the HAI inputs to substitute for, and override, the Commission's approved parameters, the HAI model erroneously reduces interconnection and unbundled element cost outputs. These HAI input modifications require correction.

- **The HAI Model's Improper Use of a Corporate Overhead Factor of 10.4%**

Q. DO THE DATA AND CORPORATE OVERHEAD FACTOR CALCULATIONS PROVIDED BY MR. DENNEY SUPPORT THE 10.4% OVERHEAD FACTOR EMPLOYED IN THE HAI 5.2A MODEL?

A. No they do not. First of all, I would point out that the 10.4% overhead factor has been used in the HAI model for several years and has remained unchanged. Its origin is rooted in AT&T data for the year 1994.[27] Thus, the factor is not based on current information, and it obviously has nothing to do with Qwest's costs of operation. Mr. Denney has attempted to justify the use of the number by employing an analysis of Qwest's corporate overhead type expense and operating revenue data taken from Qwest's 1996 through 2000 Arizona ARMIS Reports. However, in performing this analysis, Mr. Denney has made some serious misstatements and critical calculation errors, which if corrected for, would show that the Qwest corporate overhead factor, utilizing the HAI supported calculation methodology, would actually be 14.6% on a five-year average or 12.9% for the year 2000. Mr. Denney's use of an average 10.4% overhead factor leads to an understatement of corporate overhead costs in the HAI 5.2a model.

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27 See HAI testimony and support provided by Mr. Denney as HAI Inputs Portfolio Appendix C, page 174.

Q. WHAT FORMULA FOR CALCULATING AN OVERHEAD COST FACTOR DOES MR. DENNEY SUPPORT?

A. The formula for calculating the 10.4% factor used in the HAI model, as supported by Mr. Denney, is relatively simple and is shown on page 174 of the HAI Model Inputs Portfolio, Appendix C, which was included as an exhibit to Mr. Denney's direct testimony. Basically, it consists of dividing the Company's booked Corporate Operations expense amount by Net Revenues *less* Corporate Operations expense (Net Revenues serve as a surrogate for total operating costs). This calculation results in a Corporate Operations percentage "add-on" that is applied to other costs. This is a simple formula, but one that Mr. Denney nevertheless miscalculates in his "proof" analysis.

Q. WHAT MISCALCULATIONS DID MR. DENNY MAKE?

A. First, the denominator of the formula is "Total Revenue less Total Booked Corporate Operations expense." However, Mr. Denney used Total Operating Revenue from the ARMIS report *without* making a reduction for Corporate Operations expense. This had the effect of artificially lowering the percentage used as his "proof" for the 10.4% factor used in HAI.

Mr. Denney also incorrectly mischaracterized the corporate overhead to be included in the HAI overhead factor in comparison to the corporate overhead shown in the table in

his testimony. On page 36, lines 21 and 22 of his direct testimony, he states that: "The current corporate overhead factor used in HAI 5.2a ....includes Executive and Planning accounts and General and Administrative accounts." However, in the table shown on page 37, line 4 of his testimony, the Corporate Overhead amounts shown and used in the calculations of the 10.4% "proof" *exclude* Planning, Research and Development, and Other General and Administrative costs.[28] He referred to these exclusions as "adjustments identified in the testimony of Mr. Weiss;" [29]in my rebuttal of Mr. Weiss, I discuss the inappropriateness of excluding these expenses. Nevertheless, the exclusion of these costs from the denominator also had the effect of artificially lowering the percentages Mr. Denney used as "proof" for his 10.4% factor.

Q. WHAT OVERHEAD FACTOR RESULTS DO YOU OBTAIN WHEN YOU CORRECT FOR THE VARIOUS ERRORS IN MR. DENNEY'S CALCULATION?

A. The following chart shows the HAI factor results when correcting for just the denominator misstatement (see Column f) and for both the denominator and the improper exclusion of corporate overhead costs in the numerator (see Column e).

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28 These excluded costs generally average about 16% of total Corporate Operations costs.

29 See Mr. Denney direct testimony, page 37, lines 2-3.

Year [a]	Booked Corporate Overhead ($1000s) [b]	Weiss Select. Corporate Overhead ($1000s) [c]	Operating Revenues ($1000s) [d]	Booked Corrected Corporate OH Factor [e=b/(d-b)]	Corrected Original Denny CO Factor [f=(c/(d-b)]
1996	$177,576	$134,931	$1,399,370	14.5%	11.0%
1997	$204,150	$166,584	$1,496,909	15.8%	12.9%
1998	$227,342	$195,105	$1,605,361	16.5%	14.2%
1999	$204,386	$169,664 @	$1,747,477	13.3%	11.0%
2000	$247,682	$173,345	$1,830,852	15.6%	11.0%
2000 adj[30]	$204,698	N/A	$1,830,852	12.9% *	11.0%
Average				15.1%	12.0% #
Adj. Avg.				14.6%	12.0%

@ Mr. Denney's testimony reflects $169,994; the correct ARMIS amount is $169,664

* $204,698 / ($1,830,852 – $247,682)

This amount compares to original Denney factor of 10.4%

Correcting the simple "booked" average factor utilized in the HAI model results in a 15.1% corporate overhead factor (14.6% using an adjusted 2000 overhead amount in the average), and a 12.0% factor, even when using Mr. Weiss' limited corporate overhead expenses. Thus, the Corporate Overhead factor employed in the HAI 5.2a model is neither reasonable nor supportable. Instead, it is substantially understated.

30 Reduced 2000 booked amounts for corporate overhead Account 6728 reflect adjustments to normalize for non-recurring merger, out-of-period, and other adjustments.

- **Factors Applied To Reduce General Support Costs**

Q. WHAT COMMENTS DO YOU HAVE CONCERNING THE TREATMENT OF GENERAL SUPPORT COSTS IN THE HAI MODEL?

A. General Support costs include investment and expenses related to furniture, office equipment, general purpose computers, motor vehicles, garage work equipment and other work equipment. HAI 5.2a artificially reduces General Support costs by over 50% through the application of factors (called "allocators" in the model) to both estimated investment and estimated expenses. Some categories of general support expense are reduced by a "Total Operations General Support Allocator;" others are reduced by a "Office Worker General Support Allocator." These allocators reduce costs by 50.33 percent and 54.22 percent respectively. The HAI documentation provides no specific support for these allocators. The brief discussion relating to General Support costs in the HAI documentation states that a portion of General Support costs is assigned to customer operations and corporate operations and that the remainder of costs is assigned to UNEs.[31] Since the portion of costs assigned to customer and corporate operations are not captured anywhere in the model, the effect of this "allocation" is an arbitrary 50%-plus reduction in General Support costs. The HAI model estimates General Support investment and expenses by applying a factor based on 2000 ARMIS data to investment generated by the model. Thus, these originally

31 HAI 5.2a Model Description, p. 71.

estimated General Support costs are consistent with the network and services modeled by HAI; any further and arbitrary reduction is inappropriate. No General Support Allocators should be applied to the general support investment or expense.

- **Plant Operations 50% Cost Reduction Factor**

Q. MR. DENNEY EMPLOYS A NETWORK OPERATIONS FACTOR THAT REDUCES NETWORK OPERATIONS COSTS IN THE HAI MODEL BY 50%. DOES HE OFFER ANY FACTUAL BASIS FOR SUCH A REDUCTION?

A. No. Mr. Denney's 50% reduction of the Plant Operations factor in the HAI model is unwarranted and unsupported with specific evidence relating to Qwest operations. His basic premise appears to be that Qwest's actual Network Operations costs are incurred on an antiquated network. He offers no factual evidence to support his assertion that Qwest's Arizona network is an antique. Instead, he relies on generalities rather than Qwest-specific analysis. For the reasons I discussed earlier in this testimony, the Commission should reject any reduction in Qwest's network operations expenses.

- **Exclusion of Product Management and Sales Costs**

Q. IN DEVELOPING THE CARRIER-TO-CARRIER FACTORS FOR CUSTOMER SERVICE-RELATED COSTS, HOW DOES MR. DENNEY PROPOSE THAT PRODUCT MANAGEMENT AND SALES COSTS BE HANDLED?

A. In concert with testimony sponsored by Mr. Weiss, as discussed earlier in my testimony, Mr. Denney limits HAI 5.2a customer-related cost consideration to billing, billing inquiry, service order processing, and payment and collection. He assumes that all product management and sales costs are end-user related costs, and, therefore, that they are "retail" costs that are to be excluded from the development of UNE costs. Although he excludes all product management and sales costs from the processing of the HAI 5.2a model, HAI cost "input detail" include ARMIS data inputs for these cost categories, giving the illusion that such costs are actually being used.

Q. IS IT APPROPRIATE TO BROADLY CHARACTERIZE ALL PRODUCT MANAGEMENT AND SALES COSTS AS "RETAIL" COSTS IN ORDER TO JUSTIFY THE EXCLUSION OF THEM FROM UNE COST ESTIMATES?

A. No. Like Mr. Weiss, Mr. Denney overreaches with his characterization of these costs as being related exclusively to retail operations. As previously discussed in my direct testimony and in my earlier discussion of this topic regarding Mr. Weiss' faulty assumptions, Qwest incurs both Product Management and Sales costs in providing unbundled services. There is no legitimate basis for excluding these costs from the calculation of costs for interconnection services and UNEs.

VI. AVOIDED COST STUDY / RESALE DISCOUNT ISSUES

Issues Regarding the Resale Discount Testimony of Mr. William Dunkel

- **Remand Directives From the Federal District Court**

Q. DOES MR. DUNKEL PROPERLY CHARACTERIZE THE ORDER RELATING TO RESALE DISCOUNTS ISSUED BY THE UNITED STATES DISTRICT COURT IN U S WEST V. JENNINGS?

A. No. In its order in U S WEST v Jennings, the United States District Court raised issues regarding the range of cost savings among different service categories, the potential abuse of selective ordering tactics and the need for documentation to support the discounts that the Commission had ordered.[32] Mr. Dunkel skirts the specific issues that the court addressed, and, instead, provides generalizations without factual data to support his recommendation to perpetuate the use of the existing resale discounts that the court remanded back for further investigation and consideration. He fails to address what the court specifically instructed the Commission to address and what other commissions have addressed in setting appropriate resale discounts. The court's

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32 In U S WEST v. Jennings, where the Arizona Court remanded the resale discounts that this Commission established in the original cost docket, the court focused on the Commission's decision to establish two discounts instead of multiple discounts. The court stated that the Commission "must at least consider the range of cost savings for different categories of services, as well as the potential for abuse through selective ordering tactics, and determine whether additional discount rates are needed." 46 F.Supp.3d at 1015.

concern regarding the range of avoided costs across services subject to resale and the number of discounts to use were issues addressed in my direct testimony, and I won't repeat that discussion here. However, in this regard, it is noteworthy that other commissions have commented directly on this issue; these comments are instructive in showing why it is appropriate for this Commission to evaluate the use of multiple discounts for multiple services instead of a small number of discounts that would be broadly applicable to a range of services.

Based on concerns similar to those raised by the court, other commissions have ordered multiple resale discounts. For example, in ordering multiple resale discounts, the Iowa Public Utilities Board reasoned as follows:

> "First, multiple discount rates are drawn from the actual costs associated with different categories of services, multiple discount rates will tend to encourage the movement of service prices toward cost." "..... multiple discount rates will tend to further the development of efficient competition because it allows less arbitrage. A wholesale discount that relates more closely to avoided costs will also tend to ensure CLECs will not reap unfair price advantages based on present margins of cost and profit in competing with U S WEST." ....."The Board believes the cost study with five service level groupings proposed by U S WEST better reflects major differences in how costs would be avoided in a wholesale environment than does a uniform discount." [33]

The Iowa Board went on to state that:

> "One wholesale discount applied across the entire range of services subject to resale cannot reflect the basis of costs avoided for any particular service to any degree of accuracy, except by accident." [34]

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33 Iowa Docket No. RPU-96-9, Issued April 23, 1998, Section III, B. Calculation of the Wholesale Rate Discount, page 56

34 Iowa Docket No. RPU-96-9, Issued April 23, 1998, Section III, B. Calculation of the Wholesale Rate Discount, page 56

Qwest's embedded cost accounting and avoided cost data provided in this proceeding give the Commission the means to address the concerns raised by the federal district court and the foundation for setting accurate, multiple resale discounts.

- **Sufficiency of Accounting Data**

Q. IN RESPONSE TO MR. DUNKEL'S OPPOSITION TO THE USE OF MULTIPLE RESALE DISCOUNTS, PLEASE EXPLAIN WHY THE COMMISSION SHOULD USE QWEST'S PRODUCT SPECIFIC EMBEDDED COST INFORMATION TO PROPERLY SET ARIZONA RESALE DISCOUNTS?

A. The use of refined, non-public product category data to determine resale discounts is preferable for several reasons. Historically, intrastate retail rates in Arizona have not been established based solely on "public" FCC ARMIS information. Furthermore, the provisions of the Act require an analysis of costs inherent in the <u>rates</u> to be discounted, <u>not the aggregate total revenue</u>. It should come as no surprise that service-specific embedded cost information is not "public" data for Qwest or for other companies. ARMIS data, although publicly available, is far too general and was not used to set intrastate rates. Therefore, there is no reason to believe that resale discounts should be limited to an analysis of such generalized "public" data. ARMIS itself was not

designed with intrastate rate and cost analysis in mind, and, by itself, cannot possibly provide the critical data needed for appropriate resale discount calculations. The Commission should use the service-specific data Qwest has provided in this proceeding to properly identify avoided costs and to develop documentation and support for its decisions regarding the resulting resale discounts.

Q. CONTRARY TO MR. DUNKEL'S POSITION, HAS THE COMMISSION BEEN PROVIDED WITH THE DETAILED PRODUCT COST INFORMATION IT NEEDS IN THIS PROCEEDING TO ADDRESS THE CONCERNS THAT THE COURT EXPRESSED IN U S WEST V JENNINGS RELATING TO THE PROPER NUMBER OF RESALE DISCOUNTS?

A. Yes. Qwest has provided the Commission with the requisite product category avoided cost data, which addresses the court's concerns as stated in its decision. Specifically, the avoided cost model and detailed product data provided by Qwest allow the Commission to consider the range in cost savings for different categories of services and to determine the number of resale discounts needed to fulfill the requirements of the Act. The detailed product cost information provided by Qwest also allows the Commission to address the court's concern regarding an adequate explanation of how Arizona's resale discounts were determined. While Qwest has provided considerable documentation regarding its avoided costs, Mr. Dunkel has provided no independent factual evidence that supports or clarifies all the relevant factors that were employed in

establishing the two discounts that he supports in his recommendation.

Q. PLEASE RESPOND TO MR. DUNKEL'S SUGGESTION THAT QWEST'S CAAS/CARS COST ACCOUNTING DATA DOES NOT PROVIDE THE COMMISSION WITH THE DATA NECESSARY TO ESTABLISH MULTIPLE DISCOUNTS SPECIFIC TO PRODUCT CATEGORIES.

A. Mr. Dunkel's opinions regarding the use of ARMIS data, "managerial judgment" employed in product cost accounting, and the use of Qwest's CAAS/CARS product cost accounting data are not factually supported and are contrary to the opinions rendered by other Commissions that have relied on Qwest's embedded product cost accounting data for regulatory purposes for years. For example, in setting resale discounts, the Colorado Commission stated that:

> "We believe that the AT&T and MCI models, which rely solely upon publicly available data and which, as a result, are limited to deriving a single discount rate for all services, obscure the fact that the impact of the avoided cost calculations may differ among service categories. Each service category, if defined properly, may be rather homogeneous, while differing substantially from the others. This is borne out by the disaggregated studies of USWC and Staff. Moreover, we have had years of experience with relying upon such studies in numerous dockets; there is no reason not to do so here. Such studies do of course, involve allocations of some costs in addition to the direct attribution of others but these allocations are by no means arbitrary." [35]

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35 Colorado Commission Decision No. C97-739, Docket No. 96A-331T, Adopted July 16 1997 Section I. W. pages 56-57.

In setting Qwest's product-specific resale discounts for the state of Iowa, The Iowa Public Utilities Board stated that:

> "...the CAAS/CARS system does yield Iowa specific costs for specific services." ....."The Board will use the U S WEST cost information because it is the only data in the docket that can produce multiple discounts and multiple discounts more accurately reflect the costs U S WEST will avoid in a resale context." [36]

- **Reliance of Other Commissions on Qwest Data**

Q. HAS MR. DUNKEL PROPERLY INTERPRETED WHETHER QWEST'S EMBEDDED PRODUCT COST DATA WAS EMPLOYED IN SETTING RESALE DISCOUNTS IN OTHER JURISDICTIONS?

A. No. As the illustrative citations I just referenced show, other commissions have relied on Qwest's cost accounting data in establishing multiple resale discounts. Although the outcomes of each resale discount proceeding produced unique discounts for various states, this in no way minimizes the fact that Company-specific, product-specific data was necessary to produce the discount results in the states listed in my direct testimony. Contrary to Mr. Dunkel's specific assertions regarding the resale discount proceeding in the state of Washington, the resale discount decisions made by the Washington Commission required product-specific Company data in establishing its ordered resale discounts. The product cost accounting data employed by the commission came from

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36 Iowa Docket No. RPU-96-9, Issued April 23, 1998, Section III, B. Calculation of the Wholesale Rate Discount page 56.

Qwest's CAAS/CARS cost accounting system, not from any publicly available data sources such as ARMIS. The Washington Commission stated:

> "However, it is important that the discount should reasonably represent the costs which are to be avoided. The use of a national proxy, which is not based upon company specific information, or ignoring evidence which indicates that costs will not be avoided, is unacceptable. Therefore, the Commission consents to the use of company specific and proprietary data, when other data are unlikely to provide reasonable and accurate results." [37]

In arriving at its results, the Washington Commission excluded Non-resale services, Operator Services/DA services and Non-recurring service costs. The data necessary for these exclusions did not come from ARMIS; rather it came from Qwest's CAAS/CARS cost accounting system. Mr. Dunkel's recollection of the data employed in setting Washington resale discounts, a state where he was an intervenor witness, is incorrect. His statements regarding the establishment of resale discounts in other states in Qwest's region are equally flawed.

- **Requirements of the Telecommunications Act of 1996 Relating to Resale Discounts**

Q. WHAT KEY ELEMENTS ARE REQUIRED BY THE ACT FOR DETERMINING RESALE DISCOUNT?

A. The retail rates and avoided costs are the critical elements of Section 252(d)(3) of the Act. The Act's referenced "retail rates" produce revenue, but the rates are comprised of "total expenses and capital costs". It is the individual intrastate rates (expenses and

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37 Washington Docket Nos. UT-960369, UT-960370, UT-960371, April 16, 1998 at page 72.

capital costs) as set by the Commission, not the revenue produced in aggregate, that are subject to resale discount. Therefore, it is the "total costs that comprise the rates", and the "avoided costs inherent in the rates", that are defined by the Act that are the critical elements for determining the discounts.

Q. DOES SECTION 252(d)(3) OF THE TELECOMMUNICATIONS ACT EXPLICITY PRESCRIBE A FORMULA THAT REQUIRES THE USE OF REVENUE IN THE DENOMINATOR OF THE RESALE DISCOUNT EQUATION?

A. This issue has been an area where disagreement has existed among the parties and among commissions. However, nowhere does the Act explicitly provide that state commissions should determine wholesale rates based on the aggregate revenues collected from customers, less a portion of costs that will be avoided. Accordingly, the Act does not definitively set forth the discount formula of *avoided costs / revenue*, which Mr. Dunkel espouses.

Q. HAVE OTHER COMMISSIONS FOUND FAULT WITH EMPLOYING REVNEUES IN THE DENOMINATOR OF THE RESALE DISOCUNT FORMULA?

A. Yes, they have. Other commissions have found that requiring revenues to be used in the denominator of the resale discount formula distorts the discount calculations.

Therefore, other commissions that have established multiple resale discounts have rejected resale discount calculations that utilize an avoided cost divided by revenues formula.

For example, in setting multiple resale discounts in Utah, the Public Utilities Commission stated in its Order that:

> "We believe an acceptable calculation of the wholesale discount rate must properly match revenues and costs consistent with our intrastate ratemaking principles and tools. Matching is a fundamental principle of ratemaking. A discount rate must therefore be calculated as the ratio of *avoided costs to total costs*, where costs include expenses, taxes and return on investment." [38] (Emphasis added)

In Iowa, the Iowa Public Utilities Board stated:

> "The Board would give serious consideration to the use of revenues in the denominator if it had adopted a uniform discount. However, in a multiple discount methodology, such as the Board adopted, use of revenue produces unacceptable relationships among the discounts for service categories."[39]

Q. MR. DUNKEL PROVIDES SOME HYPOTHETICAL ILLUSTRATIONS AND RECALCULATES QWEST'S RESALE DISCOUNTS TO USE REVENUES IN THE DENOMINATOR IN AN ATTEMPT TO DEMONSTRATE THAT THE USE OF TOTAL COSTS IN THE DENOMINATOR IS AN ERROR. DO THESE ILLUSTRATIONS PROVIDE PROOF OF ERROR?

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38 Utah 94-999-01 October 24, 1997, Section II, Par. 3. Basis for Avoided-Cost Analysis, page 14.

39 Iowa Docket No. RPU-96-9, Issued April 23, 1998, Section III, B. Calculation of the Wholesale Rate Discount page 56.

1 **A.** No. In reality, Mr. Dunkel's illustrations serve just the opposite purpose. They show
2 why Qwest, and other state commissions, have rejected the revenue denominator theory
3 for use in creating multiple resale discounts. Under Mr. Dunkel's theory, services such
4 as Basic Residential Service, which has a high concentration of non-avoided network
5 related costs and a low concentration of retail marketing related costs, would get a
6 higher discount since its revenue stream has been traditionally subsidized by other
7 services. In contrast, a service such as Central Office features, which has been
8 traditionally priced to subsidize other services, and which has a low concentration of
9 non-avoided network related costs and a high concentration of retail marketing costs,
10 would receive a lower discount. Mr. Dunkel's approach serves to perpetuate explicit
11 subsidies, which the Act and the FCC's directives are attempting to eliminate.
12
13 **Q. WHAT CONCLUSIONS SHOULD THE COMMISSION REACH IN THIS**
14 **PROCEEDING REGARDING THE USE OF REVENUE IN THE RESALE**
15 **DISCOUNT FORMULA?**
16
17 **A.** Since the remand from the Arizona federal district court sought to ensure that proper
18 avoided costs differentiation would be recognized and that the number of resale
19 discounts would be appropriately determined in accordance with the Act, the
20 Commission should use total costs in the resale discount formula. As other
21 commissions have correctly concluded, multiple discounts are appropriate under the
22 requirements of the Act and, thus, total costs must be used in the formula. The failure

to use total costs would result in inaccurate, distorted resale discounts.

Q. MR DUNKEL SUGGESTS THAT RESALE DISCOUNTS ACROSS OTHER QWEST JURIDICTIONS SHOULD BE VERY SIMILAR TO THOSE IN ARIZONA. DOES HE SUPPORT HIS CLAIM WITH ACCURATE FACTUAL DATA?

A. No. Mr. Dunkel only offers the inappropriate analogy that postage costs are not likely to differ across states. His comparisons ignore far more obvious and significant differences, such as the level of retail marketing costs and the investment and amount of non-avoided network-related costs associated with provisioning wholesale services in different states. He fails to indicate which of the discounts resulted from an in-depth cost review and which resulted from original arbitration settlements. Mr. Dunkel also mixes and matches product-specific Basic Residential Exchange service discounts with average composite discounts in his comparison. His comparisons are improper and offer little with regard to directing the Commission through a thorough review of Arizona's avoided retailing costs.

- **Audits and Use by Other Regulatory Commissions**
- **Administration of Discounts**
- **Loop Cost Assignment For Resale Discount Calculations**

Q. SHOULD MR. DUNKEL'S COMMENTS REGARDING THE CAAS/CARS AUDITS DESCRIBED IN YOUR TESTIMONY, OR THE ADMINISTRATION OF MULTIPLE DISCOUNTS, OR ALLOCATION OF LOOP COSTS BE OF ANY CONCERN TO THE COMMISSION IN SETTING RESALE DISCOUNTS BASED ON DATA SUPPLIED BY QWEST?

A. No. I accurately depicted and discussed the audits and reviews conducted on Qwest's CAAS/CARS product cost accounting methodologies in my direct testimony. Mr. Dunkel's mischaracterization of that testimony does not change the fact that outside auditors have audited the Company's cost accounting methods and procedures and that the product cost data produced by the Company's CAAS/CARS accounting system has been scrutinized by many state commissions that have utilized Qwest product cost accounting data for years. The administration of a limited number of discounts and the rationale for employing the discount categories recommended by Qwest in this proceeding were also covered in my direct testimony; therefore, I need not repeat that discussion here. Mr. Dunkel's discussion of a la carte purchases confusion is wrong and is misguided. A la carte purchases and "packaged service purchases covered by the Composite – Packaged Services discount recommended by Qwest" are clearly definable in the ordering process and thus, this is not an issue. I would also note for the record that contrary to Mr. Dunkel's supposition, avoided costs and resale discount

calculations would be essentially unaffected by his position regarding the assignment of loop costs to products. Thus, none of these miscellaneous issues should be of concern or keep the Commission from setting the service category resale discounts based on the detailed product cost accounting data submitted by Qwest in this proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JAMES M. IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194 PHASE II

EXHIBITS OF

D. M. (MARTI) GUDE

QWEST CORPORATION

JUNE 27, 2001

INDEX OF REBUTTAL EXHIBITS

GUDE Rebuttal Exhibit No.

DMG – Rb 1 BC-to-CC Ratio

BC-to-CC Ratio

Various forward looking cost models have proposed the use of a book cost to current cost (BC-to-CC) adjustment ratio in calculating operating expense factors. On the surface this approach appears to have some appeal. However, in practice it has yet to universally achieve the theoretical improvements for which it was designed. As a result, the Qwest cost models do not use BC-to-CC ratios for the development of maintenance expense factors associated with direct (i.e., Central Office Equipment and Cable and Wire Facilities) investments.

Purpose of BC-to-CC Ratio Development

Expense factors are traditionally developed by dividing historic (actual booked) expense amounts by historic (actual booked) investment amounts. The resulting factors are then applied against projected investment levels to determine projected costs or expenses. The denominator in the factor calculation is historic investment, yet the factor is applied to future investments to determine future expense levels. Following is a hypothetical example of this calculation:

($40 / $1000) x $900 = $36

where: $40 is the historic (actual) maintenance expense
$1000 is the historic (actual) investment level
$900 is the projected investment level
$36 is the estimated future expense level

As illustrated by the above calculation, the projected expense level is lower than the historic level based solely on the fact that in this example projected plant costs are less than historic plant costs. In other words a projected decrease in the cost of purchasing or placing a piece of equipment would lead to an automatic reduction in the estimated cost of maintaining that equipment. Clearly there is no direct relationship between the cost of purchasing a piece of equipment and the cost of maintaining that equipment as implied by this calculation. For this reason the BC-to-CC ratio was devised to correct for this mismatch.

Theoretically, the BC-to-CC ratio would adjust the factor to eliminate the unintentional consequences of using an investment level to develop a factor that does not correspond to the investment level to which that factor will be applied. Following is an example of how in theory a BC-to-CC factor should work using the above example:

$ 1000 / $900 = 1.1111

where: 1.1111 is the book cost to current cost ratio

This BC-to-CC ratio would then be used to revise the above projected cost calculation as follows:

[($40 / $1000) x 1.1111] x $900 = $40

As illustrated, the BC-to-CC ratio eliminates any unintentional impacts caused by the differences between historic and projected investment costs. By eliminating this mismatch between the denominator in the investment factor and the investment to which that factor is applied, the BC-to-CC

ratio theoretically eliminates unsupportable secondary expense adjustments. In other words the BC-to-CC ratio would insure that all adjustments to expense factors are based on some defensible explicit basis as opposed to being a secondary impact of changes in investment levels that in many instances have no correlation to maintenance costs.

Practical Problems with BC-to-CC Ratio Application

Although theoretically sound the actual implementation of the BC-to-CC ratio as it exists in most models today actual increases the mismatch between projected and historic investment levels. As opposed to eliminating unintentional distortions in the expense calculation, current applications of the BC-to-CC ratio magnify these distortions.

As illustrated above, the objective of the BC-to-CC ratio is to match the investment used to calculate the factor with the investment to which that factor would be applied. This would create symmetry in the calculation, which would increase its accuracy by eliminating unintentional and unsupportable implicit adjustments to expenses. However, using the BC-to-CC ratios predominately available, as inputs to most models would actually increase this distortion. This result is attributable to the fact that the projected or current cost calculations used in the development of factors is not even remotely related to the current costs developed by the models to which the factors are applied. The current costs for the denominator in the BC-to-CC ratio are generally developed using a ***Reproduction Cost New*** approach. Reproduction costs are the amount the company would spend to replace the existing technology with identical technology at current prices and placement costs for that technology. They are calculated by applying Telephone Plant Index (TPI) factors to existing investment levels.

The resulting expense factors are then applied to current replacement costs. ***Replacement Costs*** assume that all the plant is replaced using the most modern placement techniques and the most current available technology (the TELRIC approach). Thus again, there is a mismatch between the investments used to develop the factors and the investments to which those factors are applied. Following is an example of the new calculation:

$$\frac{\text{Historic Expense}}{\text{Historic Investments}} \times \frac{\text{Historic Investments}}{\text{Reproduction Cost New}} \times \text{Replacement Cost} = \text{Projected Expense}$$

Simplified, the new calculation is:

$$\frac{\text{Historic Expense}}{\text{Reproduction Cost New}} \times \text{Replacement Cost} = \text{Projected Expense}$$

From the above equation, it is easy to see the mismatch between the investment used in the denominator (i.e. reproduction cost) and the investment to which the factor is applied (i.e. replacement cost). In essence this new approach simply replaces the historic investments used in the original calculation with a reproduction cost new investment derived using the telephone plant index.

The question then becomes, is the reproduction cost new used in developing the BC-to-CC factors a better representation of the replacement costs derived from the models than the historic investments used in the original calculation? No one can argue that both don't represent a mismatch. The issue becomes which mismatch more appropriately reflects the replacement costs derived by the model. It is Qwest's experience that reproduction costs derived using a telephone plant index increase this distortion. This is especially true regarding outside plant costs. The reproduction cost new for outside plant investment using the TPI is less representative of the replacement costs derived by the models than historic costs. For instance the TPI would suggest that outside plant costs would be approximately 140% higher if the plant was replaced today using the same technology. The Qwest

models generally show that the cost of replacing these facilities would be slightly less if new technologies were employed. Again, returning to the above example: As illustrated, the amount of maintenance expense was arbitrarily reduced from $40 to $36 by the mismatch between the historic investment used in the denominator (i.e. $1000) and the replacement cost to which it was applied (i.e. $900). Now, assuming that the reproduction cost is $1400, based on the outside plant reproduction cost factor of 140% that was derived using the telephone plant index, the new maintenance expense would be calculated as follows:

$$(\$40 \ / \ \$1000) \ \text{x} \ (\$1000 \ / \ \$1400) \ \text{x} \ \$900 \ = \ \$25.71$$

where:
$40 is the historic maintenance expense
$1000 is the historic investment level
$900 is the projected replacement investment level
$1400 is the projected reproduction investment level

As illustrated above, the current reproduction cost (i.e. $1400) used in the BC-to-CC ratio is less representative of the replacement cost (i.e. $900) than the historic investment of $1000. The $4 distortion that occurred when historic costs were used in the denominator increases to more than $14 when the reproduction cost new is substituted into the equation. The mismatch has been increased as opposed to decreased. The size of the distortion or unjustified reduction in maintenance expense has also been exacerbated. For this reason, Qwest does not use any BC-to-CC ratios in its TELRIC cost models for the calculation of maintenance costs associated with plant investment amounts determined using reproduction cost methodologies.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO Qwest CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194 Phase II**

REBUTTAL TESTIMONY OF

ROBERT F. KENNEDY

QWEST CORPORATION

June 27, 2001

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I. IDENTIFICATION OF WITNESS

Q. ARE YOU THE SAME ROBERT F. KENNEDY WHO FILED DIRECT TESTIMONY IN THIS PROCEEDING ON MARCH 15, 2001?

A. Yes.

II. PURPOSE OF REBUTTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My testimony has multiple purposes. First, I address the CLECs' proposed nonrecurring charge structure that they have introduced in this cost proceeding and point out several flaws in their proposal. Second, I respond to the issue of single point of presence ("SPOP") raised in the direct testimony of William Dunkel. Third, I discuss the issue of grooming costs and charges and respond to the testimony of Thomas Weiss relating to these issues. Fourth, I respond to issues raised in the direct testimony of Rex Knowles concerning Space Construction, Quote Preparation Fees, Collocation Terminations, CLEC-to-CLEC Connections, and Field Verification. Finally, I respond to issues raised in the direct testimony of Roy Lathrop concerning the reuse of collocation equipment, ICB pricing and channel regeneration.

III. DISCUSSION OF ISSUES

A. CLECS' PROPOSED NONRECURRING CHARGE STRUCTURE

Q. HAVE YOU IDENTIFIED FLAWS THAT EXIST IN THE NONRECURRING CHARGE STRUCTURE THAT THE CLECS ARE RECOMMENDING?

A. Yes. First, the CLECs' recommended nonrecurring charge structure[1] is inconsistent with the products and services that Qwest has agreed to offer pursuant to the section 271 workshop negotiations. In some cases, the charges proposed by the CLECs do not map to Qwest's products and services, while in other cases, nonrecurring charges simply have not been identified.

In addition, the products and services that Qwest has agreed to offer in the section 271 workshops are supported by systems, processes and procedures that were developed for the provision of these products and services to all CLECs with whom Qwest does business. Because Qwest is an Incumbent Local Exchange Carrier ("ILEC") with obligations that extend to all CLECs that do business across Qwest's entire territory, the problems that could arise should the CLECs' nonrecurring charge structure be approved would likewise extend beyond the interconnection obligations that Qwest has to CLECs operating within Arizona. Should the CLECs' proposed nonrecurring charge structure be approved, Qwest would be required to incur significant and unnecessary costs in order to modify its products and services

[1] Direct Testimony of Roy Lathrop on behalf of World Com, Exhibit RL-2 NRCM Results (May 16, 2001).

to conform with the CLECs' proposed charge structure. Qwest has proposed a nonrecurring charge structure that complies with the Telecommunications Act of 1996 ("the Act") and the FCC's pricing rules. There is no sound reason to adopt the CLECs' proposed structure and to require the unnecessary modifications of products and services that would result from the imposition of that structure.

For these reasons, Qwest recommends that the Commission find that the nonrecurring charge structure that the CLECs recommend is not in the best interest of either Qwest or the CLECs and should not be approved.

B. ISSUE RAISED IN THE TESTIMONY OF WILLIAM DUNKEL

1. SINGLE POINT OF PRESENCE ("SPOP")

Q. IN HIS TESTIMONY, MR. DUNKEL STATES THAT A SINGLE POINT OF INTERCONNECTION ("SPOP") SHOULD BE OFFERED ON AN AREA-WIDE OR LATA-WIDE BASIS[2]. DOES QWEST AGREE?

A. Yes. The SPOP issue was addressed within the general terms workshop. Qwest agrees that the SPOP should be offered on a LATA-wide basis and not strictly on a single calling area basis as Qwest had previously advocated.

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[2] Direct Testimony of William Dunkel on behalf of Arizona Corporation Commission, Pg. 77 (Jun 12th 2001)

C. ISSUE RAISED IN THE TESTIMONY OF THOMAS WEISS

1. APPLICATION OF GROOMING CHARGES

Q. IN HIS TESTIMONY, THOMAS WEISS STATES THAT NO GROOMING CHARGES SHOULD APPLY TO UNBUNDLED NETWORK ELEMENT - PLATFORM ("UNE-P") LINES.[3] DOES QWEST AGREE?

A. Yes.

Q. WHAT ACTION HAS QWEST TAKEN IN REGARD TO GROOMING CHARGES?

A. In the previous two-wire and four-wire cost studies, Qwest included the cost of grooming as part of the loop cost. Qwest has since separated the cost of grooming into three elements. While one or more of these elements will apply to all two-wire and four-wire unbundled loops, they will not be assessed on UNE-P lines.

Q. WHAT ARE THE THREE ELEMENTS ASSOCIATED WITH LOOP GROOMING THAT QWEST IS INTRODUCING?

A. The three loop grooming elements are two-wire and four-wire unbundled loop grooming and two-wire extension technology.

Q. DOES MR. WEISS RAISE OTHER ISSUES CONCERNING LOOP GROOMING IN HIS TESTIMONY?

A. Yes. These issues are addressed in the testimony of Qwest witness Dick Buckley.

D. ISSUES RAISED IN THE TESTIMONY OF REX KNOWLES

1. SPACE CONSTRUCTION

Q. BRIEFLY REVIEW QWEST'S PROPOSED SPACE CONSTRUCTION OFFERING.

A. Qwest's Space Construction offering includes the material, labor and engineering required to prepare and construct a collocation space, including the necessary support structure, cable racking, lighting, air conditioning, and convenience outlets.

Q. DID QWEST DEVELOP SPACE CONSTRUCTION BECAUSE CLECS DESIRED "MORE PREDICTABLE AND LESS CONFUSING COLLOCATION PRICING"[4] AS MR. KNOWLES STATES?

A. Yes. Space Construction was developed in response to the CLECs' requests to eliminate individual case basis ("ICB") pricing formerly used by Qwest for the pricing of space construction components. The current Space Construction offering simplifies the ordering process for the CLECs.

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[3] Direct Testimony of Thomas Weiss on behalf of AT&T, WorldCom, and XO, pg.-, (MAY 18TH, 2001).

[4] Direct Testimony of Rex Knowles on behalf of XO at Pg. 8 (May 16th, 2001).

Q. HAS ANYTHING OCCURRED SINCE YOU SUBMITTED YOUR DIRECT TESTIMONY IN THIS COST PROCEEDING WHICH MIGHT RESULT IN QWEST CHANGING THE CURRENT SPACE CONSTRUCTION PROPOSAL?

A. Yes. During the Utah collocation hearing in Docket 00-049-106, Qwest agreed to develop a separate charge for the collocation cage. Although time has not permitted Qwest to develop a cost study consistent with that agreement, Qwest is prepared to address the changes in Docket T-00000A-00-0194.

2. QUOTE PREPARATION FEE

Q. BRIEFLY REVIEW QWEST'S QUOTE PREPARATION FEE APPLICABLE TO ITS PHYSICAL COLLOCATION OFFERINGS.

A. A Quote Preparation Fee is a nonrefundable charge for the work required to verify space availability and to develop a price quote for the total cost to the CLEC for the requested physical collocation.

Q. MR. KNOWLES ARGUES THAT BECAUSE VERIZON DOES NOT IMPOSE A QUOTE PREPARATION FEE, THE COMMISSION SHOULD NOT PERMIT QWEST TO IMPOSE A QUOTE PREPARATION FEE.[5] HOW DOES QWEST RESPOND?

A. The purpose of this cost proceeding is to set prices for Qwest's products and services, including Quote Preparation Fee, consistent with the

[5] Knowles at pg.13

Telecommunications Act of 1996, the FCC and the Commission. Whether Qwest does or does not offer interconnection products and services like those allegedly offered by another provider is not relevant here. Verizon's alleged product structure is not an appropriate benchmark by which to measure whether Qwest's Quote Preparation Fee is reasonable and appropriate. Rather, Qwest believes that the Commission should consider the fact that Qwest incurs costs to prepare a collocation-related quote and, for that reason, is entitled to recover those costs.

Q. WHAT IS THE PURPOSE OF THE QUOTE PREPARATION FEE?

A. The Quote Preparation Fee is intended to recover the costs associated with the preparation of a bid by Qwest for collocation work that is requested and then subsequently cancelled by the CLEC. The Quote Preparation Fee ensures that Qwest will be compensated for the work associated with preparing a quote.

Q. WHAT HAS QWEST'S EXPERIENCE BEEN WITH REGARD TO COLLOCATION REQUESTS THAT HAVE BEEN REQUESTED BY CLECS, BUT SUBSEQUENTLY CANCELLED?

A. There have been six hundred and fifty nine (659) collocation cancellations across Qwest's region since June 1999, of which seventy-three (73) occurred in Arizona. It is necessary that Qwest recover its costs for quote preparation when a CLEC's collocation request is subsequently cancelled. Qwest would not incur these costs but for the CLECs' collocation requests, and it should be permitted to recover the costs from the parties that cause them.

Q. HOW DOES QWEST TREAT THE QUOTE PREPARATION FEE WHEN THE COLLOCATION WORK IS COMPLETED?

A. Qwest will credit the CLEC for the charges associated with the quote preparation when the collocation work is completed.

Q. HOW SHOULD THE COMMISSION DECIDE THE ISSUE OF QUOTE PREPARATION FEE?

A. Qwest incurs costs to provide a collocation-related quote and is entitled to recover those costs. Furthermore, Qwest's Quote Preparation Fee is based upon sound rationale and adequate cost support. This support, combined with the documented instances of collocation order cancellations, support the need for a Quote Preparation Fee. For these reasons, the Commission should approve Qwest's proposed Quote Preparation Fee.

3. COLLOCATION TERMINATIONS

Q. PLEASE BRIEFLY REVIEW THE PURPOSE OF COLLOCATION TERMINATIONS.

A. Collocation terminations are used by a CLEC to connect its caged or cageless collocation to the interconnection distribution frame ("ICDF") in order to access unbundled network elements ("UNEs") for the purpose of interconnection.

Q. HOW DOES QWEST OFFER COLLOCATION TERMINATIONS?

A. Qwest offers a number of termination sub-elements that a CLEC may select from in order to create the type of collocation termination desired. Depending upon a CLEC's needs, collocation termination sub-elements may be purchased for DS0, DS1 and DS3 facilities. For example, there are four DS0 sub-elements consisting of DS0 Cable per 100 pair block; DS0 Cable Placement per 100 pair block; DS0 Block; and DS0 Block Placement. Separate groups of DS1 sub-elements and DS3 sub-elements are likewise made available to accommodate a CLEC's need for such collocation services.

Q. WHY DOES QWEST OFFER COLLOCATION TERMINATIONS IN THE MANNER JUST DESCRIBED?

A. Because the particular type of collocation arrangements can differ significantly from one CLEC to another, Qwest offers collocation terminations on a sub-element basis. In this way, a CLEC may select the collocation termination equipment that best meets its individual needs. For example, a CLEC that orders DS0 facilities may choose to supply its own cable and install its own termination block, thereby foregoing the need to purchase Qwest's DS0 Cable product. On the other hand, Qwest may provide all of the elements that are required to establish a collocation arrangement. By offering collocation on a sub-element basis, Qwest offers the CLECs the option of purchasing some or all of the required collocation sub-elements directly from Qwest or from an alternative source(s) within the marketplace.

Q. MR. KNOWLES ARGUES THAT QWEST'S PROPOSED RATES FOR COLLOCATION TERMINATIONS "ARE SIGNIFICANTLY HIGHER THAN THE RATES VERIZON PROPOSED IN WASHINGTON"[6] AND RECOMMENDS THAT THE COMMISSION ADOPT THE WASHINGTON APPROVED RATES. HOW DOES QWEST RESPOND?

A. I have not seen -- and to my knowledge, this Commission has not seen -- information or cost data concerning the complete structure of Verizon's out-of-Arizona rates for recovering termination costs. XO did not bring this information to the collocation workshops. Accordingly, there is inadequate information upon which to base a comparison of Verizon's rates with Qwest's and, also, an inadequate basis for imposing Verizon's non-Arizona rates on Qwest. The Commission should make its decision concerning Qwest's collocation termination rates based upon Qwest's product structure, engineering design and cost support introduced through the testimony of Qwest witnesses and evidence offered by other parties in the Arizona cost proceeding.

Q. HOW SHOULD THE COMMISSION DECIDE THIS ISSUE?

A. As with the issue of the Quote Preparation Fee, the Commission should approve the collocation termination prices based upon the rationale and supporting costs that Qwest has presented.

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[6] Knowles at pg. 14.

4. CLEC-TO-CLEC CONNECTIONS

Q. PLEASE BRIEFLY REVIEW QWEST'S CLEC-TO-CLEC CONNECTIONS.

A. CLEC-to-CLEC connections provide CLECs with the ability to connect with each other within the same Qwest wire center for the purpose of mutually exchanging traffic. A CLEC may also use the connections to connect multiple forms of its own collocations together within the same wire center.

Q. ARE THE CHARGES FOR CLEC-TO-CLEC CONNECTIONS ADDRESSED IN THE STATEMENT OF GENERALLY AVAILABLE TERMS AND CONDITIONS ("SGAT")?

A. Yes.

Q. MR. KNOWLES ALLEGES THAT QWEST'S PROPOSED CHARGES FOR CLEC-TO-CLEC CONNECTIONS ARE INCONSISTENT WITH THE SGAT.[7] HOW DOES QWEST RESPOND?

A. While Mr. Knowles alleges that Qwest's charges are inconsistent with the SGAT, he fails to identify the inconsistency. Qwest is, therefore, unable to respond to this allegation in this rebuttal testimony.

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[7] Knowles at pg. 16.

5. FIELD VERIFICATION

Q. PLEASE REVIEW THE STEPS INVOLVED IN THE PROCESS THAT QWEST UNDERTAKES TO DETERMINE SPACE AVAILABILITY WHEN A CLEC REQUESTS ACCESS TO QWEST'S INNERDUCT.

A. Database inquiry and field verification must be completed before Qwest can accept a CLEC's order for service. Qwest will complete a database inquiry and prepare a duct structure diagram that will show the distances and access points that are present along the route for which the CLEC requests information. An estimate of costs associated with a field verification of available facilities is also prepared for the CLEC's review. After a review of the inquiry results prepared by Qwest, the CLEC must determine whether to request that Qwest proceed with the actual field verification process.

Q. MR. KNOWLES MAINTAINS THAT "THE REVIEW OF QWEST'S RECORDS . . .SHOULD BE ALL THAT IS REQUIRED TO VERIFY THE AVAILABILITY OF SPACE IN THE CONDUIT."[8] DOES QWEST AGREE?

A. No. As I have just described, field verification is a necessary part of the work that Qwest performs. Field verification is required not only to determine space availability for a CLEC that wishes to occupy innerduct along the requested route, but also to assure the ongoing integrity of Qwest's network that is used by Qwest and CLECs alike. Qwest's database research and field verification steps were

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[8] Knowles at pg. 17.

developed as a result of Qwest's experience in providing service to its end user customers and its experience in providing services to other telecommunications providers. That experience dictates that a review of records alone is simply not a sufficient basis upon which to undertake the work requested.

Q. ACCORDING TO MR. KNOWLES, "MOST OF THE TIME THAT QWEST ESTIMATES TO BE NECESSARY FOR FIELD VERIFICATION IS DEVOTED TO QWEST'S OWN INSPECTION, INCLUDING MAKING TECHNICAL DRAWINGS OF ITS CONDUIT AND REVISING ITS RECORDS ACCORDINGLY."[9] IS THIS CORRECT?

A. No. Contrary to what Mr. Knowles asserts, the drawings are done for the specific CLEC route and include any necessary "make ready" work that must be completed in order to satisfy the CLEC's request. The drawings would not be necessary, but for the CLEC's request for service. Therefore, Qwest has little or no need to review the drawings once the CLEC order for service is completed.

Q. MR. KNOWLES MAINTAINS THAT THE TIMEFRAME FOR INSPECTION OF A MANHOLE SHOULD TAKE NO MORE THAN TWO HOURS. HOW DOES QWEST RESPOND?

A. Mr. Knowles makes this assertion without explaining why this should be the case. Therefore, Qwest and the Commission have no means by which to evaluate Mr. Knowles' claim.

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[9] Knowles at Page 18

It is important to realize that manhole inspection involves more than just viewing the manhole to "verify that sufficient space exists."[10] The size of the job to be studied is a critical factor in determining how long a particular field verification may take. If, for example, the area to be studied is a five mile stretch of rural roadway in which are located five or six manholes, the field verification will be relatively short in comparison to a field verification that requires the examination of one hundred or two hundred manholes located in an urban area such as downtown Phoenix. Although both requests necessitate the review of records, field surveys, preparation of drawings, etc. the length of the overall job in the second example will naturally be greater due to the substantial number of manholes to be examined along the route. The task of individually examining the five or six manholes in the first example would be far less time-consuming than the individual examination of possibly one hundred or two hundred manholes in downtown Phoenix. Moreover, in addition to the time required to travel from one manhole to another, it is important to remember that before entering each manhole, the engineer must take steps to clear the manhole of any gas or water that may have accumulated in the manhole. It is unclear whether Mr. Knowles' time estimate allows for both travel time and the time needed to clear manholes of gas and water. An estimate as short as two hours could not realistically account for these factors.

Q. HOW DOES QWEST RESPOND TO MR. KNOWLES' ALLEGATION THAT IT HAS BEEN XO'S EXPERIENCE THAT "QWEST DOES NOT ACTUALLY

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[10] Id. at pg. 18.

INSPECT EVERY MANHOLE ALONG THE ROUTE THAT THE CLEC HAS REQUESTED"[11]

A. It is Qwest's policy to inspect every manhole as part of the field verification process. There are several reason for this. One reason is to distinguish continuous routes from. non-continuous routes, i.e where bridges may be extend off the main route. Still another reason is to determine whether the route is blocked or in some way damaged. Without knowledge of the particular details of XO's experience to which Mr. Knowles refers, however, Qwest is unable to fully respond.

E. ISSUES RAISED IN THE TESTIMONY OF ROY LATHROP

1. REUSE OF COLLOCATION EQUIPMENT

Q. PLEASE REVIEW THE "REUSABILITY TEST" PROPOSED BY WORLDCOM WITNESS ROY LATHROP. [12]

A. Mr. Lathrop describes the "reusability test" as requiring "that no capital costs be included in NRCs [nonrecurring charges] since capital items, once acquired, can be used to provide service to future customers."[13] Mr. Lathrop further states that the reusability test "should be applied to associated installation labor for the same

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[11] Knowles at page 18

[12] Lathrop at pg. 9-10.

[13] Lathrop at pg. 9.

reason - once installed, another customer at the same premise [sic] can reuse the plant at no additional cost for the plant."[14]

Q. IS THE REUSABILITY TEST PROPOSED BY WORLDCOM AN APPROPRIATE MEANS BY WHICH TO DETERMINE WHETHER AND TO WHAT EXTENT COLLOCATION EQUIPMENT MAY BE REUSABLE?

A. No. Qwest is still in the stage of developing products and processes to meet the CLECs' immediate requirements for collocation products and services. In conjunction with this effort, Qwest introduces products that in some cases may reflect input from the CLECs, or have been developed in direct response to needs expressed by the CLECs. For these reasons, Qwest does not share WorldCom's opinion that "once installed, another customer at the same premise [sic] can reuse the plant at no additional cost for the plant."[15] Qwest's experience in Arizona since June1999 demonstrates that there are not enough similarities between CLECs' needs and specifications to support the assumption that CLECs will uniformly be able to re-use collocation equipment. For example, therehave been 73 collocation cancellations and only 11 changes of responsibility which have taken place in Arizona since June 1999.

Q. PLEASE DESCRIBE QWEST'S COLLOCATION POLICIES THAT BECAME EFFECTIVE MARCH 15, 2001.

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[14] Id.

[15] Id.

A. On March 15, 2001, Qwest introduced three collocation-related policies. The first policy is Qwest's "Collocation Cancellation Policy." This policy outlines the requirements for a CLEC's cancellation of a request for a collocation site that is under construction. The second policy is Qwest's "Collocation Change of Responsibility Policy." The Collocation Change of Responsibility Policy outlines the requirements that a CLEC must follow when that CLEC wishes to transfer the lease of its collocation site to another CLEC. The third collocation policy is Qwest's "Collocation Decommissioning Policy." The Collocation Decommissioning Policy outlines the requirements that a CLEC must follow when that CLEC wishes to request the deactivation of a completed collocation site that includes the removal of the CLEC's equipment from a Qwest central office. Copies of the three collocation policies are included in Exhibit RFK-1 of this testimony.

Q. PLEASE DISCUSS QWEST'S RATIONALE FOR EACH OF THE THREE COLLOCATION POLICIES.

A. Qwest introduced the Collocation Cancellation Policy in order to ensure that collocation expenses could be recovered for collocation equipment and related services that otherwise would be stranded if a CLEC, subsequent to accepting the price quote and paying the fifty percent fee[16], decided not to occupy the collocation space. In addition, Qwest instituted this policy in order to provide CLECs with a reasonable and equitable means to terminate their use of and financial responsibility for collocation space and equipment.

As with the Cancellation Policy, Qwest introduced the Collocation Change of Responsibility Policy in order to ensure that collocation expenses would not be stranded in the event that the vacating CLEC was unable or chose not to continue occupying the collocation space. With the Change of Responsibility Policy, the CLECs themselves negotiate the terms and conditions for the transfer of the collocation site.

Finally, the Collocation Decommissioning Policy was introduced to provide CLECs with an appropriate means by which to permanently vacate a collocation site. Under this policy, the vacating CLEC will be reimbursed for the reusable elements of the vacated site for up to one year after decommission.

Q. WHAT HAS BEEN QWEST'S EXPERIENCE IN ARIZONA WITH COLLOCATION CANCELLATIONS, DECOMMISSIONS AND CHANGES OF RESPONSIBILITY?

A. As I previously stated, a total of 73 cancellations and 11 changes of responsibility have occurred in Arizona since June 1999. Also, since that time there have been zero (0) decommissions in Arizona.

Q. WHAT DOES QWEST CONCLUDE FROM THESE RESULTS?

A. First, Qwest concludes that, without a collocation cancellation policy, Qwest may have been left with no viable means for recovering the costs associated with the quote preparation fee and completed element installation charges in the 73

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[16] Exhibit RFK- 1, "Collocation Cancellation Policy" (March 9, 2001).

collocation cancellations that have occurred in Arizona since June1999. Second, while the Change of Responsibility option could be beneficial to CLECs, it has only been used 11 times in the past 24 months. This may be the case because CLECs that start business within a particular area that was served by a previous CLEC may not be able to reuse the collocation equipment, or elect to use other means by which to provide service to their end user customers.

Q. MR. LATHROP MAINTAINS THAT SOME ONE-TIME ACTIVITIES SHOULD NOT BE RECOVERED USING NONRECURRING CHARGES BECAUSE THE "LONG-RUN ECONOMIC COST OF A ONE-TIME ACTIVITY THAT BENEFITS MULTIPLE USERS IS BORNE ENTIRELY BY THE FIRST PROVIDER TO USE THE FACILITY...."[17] WILL THIS BE THE RESULT UNDER QWEST'S COLLOCATION POLICIES?

A. No. Qwest's Collocation Change of Responsibility policy makes clear that the CLEC assuming responsibility for a vacating CLEC's collocation site may do so only upon acceptance of the associated payment obligations.[18] These obligations include nonrecurring charges associated with updating Qwest's network systems to transfer reusable elements to the new CLEC. Therefore, the "first provider to use the facility" will not bear the entire cost of the one-time activity.

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[17] Lathrop at pg. 10.

[18] Exhibit RFK- 1, "Collocation Change of Responsibility Policy" (March 9, 2001).

2. INDIVIDUAL CASE BASIS ("ICB") COLLOCATION PRICING

Q. UNDER WHAT CIRCUMSTANCES DOES QWEST PROPOSE USING ICB PRICING FOR ITS COLLOCATION PRODUCTS?

A. Qwest proposes using ICB pricing only in situations where it is necessary to do so. These situations may involve infrequent requests for which Qwest has been unable to gather meaningful data from which to develop standard costs and prices. ICB pricing is also likely to be required when the scope of the work requested is so different from one request to another that it is, again, difficult to collect meaningful cost data and develop standard prices.

Q. MR. LATHROP STATES THAT THE "NATURE OF ICB CHARGES IS THAT THEY ARE HIDDEN AND DO NOT APPEAR IN OR AS COST STUDIES."[19] HOW DOES QWEST RESPOND?

A. ICB charges do not appear "in or as cost studies" because, as the name suggests, the charges are "individual." As I have just stated, this is so because there is simply not enough meaningful data available from which to develop standard costs and prices. This does not mean, however, that ICB costs and prices are "hidden" as Mr. Lathrop alleges.[20]

Q. DOES QWEST PLAN TO DEVELOP STANDARD COSTS FOR ADJACENT COLLOCATION AND FIELD CONNECTION POINT?

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[19] Lathrop at pg. 32.

A. No, it does not. Qwest has had few, if any requests for these types of collocation. As a result, there is no meaningful data upon which to develop costs. Adjacent Collocation and Field Conneciton Point would require modifications to existing construction or the construction of new facilities that Qwest simply has not had experience in providing. If and when Qwest has handled enough requests to gain the experience that is necessary to develop standard costs and standard product offerings, it will do so.

Q. DOES QWEST PLAN TO PRODUCE STANDARD COSTS FOR REMOTE COLLOCATION?

A. Yes, it does. Although there have been few requests for remote collocation, because CLECs utilize existing Qwest facilities, sufficient and appropriate information is available for Qwest to develop standard costs. Qwest is currently developing costs, and will introduce rates for remote collocation in the near future.

Q. MR. LATHROP QUESTIONS QWEST'S ICB RATE PROPOSAL FOR SECURITY AND SPACE PREPARATION. WHAT IS QWEST'S RESPONSE?

A. Qwest has simply included a placeholder in the SGAT in order to allow for the possibility of charging for security and space preparation in the future. The FCC concluded that LECs could charge for space preparation and security measures if they prorated these costs and followed a state approved pricing methodology.[21]

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[20] Id.

[21] FCC 98-48 Sec. 45-51.

Qwest has not charged for, nor is it currently developing charges for space preparation. In addition, Qwest has limited its charges for security to those elements that recover the costs for card access, an element that is included in this cost proceeding. Qwest may choose to install security cameras at a later date. Should Qwest develop charges for space preparation and security, those charges will be developed in accordance with FCC and commission guidelines.

Q. ARE THE ISSUES OF SPACE PREPARATION AND SECURITY ADDRESSED IN THE SGAT?

A. Yes. The SGAT states:

> Qwest must in all cases of shared space Collocation allocate space preparation, conditioning, security measures and other Collocation charges on a pro-rated basis to ensure that the charges paid by CLEC as a percentage of the total overall space preparation and conditioning expenses do not exceed the percentage of the total Collocation space used by CLEC.[22]

Q. WHAT DOES QWEST RECOMMEND WITH REGARD TO SPACE PREPARATION AND SECURITY?

A. This does not appear to be an issue to be addressed in this cost proceeding. Qwest has not produced costs for these elements, nor has Qwest requested authority to ICB price these elements. The language was placed in the SGAT to hold open the possibility that Qwest might develop prices for these elements in the future. The SGAT language is not in dispute. Therefore, this Commission need not address the issue of pricing for space preparation or additional security

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[22] SGAT at para. 8.3.3.1.

requirements until such time as Qwest presents costs for the Commission's review and approval.

3. CHANNEL REGENERATION

Q. PLEASE BRIEFLY REVIEW THE PURPOSE OF CHANNEL REGENERATION.

A. Channel regeneration is required when the distance from the physical collocation space leased by the CLEC, or from the collocated equipment to the Qwest network, is of sufficient length that signal amplification i.e.regeneration is necessary.

Q. MR. LATHROP STATES THAT "THE FCC FOUND THAT IN NO EVENT SHOULD ILECS CHARGE FOR REGENERATION BECAUSE IT SHOULD NOT BE NECESSARY."[23] DOES QWEST AGREE WITH MR. LATHROP'S INTERPRETATION OF THE FCC'S POSITION ON THIS ISSUE?

A. No. The FCC did not state that in no event should ILECs charge for regeneration because it should not be necessary. What the FCC stated was that "**the record demonstrates** that . . .a repeater should not be needed for the provision of physical collocation service."[24] What the FCC further stated, and what Mr. Lathrop himself acknowledged, is that "a repeater is only necessary to maintain the proper voltage level of an electronic signal when the length of the cable between the

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[23] Lathrop at pg. 63.

[24] FCC 93-162.

interconnector's cage and the LEC's digital cross-connect bay exceeds 655 feet for a DS1 and 450 feet for a DS3."[25]

While no LEC was apparently able to show that regeneration was necessary in June of 1997 when the FCC released the *Physical Collocation Investigation Final Order*, the FCC clearly did not foreclose the Qwest's ability to offer and charge for regeneration under appropriate circumstances.[26]

Q. WHAT DOES THE FCC ALLOW WITH RESPECT TO A LEC'S ABILITY TO CHARGE FOR CHANNEL REGENERATION WHEN IT IS REQUIRED?

A. In the *Physical Collocation Final Order*, the FCC identified two standards that LECs must meet in order to introduce a rate structure:

> (1) rate structures must reflect cost-causation principles, i.e. the manner in which costs are incurred in providing expanded interconnection service; and (2) rate structures must be unbundled to ensure that interconnectors are not forced to pay for services that they do not need.[27]

Q. DOES QWEST COMPLY WITH THE FCC'S STANDARDS?

A. Qwest recognizes its obligation to provide the most efficient means of interconnection possible. This will ensure to the extent possible that CLEC

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[25] FCC 93-162

[26] Id.

equipment is placed in such a manner as to avoid the need for channel regeneration. Where channel regeneration is unavoidable, however, CLECs should incur the cost of channel regeneration.

With respect to the first standard, when the distance from the physical collocation space leased by the CLEC or from the collocated equipment to the Qwest network is of sufficient length, regeneration is necessary. Central office space is a limited resource that is used by Qwest and CLECs alike. When central office space becomes extremely scarce, Qwest and the CLECs may find it necessary to locate equipment in more distant locations. When this is the case, channel regeneration may be required. When a CLEC finds it necessary to locate its physical collocation at a distance from Qwest's network such that channel regeneration is required, the CLEC, as the cost causer, should compensate Qwest for channel regeneration.

With respect to the second standard, Qwest has unbundled the charge for channel regeneration so that the CLEC will be charged only when channel regeneration is required. In this way, CLECs will not be forced to pay for services that they do not need.

IV. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

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[27] Id.

1 A. Yes it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	**DOCKET NO. T-00000A-00-0194**
COMPLAINCE WITH CERTAIN	)	**PHASE II**
WHOLESALE PRICING	)	
REQUIREMENTS FOR UNBUNDLED	)	
NETWORK ELEMENTS AND RESALE	)	
DISCOUNTS	)	

EXHIBIT OF

ROBERT F. KENNEDY

JUNE 27, 2001

Collocation Cancellation Policy

March 9, 2001

Due to changing economic conditions and revisions of Co-Providers' network strategies, Qwest is distributing the following policy for the cancellation of collocation sites. This policy is a revision of the cancellation policy dated January 17, 2001. The policy was revised based on comments and suggestions from the industry. As previously indicated in the cancellation policy, this service is available beginning March 15, 2001. Qwest Communications reserves the right to modify this, and any other collocation policy, as necessary.

This policy addresses the applicable requirements for the cancellation of a collocation site request under construction. This policy is available to all Co-Providers regardless of whether collocation cancellation is specifically addressed in the Co-Provider's Interconnection Agreement. If terms and conditions for collocation cancellation are included in the Co-Provider's Interconnection Agreement, and those terms differ from those set forth in this policy, then the terms of the Interconnection Agreement will prevail.

Cancellation, for purposes of this policy, applies to all collocation sites which are under construction and that the Co-Provider has not received notification of completion from Qwest. A cancellation can occur by the result of a Co-Provider request or due to expiration. Expiration of a collocation request occurs where the Co-Provider fails to take the following action:

1. Accept the quote and pay the initial 50% by the 30-day quote acceptance timeframe.

Cancellation Overview

1) Cancellation is offered for Caged Collocation, Cageless Collocation, Virtual Collocation, and ICDF Collocation.

2) The following describes the two scenarios for which a collocation request will be considered eligible to be cancelled:

   a) Quote is not accepted by the Co-Provider or the quote expires.
      i) If the original collocation request is cancelled prior to quote acceptance or due to expiration of the quote, the following payments will be owed to Qwest:

Payments owed to Qwest by the vacating Co-Provider for the original collocation request:
- Quote Preparation Fee (QPF) for original collocation request

Cancellation Charges
- Please see rate elements and additional terms and conditions contained in this document.

   b) After quote acceptance[1], but prior to notification of completion, a cancellation may be requested.

[1] Quote acceptance is defined as the receipt of the first 50% payment and written acceptance of the quote.

i) If the original collocation request is cancelled after quote acceptance, but prior to notification of completion, the following payments will be owed to Qwest:

Payments owed to Qwest by the vacating Co-Provider for the original collocation request:

- QPF payment associated with the original order (if applicable)
- Cost associated with completed element installation

Cancellation Charges

- Please see rate elements and additional terms and conditions contained in this document

Cancellation Terms and Conditions

1) The Co-Provider must submit its Cancellation Request to a Qwest Account Representative via certified mail. A completed Cancellation Order Form must be sent accompanied by a written request (Letter of Authorization) on company letterhead, and must be signed by an authorized Co-Provider agent.

   a) Once the cancellation request, appropriate documentation and 100% of cancellation quote is paid, Qwest will process the cancellation through to completion.

   b) If 100% of the cancellation quote is not paid within 30 days of the quote distribution date, Qwest will begin recurring billing for installed elements for which the Co-Provider whom submitted the cancellation request will be liable.

2) The terms of the Co-Provider's Interconnection Agreement must contain negotiated terms and conditions and be finalized for the type of collocation for which the cancellation is be requested.

   a) If negotiations for terms and conditions have not been completed, the Co-Provider must enter into negotiations with Qwest prior to acceptance of the Cancellation Request.

3) Upon receipt of the cancellation quote, Qwest will cease[2] all work with the exception of work for which installation has already begun.

   a) Qwest will assess the project status to determine the elements that are in the process of being built. The installation of such elements will be completed and the Co-Provider billed accordingly.

4) If a Co-Provider submits an order to cancel a collocation site that also has Splitter Collocation associated with it, Qwest requires the splitter collocation be cancelled at the same time. Splitter collocation will be cancelled and managed using the terms and conditions of the cancellation policy. The Co-Provider submitting the cancellation request must indicate on the Cancellation Order Form that splitter collocation is present and that it is to be removed.[3]

   a) If Line sharing or Line splitting have been established, a LSR must be submitted for the services to be removed. If they are not disconnected charges for the service and the splitter collocation will continue to be billed and the cancellation request will not be processed.
   b) Prior to disconnecting the line sharing or line splitting, the Co-Provider must notify any partnering Co-Providers of the discontinuation of service.
   c) The Co-Provider must submit a letter of notification at the time that the order form is submitted.

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[2] Elements of work in progress (i.e. cage enclosure, bay space, racking, power or termination wiring, blocks, etc) for which installation has started will be charged in full.

[3] If the Co-Provider requires the removal of a CLEC to CLEC or Splitter Collocation separate from the cancellation of a collocation site, they must submit an application for augmentation to do so.

d) Charges associated with the disconnection of these services, are in addition to the costs of canceling the collocation site and will be billed independently of the cancellation request.

5) If a Co-Provider submits an order to cancel a collocation site that also has a CLEC to CLEC. Qwest requires the CLEC to CLEC- Direct Connect be cancelled at the same time. CLEC to CLEC – Direct Connect will be cancelled and managed using the terms and conditions of the cancellation policy.
   a) In the case of CLEC to CLEC – Direct Connect, the Co-Provider submitting the cancellation request must:
      i) Submit a Letter of Authorization signed by both the canceling Co-Provider and its partnering Co-Provider that authorizes Qwest to disconnect or stop the installation of the CLEC to CLEC – Direct Connect.
         (1) If a copy of the required Letter of Authorization is not attached to the cancellation request, Qwest will not accept the application.
      ii) Indicate on the Cancellation Order Form that the CLEC to CLEC – Direct Connect must be removed.
         (1) If the CLEC to CLEC – Direct Connect is not indicated to be removed recurring billing will continue and an augment order will need to be submitted independently. (Please see CLEC to CLEC Policy for additional CLEC to CLEC terms and requirements)

6) Qwest will prepare a cancellation quote and bill to be distributed to the Co-Provider within 30 days from the submission of the cancellation application and required documentation. Payment of cancellation bill is due within 30 days of quote date.
   a) If payment is not made within 30 days of the cancellation quote:
      i) Co-Provider's account to is subject to all remedies associated with Qwest's collection process.
      ii) Recurring charges for the installed elements (if applicable) will be billed until payment for cancellation is made.
      iii) Upon Payment Qwest will complete the cancellation request and stop the billing of the recurring charges for the installed elements.
      iv) Prior to Qwest accepting another collocation application from the Co-Provider, all outstanding financial obligations for all of the Co-Provider's collocation jobs, must be paid to Qwest.

      Potential Collocation Payments owed to Qwest by the relinquishing Co-Provider:
      - 100% of all incurred recurring charges
      - 100% of all incurred non-recurring charges
      - All associated cancellation charges

7) Upon cancellation, the Co-Provider owned materials utilized in building the collocation site would not be returned unless the Co-Provider requests removal[4] in writing.

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[4] If the Co-Provider requests that the cabling and fencing that it owns be removed, Qwest will add charges for the removal of these items to the cancellation quote.

- If the equipment cable was procured by Qwest, per the Co-Provider's application:
  - But not installed: Qwest will reuse it when possible for future requests.
  - If installation has begun and the Co-Provider requests the cable be returned, Qwest will mine out the cable and return it to the Co-Provider.
- If the cable has been procured by the Co-Provider and not installed, the cable will be returned.

8) Space returned to Qwest's control is used to meet Qwest's valid space requirements, as well as, offered to other requesting Co-Providers on a first-come first-serve basis and will be available for up to 1 year after the cancellation.

   a) The reusable elements of the vacated collocation site can be utilized by a new Co-Provider, but the site is provided "as is" after the cancellation process has been completed.

      i) If a new Co-Provider chooses to lease the relinquished space:

         (1) Qwest will bill the new Co-Provider the vacating Co-Provider's non-recurring rates for the reusable elements. However, the recurring charges will be billed based on the new Co-Provider's Interconnection rates for the reusable elements.

         (2) Additional elements required to complete the new Co-Provider's requests to modify the acquired (vacated) site will be quoted based on the new Co-Provider's Interconnection Agreement.

      ii) The Vacating Co-Provider will be reimbursed for the reusable elements of the vacated collocation site for up to 1 year after cancellation.

         (1) Reimbursement of the reusable elements will occur after the new Co-Provider accepts the collocation site, based on its submitted collocation request, and a 100% payment is made to Qwest.

            (a) Any payment associated with reimbursement to the vacated Co-Provider will first be applied to any debt owed to Qwest Communications with the remaining balance paid to the vacated Co-Provider.

9) The vacating Co-Provider has 60 calendar days from the time it submits its request for cancellation to remove its equipment, or Qwest will send notification the Co-Provider that the equipment is considered abandoned.

   a) Upon receiving notification of abandonment from Qwest, the vacating Co-Provider will have 15 calendar days to notify Qwest that the equipment is not abandoned. The Co-Provider will then have additional 15 calendar days to remove their equipment for it not to be considered abandoned.
   b) Qwest will review the Co-Provider's responses and assess if the equipment has been abandoned. If abandoned, Qwest will send final notification and bill to the Co-Provider for the labor charges associated with the removal of the abandoned equipment. Qwest will then dispose of the abandoned equipment.
   c) In the case of Virtual Collocation, Qwest will automatically remove all equipment within 60 days and return it to the Co-Provider. An additional charge will be assessed and billed for the removal of the Co-Provider's equipment.

10) The vacated Co-Provider must relinquish security access, if they do not currently lease another collocation site at the vacated Central Office. A New Co-Provider must submit its request for security access utilizing Qwest procedures.

11) Space returned to Qwest is not subject to a Change of Responsibility request.

Cancellation Rate Elements

Payments owed to Qwest by the vacating Co-Provider for the original collocation request:

1) QPF payment associated with the original order (if outstanding)
2) Cost associated with completed element installation (if outstanding)
3) Cancellation Assessment Fee
   a) Nonrecurring
   b) Covers the cost of engineering analysis of site completion and reusable elements, Cancellation quote preparation, coordination of vendors, and supporting documentation.
4) Network Systems Administrative Fee (if applicable)[5]
   a) Nonrecurring
   b) Covers the costs associated with updating Network systems to note reusable elements.
5) Labor Charges (if applicable)[6]

Charges to new Co-Provider for assuming a cancelled collocation site[7]:

1) Network System Administrative Fee
   a) Nonrecurring
   b) Covers the costs associated with updating Network systems to transfer reusable elements to a new Co-Provider.
2) Billing Administration Fee
   a) Nonrecurring
   b) Fee is applied to the record and database management activities performed by Qwest for the reimbursement of capital investments relating to payments owed by a new Co-Provider to a vacating Co-Provider for the use of a cancelled collocation site's previously paid and reusable elements.
3) Charges associated with reusable elements[8]
   a) Nonrecurring charges will be based on the vacating Co-Provider's Interconnection Agreement and quoted amounts.
   b) Recurring charges will be billed based on the new Co-Provider's Interconnection Agreement.

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[5] Network System Administrative Fee will not be charged if the collocation build has not reached the installation stage, or if none of the elements installed are reusable.

[6] If the Co-Provider requests that the cabling and fencing that it owns be removed, Qwest will add charges for the removal of these items to the cancellation quote.

- If the equipment cable was procured by Qwest, per the Co-Provider's application:
  - But not installed: Qwest will reuse it when possible for future requests.
  - If installation has begun and the Co-Provider requests the cable be returned, Qwest will mine out the cable and return it to the Co-Provider.
- If the cable has been procured by the Co-Provider and not installed, the cable will be returned.

[7] In order to assume a cancelled collocation site and its reusable elements, the new assuming Co-Provider must establish the site to be functional, in a reasonable amount of time, for the purpose of Interconnection or access to Unbundled Network Elements. This will generally require that additional elements be ordered.

[8] Reimbursement of the vacating Co-Provider's payments for reusable elements will be managed by Qwest and supplied to the vacating Co-Provider once the new Co-Provider has received completion notification of its request and Qwest has received full payment for the requested collocation site.

Collocation Change of Responsibility Policy

March 9, 2001

Due to changing economic conditions and revisions of Co-Providers' network strategies, Qwest is distributing the following policy for the transfer of a collocation site from one Co-Provider to another Co-Provider. Qwest refers to this policy and associated processes as a Change of Responsibility. This policy announcement is a revision of the Change of Responsibility policy dated January 16, 2001. This policy was revised based on comments and suggestions from the industry. As previously indicated in the previous Change of Responsibility notification, this service is available beginning March 15, 2001. Qwest Communications reserves the right to modify this, and any other collocation policy, as necessary.

This policy addresses the applicable requirements for a Co-Provider to submit an order to transfer the lease of its collocation site to another Co-Provider. This policy is available to all Co-Providers regardless of whether collocation change of responsibility is specifically addressed in the Co-Provider's Interconnection Agreement. If terms and conditions for collocation change of responsibility are included in the Co-Provider's Interconnection Agreement, and those terms differ from those set forth in this policy, then the terms of the Interconnection Agreement will prevail.

Change of Responsibility, for the purpose of this policy, refers to the authorized transfer of a leased collocation space and its associated payment obligations from one Co-Provider to another Co-Provider with a commission approved Interconnection Agreement. However, this policy does not address the transfer of collocation sites, which are part of a network and have active end-users, nor does it address requirements if two Co-Providers merge their corporations. Two options for a Change of Responsibility are available:

1) Cancellation Avoidance Request (CAR)
   - A Cancellation Avoidance Request (CAR) permits a Co-Provider to stop work on a collocation site in progress, as well as, transfer the responsibility of the collocation site to a new Co-Provider in good standing, who agrees to take on the legal and financial responsibilities of occupying the collocation site.
   - CAR is submitted in lieu of a Cancellation Request.

2) Decommission Avoidance Request (DAR)
   - A Decommission Avoidance Request (DAR) permits a Co-Provider to vacate and transfer responsibility for a completed collocation site to another commission approved Co-Provider who is in good standing with Qwest. The Co-Provider to whom the collocation is being transferred to agrees to take on the legal and financial responsibilities of the collocation site.
   - DAR is submitted in lieu of a Decommission Request.

Change of Responsibility Terms and Conditions

Cancellation Avoidance Request (CAR) Terms and Conditions

A Cancellation Avoidance Request can be requested if:

1) Qwest has not completed the construction of the collocation site as indicated by Qwest's distribution of notification of completion.
2) A collocation site has been accepted through the quote acceptance[1] procedures, but is prior to notification of completion.
   a) Any financial obligations owed to Qwest for the collocation site must be paid in full.
3) Qwest has not taken action to cancel an order due to expiration.
   a) Expiration is defined as an existing collocation request that terminates by lack of customer action.
      i) To avoid cancellation the following actions must be taken by the Co-Provider prior to expiration:
         (1) Accept the quote and pay the initial 50% and QPF (if applicable), in accordance with the 30 day quote acceptance time frame or as specified in the Co-Provider's Interconnection Agreement.
4) A Cancellation Avoidance Request is not permitted if the Co-Provider has previously submitted a cancellation request or its original collocation order has expired.
5) All general terms and requirements associated with a Change of Responsibility have been complied to and met.

Cancellation Avoidance Request (CAR) Charges

Payments Owed to Qwest by the Vacating Co-Provider

Financial obligations for the original collocation request:

1) Quote Preparation Fee (QPF) (if applicable)
2) Charges associated with the constructed elements[2] of the original collocation request.

Change of Responsibility – CAR Rate Elements:

1) CAR Assessment Fee
   - Nonrecurring

[1] Quote acceptance is defined as the receipt of the first 50% payment and written acceptance of the quote.
[2] Elements for which construction is in progress will be charged in full.

- Fee assessed applies to the project, order and support management associated with the administrative function of processing the Change of Responsibility application and request.

2) Entrance Facility Splice Removal
   - Nonrecurring
   - Charges associated with the removal of the splice at the POI, which is required per the terms and conditions of the Change of Responsibility policy.
3) Temporary Power Down
   - Nonrecurring
   - Charges associated with removal of the BDFB fuse to temporarily down power.

Payments Owed to Qwest by the Assuming (New) Co-Provider

Change of Responsibility – CAR Rate Elements:

1) Network Administration Fee
   - Nonrecurring
   - Covers the cost associated with updating Network systems to transfer reusable elements to the new Co-Provider.
2) Security Charges (if applicable)[3]
   - Nonrecurring
   - This charge applies to the keys/cards and card readers required for Co-Provider access to the Qwest Premise for the purpose of collocation.
3) Restoration of Temporary Power Down
   - Nonrecurring
   - Charges associated with the restoration of the BDFB fuse that has temporarily been powered down while Change of Responsibility requirements were met.

Decommission Avoidance Request (DAR) Terms and Conditions

A Decommission Avoidance Request can be requested only if:

1) The collocation site's construction has been completed and Qwest has sent notification of completion.
2) All financial obligations of the specific site are paid in full, including payment of the initial and final 50% owed on all applicable recurring charges.
3) Qwest has not taken action to decommission an order due to expiration.
   a) Expiration is defined as an existing collocation request that is terminated by lack of customer action.

[3] Additional security charges will not be applied if the assuming (new) Co-Provider already possesses the number of access cards they require to maintain or modify the collocation site.

i) To avoid decommissioning a Co-Provider must take the following actions prior to expiration of the collocation request:
   (1) Accept the quote and pay the initial 50% by the 30-day quote acceptance timeframe (if terms of a Co-Provider's Interconnection Agreement differ, the Interconnection Agreement's terms are applied).
   (2) Payment of the final 50% must be made within 30 days of the Ready for Service (RFS) date (if terms of a Co-Provider's Interconnection Agreement differ, the Interconnection Agreement's terms are applied).

4) Co-Provider has not previously submitted a decommissioning request.

Decommission Avoidance Request (DAR) Charges

Payments Owed to Qwest by the Vacating Co-Provider

Financial obligations for the original collocation request:

1) Quote Preparation Fee (QPF) (if applicable)
2) First 50% of quoted charges
3) Final 50% of quoted charges
4) All applicable recurring charges

Change of Responsibility – DAR Rate Elements

1) DAR Assessment Fee
   - Nonrecurring
   - Fee assessed applies to the project, order and support management associated with the administrative function of processing the Change of Responsibility application and request.
2) Entrance Facility Splice Removal
   - Nonrecurring
   - Charges associated with the removal of the splice at the POI, which is required per the terms and conditions of the Change of Responsibility policy.
3) Temporary Power Down
   - Nonrecurring
   - Charges associated with removal of the BDFB fuse to temporarily down power.

Payments Owed to Qwest by the Assuming (New) Co-Provider

Change of Responsibility – DAR Rate Elements:

1) Network Administration Fee
   - Nonrecurring
   - Covers the cost associated with updating Network systems to transfer reusable elements to the new Co-Provider.

2) Security Charges (if applicable)[4]
   - Nonrecurring
   - This charge applies to the keys/cards and card readers required for Co-Provider access to the Qwest Premise for the purpose of collocation.
3) Restoration of Temporary Power Down
   - Nonrecurring
   - Charges associated with the restoration of the BDFB fuse that has temporarily been powered down while Change of Responsibility requirements were met.

Change of Responsibility General Terms and Conditions

1) Change of Responsibility is offered for Caged, Cageless and Virtual Collocation.
2) 100% of the Co-Provider's preexisting financial obligations must be met prior to a Change of Responsibility space investigation request or transfer application being accepted by Qwest.
3) The Co-Provider to whom the collocation site is being transferred, must be in good financial standing and have a commission approved Interconnection Agreement with Qwest.
   a) The terms of the Co-Provider's Interconnection Agreement to whom the collocation site is being transferred must have been negotiated with Qwest for the type of collocation for which it is accepting responsibility.
      i) If the terms and conditions for the specific collocation type are not included in the Interconnection Agreement, the Co-Provider must begin negotiation of its Interconnection Agreement with Qwest prior to the completion of the Change of Responsibility.
4) A submitted Change of Responsibility request is for the transfer of a collocation site, which includes all elements that exist as part of the collocation[5] site at the time the Change of Responsibility request is submitted.
   a) If a Co-Provider submits a Change of Responsibility request for a collocation site that also has a Splitter Collocation associated with it, for the purposes of the Change of Responsibility policy, Qwest considers this a part of the original collocation site and the Splitter Collocation must also be transferred with the leasing rights of the original collocation site.

[4] Additional security charges will not be applied if the assuming (new) Co-Provider already possesses the number of access cards they require to maintain or modify the collocation site.

[5] If an augment to the collocation site was requested prior to the submission of the Change of Responsibility request, Qwest will complete the installation of the service or element(s) if installation is in progress. Qwest will then require the Co-Provider meet 100% of the financial responsibilities for these elements or services, and if applicable, require the Co-Provider to transfer the elements with the original elements installed as part of the collocation site. If the quote has not yet been accepted and the installation of the services/elements has begun, Qwest will bill the Co-Provider the appropriate charge for Engineering Analysis and Quote preparation. The collocation augmentation will then be permitted to expire.

b) Qwest, however, requires the following elements and services be removed (disconnected) prior to Qwest accepting the Change of Responsibility-DAR application request and CAR space investigation request:
   - CLEC to CLEC
   - Unbundled Network Elements
   - Finished Services
   - Administrative Lines
   - Entrance Facilities
   - Line Sharing
   - Line Splitting

c) Prior to submitting orders to disconnect Unbundled Network Elements, CLEC to CLEC, administrative lines, finished services, line splitting and line sharing, the vacating Co-Provider must notify all end users and partnering Co-Providers of the discontinuance of service.
   i) A copy of the notification letter must be sent to Qwest prior to Qwest accepting the:
      (1) Cancellation Avoidance Request (CAR) space investigation request.
      (2) Decommission Avoidance Request (DAR) Change of Responsibility transfer application.
   ii) For a CLEC to CLEC – Direct Connect arrangement, the vacating Co-Provider must submit a Letter of Authorization from the owner of the equipment cable authorizing Qwest to remove the equipment cable. Removal charges[6] will be applied accordingly.
   iii) All charges associated with the disconnection of these services, with the exception of CLEC to CLEC – Direct Connect[6], are in addition to the costs of transferred the collocation site and will be billed independently of the Change Responsibility request.

d) If a Co-Provider submits and Qwest accepts a Change of Responsibility space investigation request for a Cancellation Avoidance Request, Qwest will stop construction, at which time the site is subject to Qwest's cancellation policy if the transfer of collocation space is not successful.

e) If a Co-Provider submits and Qwest accepts a Change of Responsibility space investigation request for a Change of Responsibility transfer application for a Decommission Avoidance Request, the vacating Co-Provider is obligated to pay all recurring charges until the Change of Responsibility is complete and leasing responsibilities are transferred.

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[6] To reduce removal expenses for both the vacating Co-Provider, partnering Co-Provider and Qwest for the purpose of the Change of Responsibility policy, Qwest will retain the Co-Provider's equipment cable in exchange for the costs of removal.

- If the Co-Provider requests that the cabling be removed, Qwest will add charges for the removal of this item to the vacating Co-Provider's Change of Responsibility quote.
  - Requests for CLEC to CLEC – Direct Connect cable removal must be received at the time of the space inquiry request.

5) Upon receipt of payment of the quote for Change of Responsibility, Qwest will automatically pull the fuse to temporarily down power and remove Entrance Facility splice at the POI for the purposes of completing the Change of Responsibility order.
6) If a Co-Provider chooses to submit a Change of Responsibility space investigation request, the Co-Provider authorizes Qwest to release information about the collocation site and the Co-Provider's contact information to potentially interested parties on Qwest's queue lists.
7) The Co-Provider must submit its Change of Responsibility space investigation request and transfer application request to a Qwest Account Representative via certified mail. A completed Cancellation Order Form must be sent accompanied by a written request (Letter of Authorization) on company letterhead, and must be signed by an authorized Co-Provider agent.
8) The following information refers to the high level processes and associated policy requirements used in managing a Co-Provider's Change of Responsibility space investigation request. For more detailed information regarding the procedures used, please see Qwest's website at www.qwest.com.
   a) Upon receipt of a Co-Provider's Change of Responsibility space investigation request and the appropriate documentation, the following actions will occur:
      i) Qwest will review the Central Office queue list for which the Change of Responsibility space investigation was requested:
         (1) If Co-Providers are in queue that require the same type of collocation, Qwest will notify the Co-Provider in queue that the vacating Co-Provider is offering to transfer its collocation space. The following information will be provided :
            (a) Collocation specifications (i.e. quantities of elements installed, collocation site size, etc.).
            (b) Change of Responsibility quotes (Indicates the payments owed to Qwest for the management of the Change of Responsibility Request).
            (c) Vacating Co-Provider's contact information*
               - Name of contact person
               - Telephone number of contact person

               *Qwest will not distribute the vacating Co-Provider's corporation name in the continued support of safe harbor requirements.
      ii) All interested Co-Providers shall directly contact the vacating Co-Provider to begin negotiations for the available space.
         (1) Negotiation of the terms and conditions between the vacating Co-Provider and the new Co-Provider are the responsibility of the two parties. Qwest does not participate in these discussions nor have any responsibility or liability for the management of the transfer of the collocation site, nor for any terms and conditions negotiated by the Co-Providers beyond those stated in the Change of Responsibility Policy.
      iii) If there are no Co-Provider's in queue, the vacating Co-Provider will be notified.

(1) At any time before, during or after the space investigation process, the vacating Co-Provider may choose to identify a Co-Provider who has interest in the collocation site. Any discussions held and/or agreements made are at the sole discretion of the vacating Co-Provider.

iv) If the vacating Co-Provider was not able to reach an agreement with a Co-Provider in queue or another interested Co-Provider within 40 days from the submission of the Change of Responsibility request, one of the following will apply:

(1) If the Change of Responsibility space investigation request was for a Cancellation Avoidance Request (CAR) and no agreement was reached, the collocation site will revert to cancelled status and be subject to Qwest's cancellation procedures.

(2) If a Change of Responsibility was a Decommission Avoidance Request (DAR) and there was no agreement reached, the collocation would remain active and the original Co-Provider would retain legal and financial responsibilities for the collocation site.

9) The following refers to the high level processes and associated policy requirements used in managing a Co-Provider's Change of Responsibility transfer application submission. For more detailed information regarding the procedures used, please see Qwest's website at www.qwest.com.

a) Once an agreement has been reached between the vacating Co-Provider and the new (assuming) Co-Provider, the vacating Co-Provider must fill in the Change of Responsibility Submission of Agreement section of the Order From and resubmit the application. The vacating Co-Provider must also submit all supporting documentation (indicated in this policy) that is required to be submitted along with the resubmitted application.

i) The resubmitted application and supporting documents must be received no later than 40 days after Qwest receives and accepts the initial Change of Responsibility application.

ii) Required supporting documentation may include:

(1) Letter of Authorization from the vacating Co-Provider indicating agreement with the terms and conditions of Qwest's Change of Responsibility policy, and approval for Qwest to proceed with the required steps to support the requested Change of Responsibility request.

(2) A copy or copies of the Letter of Notification to any end-users and collocation partners indicating the discontinuance of services relating to the collocation space, Unbundled Network Elements, CLEC to CLEC, administrative lines, finished services, line sharing and line splitting.

(3) Letter of Authorization indicating the vacating Co-Provider and the new Co-Provider have reached an agreement and authorize Qwest to proceed with the Change of Responsibility transfer request within the terms of the Change of Responsibility policy.

b) Upon receipt of the Change of Responsibility transfer application and supporting documentation, Qwest reviews the documentation and validates its accuracy. In

addition, Qwest verifies that 100% of the vacating and assuming Co-Provider's financial obligations with Qwest have been met prior to or at the time of application submission.

c) Upon positive verification of the financial and documentation obligations, Qwest will proceed with the transfer.

d) The Change of Responsibility is considered complete when:
   i) Network record changes are complete.
   ii) Billing is transferred to the new Co-Provider.
   iii) Appropriate documentation (as indicated in the Change of Responsibility policy) has been received by Qwest.
   iv) Notification of completion has been sent to the new Co-Provider.

e) Upon completion of the Change of Responsibility, the new Co-Provider will be assessed ongoing and future charges for the collocation site based on the terms and conditions of its Interconnection Agreement.

10) Unless a shorter interval is agreed upon between the two Co-Providers, the vacating Co-Provider has 60 calendar days from the time they submit the Change of Responsibility Request to remove its equipment, or Qwest will send notification to the Co-Provider that the equipment is considered abandoned.

a) Upon receiving notification of abandonment from Qwest, the vacating Co-Provider will have 15 calendar days to notify Qwest that the equipment is not abandoned. The Co-Provider will then have additional 15 calendar days to remove their equipment for it not to be considered abandoned.

b) Qwest will review the Co-Provider's responses and assess if the equipment has been abandoned. If abandoned, Qwest will send final notification and bill to the Co-Provider for the labor charges associated with the removal of the abandoned equipment. Qwest will then dispose of the abandoned equipment.

c) In the case of Virtual Collocation, Qwest will automatically remove all equipment within 60 days and return it to the Co-Provider. An additional charge will be assessed and billed for the removal of the Co-Provider's equipment.

11) Once the collocation site has been transferred, the new Co-Provider may modify the collocation site by submitting augment orders.

a) Types of augment orders that may need immediate consideration are:
   i) Entrance Facility requirements
   ii) Finished Services or Unbundled Network Elements
   iii) Power Requirements

b) Charges for augmentations to modify transferred collocation sites will be based upon the new Co-Provider's Interconnection Agreement.

12) The vacated Co-Provider must relinquish security access, if they do not currently lease another collocation site at the vacated Central Office. New Co-Providers without sufficient or existing access to the Central Office must submit access requests utilizing Qwest's security request procedures.

Collocation Decommissioning Policy

March 9, 2001

Due to changing economic conditions and revisions of Co-Providers' network strategies, Qwest is distributing the following policy for the decommissioning of collocation sites. This policy is a revision of the decommissioning policy dated January 17, 2001. The policy was revised based on comments and suggestions from the industry. As previously indicated in the decommission policy, this service is available beginning March 15, 2001. Qwest Communications reserves the right to modify this, and any other collocation policy, as necessary.

This policy addresses the applicable requirements for a Co-Provider to submit an order to decommission a completed collocation site for which Qwest has sent notification of completion. This policy is available to all Co-Providers regardless of whether collocation decommissioning is specifically addressed in the Co-Provider's Interconnection Agreement. If terms and conditions for collocation decommissioning are included in the Co-Provider's Interconnection Agreement, and those terms differ from those set forth in this policy, then the terms of the Interconnection Agreement will prevail.

Decommission, for the purposes of this policy, refers to the removal[1] of a specific collocation site, which the Co-Provider desires to be deactivated. The completion of a decommission request and 100% payment of any outstanding financial obligations, will terminate the billing of recurring charges for the site.

Decommission Overview

1) Decommissioning is offered for Caged Collocation, Cageless Collocation, Virtual Collocation, and ICDF Collocation.
2) The following describes when a collocation site will be considered eligible for submission of an application for decommission:

   a) Co-Provider receives a notice of completion and a 100% of financial obligations have been met for the collocation site being requested to be decommissioned.

      The financial obligations may include, but are not limited to:
      - QPF payment associated with the original order
      - First 50% of quoted charges
      - Final 50% of quoted charges
      - All applicable recurring charges

[1] If the Co-Provider requests that the cabling and fencing that it owns be removed, Qwest will add charges for the removal of these items to the Decommission quote.
- If the equipment cable was procured by Qwest, per the Co-Provider's application:
  - But not installed: Qwest will reuse it when possible for future requests.
  - If installation has begun and the Co-Provider requests the cable be returned, Qwest will mine out the cable and return it to the Co-Provider.
- If the cable has been procured by the Co-Provider and not installed, the cable will be returned.

Decommission Terms and Conditions

1) The Co-Provider must submit its Decommission Request to a Qwest Account Representative via certified mail. A completed Decommission Order Form must be sent accompanied by a written request (Letter of Authorization) on company letterhead, and must be signed by an authorized Co-Provider agent.

   a) All Unbundled Elements, CLEC to CLEC, administrative lines, finished services, line sharing services, line splitting services or splitter collocation arrangements must be disconnected from the collocation site to be decommissioned. If they are not disconnected, charges for these elements will continue to be billed and the decommission request will not be processed.
      i) All charges associated with the disconnection of these services, with the exception of splitter collocation and CLEC to CLEC - Direct Connect, are in addition to the costs of decommissioning the collocation site and will be billed independently of the decommission request.
      ii) Prior to disconnecting circuits associated with the collocation, the Co-Provider must notify, in writing, all current end users of the discontinuance of service.
      iii) A copy of the notification letter must be submitted with the decommission request or the application will not be accepted.
      iv) Once the Decommission request, appropriate documentation and 100% of Decommission quote is paid, Qwest will process the decommission request through to completion.

2) Terms in the Co-Provider's Interconnection Agreement must contain finalized terms and conditions associated with the type of collocation for which the decommission is being requested.
   a) If negotiations for terms and conditions have not been completed, the Co-Provider must enter into negotiations with Qwest prior to Qwest accepting the Decommission Request.

3) If a Co-Provider submits an order to decommission a collocation site that also has Splitter Collocation associated with it, Qwest requires the splitter collocation be decommissioned at the same time.

   a) Splitter collocation will be decommissioned and managed using the terms and conditions of the decommission policy. The Co-Provider submitting the decommission request must indicate on the Decommission Order Form that splitter collocation is present and that it is to be removed.[2]

4) If line sharing or line splitting have been established, a LSR must be submitted for the services to be removed. If they are not disconnected, charges for the service and the splitter collocation will continue to be billed and the decommission request will not be processed.
   a) Prior to disconnecting the line sharing or line splitting, the Co-Provider must notify any partnering Co-Providers and end users of the discontinuation of service.

[2] If the Co-Provider requires the removal of a CLEC to CLEC or Splitter Collocation separate from the Decommission of a collocation site, they must submit an application for augmentation to do so.

i) The Co-Provider must submit letter of notification at the time the decommission order form is submitted.

5) If a Co-Provider submits an order to Decommission a collocation site that also has a CLEC to CLEC arrangement, Qwest requires the CLEC to CLEC be cancelled at the same time. CLEC to CLEC – Direct Connect will be cancelled and managed using the terms and conditions of the decommission policy.
   a) In the case of CLEC to CLEC – Direct Connect, the Co-Provider submitting the decommission request must:
      i) Submit a Letter of Authorization signed by both the vacating Co-Provider and the partnering Co-Provider that authorizes Qwest to disconnect or stop the installation of the CLEC to CLEC – Direct Connect.
         (1) If a copy of the required Letter of Authorization is not attached to the decommission request, Qwest will not accept the application.
      ii) Indicate on the Decommission Order Form that the CLEC to CLEC – Direct Connect must be removed.
   b) CLEC to CLEC - Cross Connect must be decommissioned using terms and conditions specific to its product offering.

6) Qwest will prepare a Decommission quote and bill, to be distributed to the Co-Provider within 30 days from the submission date of the Decommission application and required documentation. Payment of Decommission bill is due within 30 days of quote date.
   a) If payment is not made within 30 days of the decommission quote date:
      i) Qwest will expire the request and bill the Co-Provider the:
         (1) Appropriate Assessment Fee
         (2) Continue to bill the Co-Provider recurring charges for the collocation site.

7) The vacating Co-Provider is obligated to pay all recurring charges until the decommission is completed. The decommission is considered complete when:
   a) The collocation site has been powered down.
   b) Collocation financial obligations for the site have been met.
      i) 100% of decommission charges have been paid.
      ii) 100% of outstanding non-recurring and recurring charges have been paid.
      iii) Letters of Authorization and notification(s) are submitted with the application, received via certified mail and accepted by Qwest.

8) Upon Decommissioning, the Co-Provider owned materials utilized in building the collocation site will not be returned unless the Co-Provider requests removal[3] in writing.

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[3] If the Co-Provider requests that the cabling and fencing that it owns be removed, Qwest will add charges for the removal of these items to the Decommission quote.

- If the equipment cable was procured by Qwest, per the Co-Provider's application:
  - But not installed: Qwest will reuse it when possible for future requests.
  - If installation has begun and the Co-Provider requests the cable be returned, Qwest will mine out the cable and return it to the Co-Provider.
- If the cable has been procured by the Co-Provider and not installed, the cable will be returned.

9) The vacated Co-Provider must relinquish security access, if they do not currently lease another collocation site at the vacated Central Office. A New Co-Provider must submit its request for security access utilizing Qwest procedures.

10) Space returned to Qwest's control is used to meet Qwest's valid space requirements, as well as, offered to requesting Co-Providers on a first-come first-serve basis and will be available for up to 1 year after the decommission.

   a) The reusable elements of the vacated collocation site can be utilized by a new Co-Provider, but the site is provided "as is" after the decommission process has been completed.

      i) If a new Co-Provider chooses to lease the relinquished space:

         (1) Qwest will bill the New Co-Provider the vacating Co-Provider's non-recurring rates for the reusable elements. However, the recurring charges for reusable elements will be billed based on the new Co-Provider's interconnection agreement rates.

         (2) Additional elements required to complete the new Co-Provider's collocation site modification requests will be quoted based on the new Co-Provider's Interconnection Agreement.

      ii) The Vacating Co-Provider will be reimbursed for the reusable elements of the vacated collocation site for up to 1 year after decommission.

         (1) Reimbursement of the reusable elements will occur after the decommissioned site is turned over to a new Co-Provider and modifications (if applicable) have been completed and a 100% payment has been made for the modifications and assumption of the vacated sites reusable elements.

            (a) Any payment associated with reimbursement to the vacated Co-Provider will first be applied to any debt owed to Qwest communications with the remaining balance paid to the vacated Co-Provider.

11) The vacating Co-Provider has 60 calendar days from the time it submits its request for decommission to remove its equipment, or Qwest will send notification the Co-Provider that the equipment is considered abandoned.

   a) Upon receiving notification of abandonment from Qwest, the vacating Co-Provider will have 15 calendar days to notify Qwest that the equipment is not abandoned. The Co-Provider will then have additional 15 calendar days to remove their equipment for it not to be considered abandoned.
   b) Qwest will review the Co-Provider's responses and assess if the equipment has been abandoned. If abandoned, Qwest will send final notification and bill to the Co-Provider for the labor charges associated with the removal of the abandoned equipment. Qwest will then dispose of the abandoned equipment.
   c) In the case of Virtual Collocation, Qwest will automatically remove all equipment within 60 days and return it to the Co-Provider. An additional charge will be assessed and billed for the removal of the Co-Provider's equipment.

12) Space returned to Qwest is not subject to a Change of Responsibility request.

Rate Elements Charged for Decommissioning

Payments owed to Qwest by the vacating Co-Provider for the Decommission request:

1) Network System Administrative fee[4]
   a) Nonrecurring
   b) Covers the costs associated with updating Network systems to note reusable elements.
2) Labor Charges[5]
   a) Nonrecurring
   b) Covers the cost of removing Co-Provider owned equipment.
3) Decommission Assessment fee
   a) Nonrecurring
   b) Covers the cost of engineering analysis of site completion and reusable elements, Decommission quote preparation, coordination of vendors, and supporting documentation.

Charges to new Co-Provider for assuming a decommissioned collocation site:

1) Network System Administrative fee
   a) Nonrecurring
   b) Covers the costs associated with updating Network systems to transfer reusable elements to the new Co-Provider.
2) Security Charges (if applicable)[6]
   a) Nonrecurring
   b) This charge applies to the keys/cards and card readers, required for Co-Provider access to the Qwest Premises for the purpose of collocation.
3) Billing Administration Fee
   a) Nonrecurring
   b) Fee is applied to the record and database management activities performed by Qwest for the reimbursement of capital investments relating to payments owed by a new Co-Provider to a vacating Co-Provider for the use of a decommissioned collocation site's previously paid and reusable elements.
4) Charges associated with reusable elements[7]
   a) Nonrecurring charges will be based on the vacating Co-Provider's Interconnection Agreement and quoted amounts.

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[4] Reimbursement of the vacating Co-Provider's payments for reusable elements will be managed by Qwest and supplied to the vacating Co-Provider once the new Co-Provider has received completion notification of its request and Qwest has received full payment for the requested collocation site.

[5] If the Co-Provider requests that the cabling and fencing that it owns be removed, Qwest will add charges for the removal of these items to the vacating Co-Provider's decommissioning quote.

[6] Additional Security charges will not be applied if the new Co-Provider already possesses the number of access cards they require to maintain or modify the collocation site. Addition access cards can be ordered if required at a later date.

[7] Reimbursement of the vacating Co-Provider's payments for reusable elements will be managed by Qwest and supplied to the vacating Co-Provider once the new Co-Provider has received completion notification of its request and Qwest has received full payment for the requested collocation site.

b) Recurring charges will be billed based on the new Co-Provider's Interconnection Agreement.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.	]]]]]]	**DOCKET NO. T-00000A-00-0194** **PHASE II**

REBUTTAL TESTIMONY OF

TERESA K. MILLION

ON BEHALF OF

QWEST CORPORATION

JUNE 27, 2001

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I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS AND POSITION WITH QWEST CORPORATION.

A. My name is Teresa K. (Terri) Million. My business address is 1801 California Street, Room 4450, Denver, Colorado 80202. I am employed by Qwest Corporation as a Director, Service Costs, in the Policy and Law Department. In this position, I am responsible for preparing testimony and testifying about Qwest's cost studies in a variety of regulatory proceedings.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to rebut the testimony of the intervening witnesses regarding Qwest's cost studies filed in this docket. This includes the testimony of Mr. Edward J. Caputo on behalf of WorldCom; Mr. Randy G. Farrar representing Sprint; Mr. Rex Knowles on behalf of XO Communications; Dr. Francis Collins representing Cox Communications; and Mr. Michael Hydock, Mr. Thomas H. Weiss, Mr. Roy Lathrop, Mr. Richard Chandler, Mr. Joseph Gillan, and Mr. Douglas Denney representing the Joint Intervenors. I also rebut the

testimony of Mr. William Dunkel on behalf of the staff of the Arizona Corporation Commission.

I present revised cost studies that represent Qwest's response to a number of issues raised in the testimony of staff and the intervenors. For example, Qwest is changing the cost of money to 9.61%, it is eliminating the sales tax from the TIF at the suggestion of Mr. Weiss. Qwest is also making changes to collocation and CLEC-to-CLEC connections as a result of comments from Mr. Lathrop and Mr. Knowles. Finally, Qwest has stated the grooming charges separately from the unbundled loop so that it is not reflected in the UNE-P charges. The specific revisions to the cost studies are discussed in detail in this rebuttal testimony and that of Qwest witnesses, Mr. Garrett Fleming, Mr. Richard Buckley, and Ms. Marti Gude.

I will begin my rebuttal by addressing several general issues raised in the testimony of Mr. Michael Hydock.

III. GENERAL ISSUES

Q. MR. HYDOCK STATES IN HIS TESTIMONY, ON PAGE 31, THAT THE RATES ESTABLISHED BY THIS COMMISSION IN DOCKET NO. U-3021-96-448 DO NOT COMPLY WITH THE FCC'S TELRIC PRICING RULES. DO YOU AGREE?

A. No. This Commission spent considerable time, effort and resources in the prior cost docket to carefully review the cost studies, models and testimony presented by various parties to determine appropriate TELRIC costs. In reaching its conclusions about proper TELRIC pricing, the Commission rejected many of the costs, inputs and assumptions presented by Qwest, and instead chose to rely more on the representations of AT&T as presented in its models. For example, the Commission used AT&T's Hatfield Model as the starting point for the cost of unbundled network elements.[1] The Commission chose to reduce Qwest's corporate overheads to 15% from 27% based on a regression study produced by Hatfield. In addition, the Commission reduced Qwest's maintenance costs by 15%, and adopted Hatfield's achievable average fill factors, placement costs, terminal installation and splicing, and drop and NID installations. The Commission also assumed structure sharing ratios of 50% based on input from AT&T. For transport and termination costs the Commission again adopted AT&T's Hatfield Model. Finally, the Commission rejected Qwest's proposal for NRCs. Thus it is not Qwest's models that support the existing costs. In instances where the Commission chose Qwest's inputs or assumptions over AT&T's, it was based on a determination that those inputs better reflected the Commission's understanding of the TELRIC principles. It is ludicrous for Mr.

[1] Docket No. U-3021-96-448 et al., Decision No. 60635, January 30, 1998, at p. 7.

Hydock to suggest that the prices resulting from that prior docket, based primarily on AT&T's own TELRIC inputs, do not now comply with the TELRIC pricing rules.

Q. HAS THE RECORD DEVELOPED IN THE PRIOR COST DOCKET BEEN THE SUBJECT OF REVIEW?

A. Yes. The decision of the Commission in the prior docket was the subject of review, including by the court. The court in *U S WEST Communications, Inc. v. Jennings*, 46 F. Supp. 2d 1004 (D. Ariz. 1999) found that, with minor exceptions, the Commission had conducted a proper analysis of the parties' proposals, resulting in TELRIC based rates.

Q. MR. HYDOCK POINTS TO THE CURRENT DEAVERAGED ZONES AS A REASON FOR NOT ACCEPTING ARIZONA'S CURRENT RATES AS TELRIC. IS THIS A VALID ARGUMENT?

A. No. The current deaveraged zones are <u>interim</u>, until permanent deaveraging can be established. The Commission conducted its deaveraging proceeding under the assumption that a further proceeding would be required to determine permanent zones. However, the fact that permanent zones are to be addressed in this later phase of the docket does not mean that the permanent rates established by the Commission in the prior cost docket are not TELRIC.

Q. MR. HYDOCK EXPRESSES CONCERNS ABOUT THE DIFFERENCES BETWEEN EXHIBIT A IN THE STATEMENT OF GENERALLY AVAILABLE TERMS ("SGAT") ON FILE WITH THE COMMISSION PURSUANT TO THE ARIZONA "271" PROCEEDING AND THE RATES ATTACHED TO MS.

ARNOLD'S TESTIMONY. PLEASE EXPLAIN WHAT EACH OF THESE DOCUMENTS REPRESENTS.

A. The rates contained in the Exhibit A to the SGAT filed in the 271 proceeding are either currently approved in Arizona or are proposed. The currently approved rates are the result of the prior cost docket. The rates that are proposed are footnoted in Exhibit A to indicate a particular status. For example, the footnotes may indicate that a rate has not been the subject of a cost docket and, thus, cannot be considered approved by the Commission yet, or that Qwest is unable to produce standard costs for the element and will develop TELRIC costs on an individual case basis ("ICB"), as needed. These rates are, in a sense, placeholders that have been developed on a regional basis with the expectation that they will be replaced with permanent Commission-approved rates once the cost docket process has been completed.

The rates in Exhibit A of the SGAT do not necessarily reflect the agreements between Qwest and the CLECs that have resulted from the 271 workshop process. This is because the workshop process is dynamic and ongoing, while Exhibit A represents a "snapshot" in time of Qwest's understanding of the UNE and interconnection products that it offers. The Exhibit A of the SGAT will be updated to reflect the Commission's pricing decisions when they become final.

The Exhibit attached to Ms. Arnold's testimony, on the other hand, reflects Qwest's newest proposals for TELRIC rates for all of the elements (as of the time of filing) that it has either agreed to provide or is required to provide pursuant to the 271 workshops or the FCC's rules. It too represents a snapshot in time of Qwest's cost studies, although, Qwest is committed to continuing to update its cost models and studies based on agreements reached with the CLECs in a variety of forums.

Q. IS MR. HYDOCK CORRECT THAT ONE SHOULD EXPECT THE COST OF ELEMENTS PROPOSED CURRENTLY TO BE LOWER THAN THE RATES DETERMINED IN THE PRIOR PROCEEDING?

A. No. Mr. Hydock's statements are misleading in several respects. First, Mr. Hydock implies that because, as he claims, the market for telecommunications equipment has "expanded profoundly" in the intervening years, there should necessarily be a corresponding decrease in costs. He makes these statements without providing any evidence to support them. An alternative could be that the recent misfortunes of companies such as Lucent and Nortel might be indicate the opposite conclusion, that in fact, the telecommunications equipment market is primed for price increases. Regardless, without further evidence one way or the other, it is impossible to draw conclusions about the impact on UNE costs.

Second, he makes a sweeping statement about improved switching performance due to processor technology. Mr. Hydock concludes that this results in lower

operating costs, but again, he fails to produce any factual evidence to quantify either the gain in performance or the reduction in operating costs. However, from this he expects the Commission to conclude that Qwest's cost are necessarily inflated.

Finally, it is important to note that the rates approved in the prior cost docket were not based on the costs proposed by Qwest in that proceeding. For example, in the prior cost docket, Qwest calculated a statewide average loop cost of $30.20. Its current statewide average cost for a UNE loop is less than that, at $28.96. However, the rate approved by the Commission in the prior docket was $21.98, considerably lower that Qwest's cost estimates. Thus, while Qwest's loop costs have declined in the intervening period, they are still not lower than the rate approved in the cost docket.

IV. INTERVENOR TESTIMONY

A. Testimony of Mr. Caputo

Q. WHAT ISSUE IN MR. CAPUTO'S TESTIMONY DO YOU ADDRESS?

A. I discuss Mr. Caputo's contention that Qwest must develop a standard cost for customized routing before being exempted from treating Directory Assistance and Operator Services ("DA/OS") as Unbundled Network Elements (UNEs) under the FCC's rules.

Q. HOW DOES QWEST CURRENTLY TREAT ITS COSTS FOR CUSTOMIZED ROUTING?

A. Qwest currently treats customized routing as Individual Case Basis ("ICB") for costing purposes. The reason for this is, as Mr. Caputo says in his testimony on page 5, that "Qwest's obligation [to provide customized routing] extends to all carriers and that this routing scheme must, in fact, be customized for each requesting carrier." Based on the obligation to provide a *custom* solution for each and every carrier, Qwest believes that it is unable to take a standardized approach to developing the costs for customized routing.

Q. DOES INDIVIDUAL CASE BASIS PRICING MEAN THAT COSTS ARE BASED ON SOMETHING OTHER THAN TOTAL ELEMENT LONG RUN INCREMENTAL COSTS ("TELRIC")?

A. No. The fact that Qwest establishes ICB pricing for non-standard elements such as customized routing does not mean that the prices that result under ICB are not based on TELRIC. ICB pricing merely indicates the variety of ways that customized routing solutions could be achieved, it does not change Qwest's application of the FCC's TELRIC rules to the costs it develops for customized routing. As long as Qwest is willing to provide customized routing at TELRIC rates, even if those rates are developed on an individual case basis, Qwest is exempt from the requirement to treat DA/OS as a UNE under the FCC's rules.

Q. HAS WORLDCOM EXPLORED THE ICB PRICE FOR ITS CUSTOMIZED ROUTING NEEDS WITH QWEST?

A. No. As WorldCom's witness Caputo states at pages 5 and 6, "...WorldCom needs to meet with Qwest's switch engineering organization to document WorldCom's needs...WorldCom can provide Qwest with documentation that specifies WorldCom's customized routing requirements." These statements imply that WorldCom has not explored with Qwest what an ICB price would entail with respect to WorldCom's customized routing needs. Yet, Mr. Caputo goes on to say that CLECs should "not be penalized if Qwest implements a high cost customized routing solution." (Caputo Direct, page 7) Since WorldCom has not contacted Qwest about its customized routing needs, it is pure speculation on WorldCom's part to suggest that Qwest's costs would be high.

Nevertheless, Qwest believes that it is entirely appropriate to include all TELRIC-based costs that are necessary to provide a custom solution for a given carrier. It is inappropriate for the CLECs to expect Qwest to provide customized solutions to meet their individual needs, and then expect Qwest to absorb the costs that are above and beyond "routine implementation costs." The FCC has made it clear that under the Telecom Act ILECs are not required to underwrite the costs to the CLECs of being in business.

B. Testimony of Mr. Farrar

Q. WHAT ISSUES IN MR. FARRAR'S TESTIMONY DO YOU ADDRESS?

A. I discuss Mr. Farrar's contention that Qwest's cost study for line sharing inappropriately applies an engineering charge to CLECs when the splitter is placed in the CLECs' collocation space. I also address Mr. Farrar's discussion regarding the development of Qwest's loop conditioning charges.

Q. IS MR. FARRAR CORRECT, DOES QWEST APPLY ENGINEERING CHARGES TO CLECS IN INSTANCES WHERE THE SPLITTER IS PLACED IN A CLEC'S COLLOCATION SPACE?

A. No. The line sharing collocation costs are calculated based on three basic splitter configurations <u>not including</u> when the CLEC locates the splitter in its collocation area, as indicated in my testimony beginning on page 70. In fact, footnote #35 states clearly that Qwest would not incur additional collocation costs when the splitter is located in the CLEC's collocation area. As Mr. Farrar recognizes, there are instances when Qwest expends the engineering effort reflected in its cost study on splitter arrangements. The three configurations that drive such engineering cost in the cost study include when the splitter is 1) located in the common area, 2) mounted on an Intermediate Distribution Frame, and 3) mounted on a Main Distribution Frame. However, there is no engineering charge associated with the configuration when the splitter is located in the CLEC's collocation space, as Mr. Farrar contends.

Q. MR. FARRAR HAS A NUMBER OF CRITICISMS REGARDING QWEST'S CABLE UNLOADING CHARGE AND MAKES COMPARISONS WITH SPRINT'S CHARGES. ARE HIS COMPARISONS CORRECT?

A. No. Mr. Farrar has misunderstood how Qwest applies its charge for cable unloading and has therefore presented a wrong comparison of rates. This is because Mr. Farrar apparently does not understand that Qwest's cost is an average calculation that applies to as many as 25 cable pairs and at as many locations as there are load coils and/or bridge taps to remove on a given pair.

Mr. Farrar begins by explaining that Sprint has differentiated its costs between buried, aerial and underground load coil removal. For aerial and buried unloading he states that Sprint's charge per location for unloading 25 pairs over 18,000 feet is $99.32 (i.e., $64.28 for the first and $1.46 for each additional pair in a location). Mr. Farrar explains that for underground unloading Sprint's cost is $479.73 per location for 25 pairs over 18,000 feet (i.e., $441.57 for the first and $1.59 for each additional pair at a location). (Farrar direct testimony, page 12). He then goes on to say that Qwest's cost for similar work is many times higher than Sprint's, however, he has not applied his comparison correctly.

It is true that Qwest calculates an average cost of $649.48 for cable unloading. This cost assumes one engineering cost, and one travel time cost for an average of three underground cable locations across all loop lengths. Qwest does not believe that there is a significant amount of buried or aerial cable in its feeder routes to be unloaded in its region, and that the vast majority of unloading activity in Arizona will be for underground cable. Where Mr. Farrar made his mistake

was, as explained above, in not understanding that Qwest's flat rate of $649.48 is not per loop or per location but instead applies for unloading up to 25 cable pairs, and at as many locations as are necessary on a given pair. Therefore, the correct comparison if, for example Qwest is unloading 25 underground pairs at three different locations, is a Qwest charge of $649.48, and under the same scenario, a Sprint charge of $1439.19 (i.e., $479.73 times 3 locations). The Sprint charge for unloading 25 aerial pairs at three different locations is $297.96 (i.e., $99.32 time 3 locations), compared to Qwest's charge of $649.48. However, as noted above, Qwest does not believe that it will encounter a significant amount of aerial cable unloading activity. Thus, Qwest believes that when the correct comparison is made, its costs for cable unloading are quite reasonable compared to similar activities for Sprint.

C. Testimony of Mr. Knowles

Q. WHAT AREAS OF MR. KNOWLES TESTIMONY DO YOU ADDRESS?

A. I discuss three issues raised by Mr. Knowles: 1) his contention that Qwest submitted rates for CLEC-to-CLEC Connections and Field Verifications without also submitting the accompanying cost studies; 2) his concerns about the costs for "Design Engineering & Installation" associated with CLEC-to-CLEC Connections; and 3) his concerns regarding the activities included in Field Verifications.

Q. DO YOU ADDRESS OTHER COLLOCATION ISSUES RAISED BY MR. KNOWLES?

A. No. Qwest witness Garret Fleming rebuts the collocation testimony of Mr. Knowles, Mr. Lathrop and Mr. Dunkel. My testimony is limited to a discussion of Qwest's assumptions regarding CLEC-to-CLEC Connections.

Q. WHAT DOES MR. KNOWLES SAY ABOUT QWEST'S CLEC-TO-CLEC CONNECTIONS AND FIELD VERIFICATION STUDIES?

A. Mr. Knowles states that XO "could not find any cost study or other support for the rates Qwest proposed for the various elements associated with [CLEC-to-CLEC] connections in the testimony and exhibits Qwest previously filed." (Knowles Direct testimony, page 15) He goes on to say that my testimony addresses the collocation study, but that the collocation study does not reference the costs for CLEC-to-CLEC Connections. Mr. Knowles also claims not to have seen a cost study supporting Field Verification fees.

Q. IS MR. KNOWLES CORRECT, HAS QWEST FAILED TO PROVIDE A FACTUAL BASIS ON WHICH THE COMMISSION COULD ADOPT QWEST'S PROPOSED RATES?

No. The reason that the collocation cost study does not address CLEC-to-CLEC Connections is because the costs for these elements are contained in a separate stand-alone cost study. At page 55 under a question discussing other cost data for additional elements, there is a list of such elements including "Direct CLEC to CLEC Connections." In addition, beginning at the bottom of page 58, my

testimony provides a brief discussion of direct CLEC to CLEC interconnection. This study was provided as Exhibit TKM-15, as well as being included and identified on the CD index as study ID# 4704.

The costs associated with Field Verification are detailed, along with other nonrecurring costs, as part of the Enhanced Nonrecurring Cost study ("ENRC") filed as Exhibit TKM-03 and can be found on the last page of the Nonrecurring Cost Summary at line #s 238 and 239.

Q. IS MR. KNOWLES CORRECT, DOES QWEST INTEND TO CHARGE CLECS TO RECOVER THE COSTS ASSOCIATED WITH INSTALLING CABLE RACKING EVEN IF THEY USE EXISTING CABLE RACKING?

A. No. Qwest does not intend to charge CLECs for installing cable racking if they use existing cable racking. Qwest's cost study for CLEC-to-CLEC connections is intended to assume that a CLEC will utilize existing cable racking 95% of the time and that only 5% of the time such connections will require installation of an additional 20 feet of new cable racking. Unfortunately, it was discovered in a detailed review of this study, based on Mr. Knowles comments, that this assumption was not carried through to the calculation of engineering time necessary for CLEC-to-CLEC connections. Therefore, Qwest has recalculated its costs associated with the Design Engineering & Installation function. For activities that would be required for both new and existing cable racking the calculation remains the same. However, for activities that are only required in

the case of new cable racking Qwest has assumed that those activities occur only 5% of the time. The new costs for Design Engineering & Installation are reflected in the CLEC-to-CLEC Connections cost study, which reduces this cost from $1,353.22 to $791.63.

D. Testimony of Dr. Collins

Q. WHAT ISSUES DISCUSSED IN DR. COLLINS' TESTIMONY DO YOU ADDRESS?

A. Dr. Collins discusses a variety of issues including the cost of capital and depreciation lives used in the cost studies. I address these issues and attempt to clarify Qwest's position in order to correct Dr. Collins' misunderstanding regarding each of these issues.

Q. WHAT IS QWEST'S POSITION WITH REGARD TO THE APPROPRIATE COST OF CAPITAL.

A. As stated in my direct testimony, at the bottom of page 34, Qwest believes that a forward-looking cost of money is appropriate for use in TELRIC studies. Such a cost of capital would take into effect the increased risk that Qwest will experience in the face of increased competition. Nevertheless, in order to avoid conflict over this input to the cost studies, Qwest's position was to use the 10.37% authorized rate approved by the Commission in the previous cost docket. Thus, when

Qwest filed its cost studies on March 15, 2001, and supplemented that filing on April 16, 2001, it used a 10.37% cost of money.

However, in the interim, on March 30, 2001, the Commission again addressed the issue of Qwest's cost of capital and settled on 9.61% as the appropriate rate in its decision in Docket No. T-01051B-99-0105. Consistent with the intent expressed in its earlier filing, Qwest has substituted a 9.61% cost of capital into its cost studies and submits the revised studies along with this rebuttal testimony. The updated costs are reflected in revised Exhibit TKM-01R and the supporting cost studies and models are being provided in CD format. The CD contains an index that lists each study individually.

Q. COULD YOU CLARIFY DR. COLLINS' CONFUSION OVER THE DEPRECIATION LIVES QWEST USED IN ITS COST STUDIES?

A. Yes. Although, Qwest witness Marti Gude addresses depreciation issues more thoroughly in her rebuttal testimony, I attempt to correct Dr. Collins' misunderstanding with the following explanation. Again, Qwest's intent with respect to depreciation lives is to use rates approved by the Commission, although Qwest's position is that rates should be based on real economic depreciation lives that take competition into consideration. When Qwest filed its original Phase II testimony on October 11, 2000, the depreciation lives that were approved by the Commission at the time were those approved in the prior cost

1 docket. Those lives were based on the depreciation study performed by
2 Technology Futures, Inc. (TFI) as allowed by the Commission in the previous
3 cost docket.[2] When Qwest provided its response to Staff Discovery DW-01-017,
4 Qwest based its response on the lives that were used in its cost studies filed in
5 October 2000.

6 In the interim, between Qwest's filing in October of 2000, and its current filings on
7 March 15, 2001 and April 16, 2001, Qwest updated its cost studies to reflect the
8 Commission's final decision in the depreciation docket. Therefore, in its March
9 15, 2001 filing, Qwest used the depreciation lives approved by the Commission
10 in Arizona's Depreciation Docket No. T-01051B-97-0689, Commission Decision
11 No. 62507, dated 5-4-00. Thus, when Dr. Collins compared the depreciation
12 lives used in its current filing with those used in response to an outdated data
13 request, it appeared as though there was a discrepancy between the two. In
14 fact, when the Commission decided to require Qwest to resubmit all of its cost
15 studies in March 2001, Qwest merely updated the depreciation lives used in the
16 studies to reflect the Commission's most recent decision. Qwest believes that it
17 is inappropriate to use FCC prescribed lives in a state such as Arizona where the
18 Commission has spent considerable time and effort to determine what it believes
19 are appropriate forward-looking depreciation rates.

[2] Docket No. U-3021-96-448 ET AL., Decision 60635, p. 10.

1 **E. Testimony of Mr. Weiss**

2 **Q. WHAT AREAS OF MR. WEISS' TESTIMONY DO YOU ADDRESS?**

3 A. I address Mr. Weiss' discussion of Qwest's cost of money and Total Investment
4 Factors ("TIFs"), as well as his discussion of material prices and the appropriate
5 fill factors for development of costs for high capacity loops (DS1 and DS3
6 capable loops), unbundled dedicated interoffice transport (UDIT), and shared
7 transport.

8 **Q. WHAT DOES MR. WEISS SAY ABOUT QWEST'S COST OF MONEY?**

9 A. Mr. Weiss implies that it was disingenuous of Qwest to use a 10.37%
10 "prescribed" cost of money in its studies filed on March 15, 2001, when the
11 Commission approved a lower rate of 9.61% as part of the Settlement
12 Agreement in Docket No. T-01051B-99-0105 et al. However, Mr. Weiss failed to
13 point out in his testimony, although it is noted in his footnote number 22, that the
14 referenced approval did not happen until March 30, 2001. This date was two
15 weeks <u>after</u> Qwest had filed its testimony and well more than two weeks after it
16 had prepared its cost studies. Qwest could not have predicted on March 15,
17 2001 when a final agreement might have been approved by the Commission, or
18 what cost of money might have been determined. As for the studies filed on April
19 16, 2001, it seemed appropriate at the time to use a consistent cost of capital for
20 both of Qwest's Phase II filings. Nevertheless, as stated above in response to

Dr. Collins, Qwest's intent in this proceeding is to use the Commission authorized rate, therefore, Qwest resubmits its cost studies in conjunction with this filing using a 9.61% cost of capital.

Q. YOU STATED THAT YOU WOULD ALSO ADDRESS MR. WEISS' CONCERNS WITH QWEST'S TIFS. PLEASE EXPLAIN THE TIF.

A. The Total Investment Factor ("TIF") combines all the proper investment loadings into one factor, calculated mathematically correctly, so that when multiplied against the material investments provides a total installed investment. While switching equipment provided by the vendor at an EF&I price often includes the installation and engineering, the TIF factor is applied to a material price to calculate not only installation and engineering, but also other costs such as power, warehousing, transportation and finance charges. Thus, the TIF will be higher than the investment loadings added to EF&I investment. However, the TIF does not calculate EF&I investment. The TIF does calculate fully loaded material investments that may include investment on an EF&I basis, but also reflects the additional loadings mentioned above that are not generally included in an EF&I price from a vendor.

The major component of the TIF is the labor to install and engineer the equipment. Since the material investment is for equipment only, as explained, the TIF factor also includes investments for testing and the power equipment

required to properly operate the equipment represented by the material investment. Sales tax and Interest During Construction (IDC) are added to the material investment to cover expenses Qwest incurs when it purchases equipment. Qwest also incurs expenses for warehousing and transporting the equipment from its warehouses to the equipment location.

Qwest relies on the General Ledger Journal files, as reflected in the company books, as well as other company reports (such as the MR2A) to calculate the underlying factors that make up the TIF factor. Qwest uses these reports to calculate the average expenditures required to perform the steps necessary to first warehouse the equipment, then transport it to the proper location, install and power the equipment, and finally, reflect the necessary taxes and finance charges.

Q. IS THE TIF NEW?

A. No. Qwest has always presented its material investments on a fully loaded basis, using a TIF to arrive at the amount. Qwest's previously filed cost studies and cost models have included the TIF in a variety of ways depending on what level of material investment the cost analyst started with, although, in the past this calculation may have been embedded, and not readily apparent in the study or model. Qwest's current process requires that material investments be brought

into the models at a common point so that the TIF is applied consistently to arrive at fully loaded material investment.

Q. WHY DOES QWEST USE FACTORS TO CALCULATE THE TIF INSTEAD OF USING ACTUAL ENGINEERING COSTS OR ENGINEERING COST ESTIMATES?

A. Developing a factor to reflect actual average costs to be added to material investments is more accurate than engineering estimates, and is appropriate in forward-looking cost studies.

The equipment for which TIFs are developed come in many configurations and forms and include circuit equipment, radio systems and other terminal equipment. It is difficult to estimate the loadings required to produce a given total installed investment amount, since no two jobs are alike. The loadings required for one job may be very different from those required for the next one. This causes many peaks and valleys in engineering estimates, making estimating very difficult, and not as accurate as using actual expenditures collected for the equipment being installed to develop an average loading factor. Since the TIF represents a relationship of material investment to related expenditures for the most current time period it provides a forward-looking cost estimate based on Qwest's actual experience installing equipment.

Q. MR. WEISS PRESENTS A TABLE (TABLE NO. 3) ON PAGE 56 OF HIS TESTIMONY THAT DEMONSTRATES SELECTED TIFS BY COMPONENT, IS HIS REPRESENTATION CORRECT?

A. No. Mr. Weiss' table shows two columns of components, one representing Hardwired and one representing Plug-ins. However, what are actually represented in those columns are the TIF components for Hardwired, one with warehousing included and one with warehousing excluded. The factors represented in Table No. 3 do not reflect the components for Plug-ins.

Q. WHY IS IT IMPORTANT TO CORRECT HIS REPRESENTATION?

A. It is important to understand correctly what is represented in the table for two reasons. First, Mr. Weiss criticizes Qwest for using a warehouse component in its TIF. He says that under a modern, forward-looking JIT (just in time) method of equipment ordering it is not necessary to warehouse much equipment. I agree that in a forward-looking environment less warehousing is involved than Qwest has experienced historically, however, I disagree that it can be avoided entirely.

In the past, Qwest operated with warehouses in each of its 14 states. Today, because of its movement toward JIT ordering methods, Qwest has warehouses in only four of its states and often orders equipment directly to a job site. Therefore, Qwest calculates each of its TIFs separately for both warehousing and transportation, and for transportation only. The transportation-only calculation reflects equipment that is ordered directly to a job site with no

1 warehousing involved. Qwest calculates these various TIFs in order to more
2 accurately reflect the appropriate material costs for a variety of equipment
3 configurations and warehousing needs.

4 Since Qwest's TELRIC studies also reflect the economies gained from assuming
5 the replacement of the entire network, it would be inappropriate to eliminate the
6 warehousing and transportation factors entirely. Mr. Weiss states in his direct
7 testimony, at the bottom of page 57, that "...it is not necessary for Qwest to
8 "warehouse" much of the equipment that it uses to deliver local interconnection
9 and unbundled network elements to CLECs or to itself." If Mr. Weiss' statement
10 is based on the position that a JIT environment would not include warehousing
11 and transportation activities for individual elements of plant, it is contrary to the
12 tenets of TELRIC, which require replacement of the total element. On the other
13 hand, if Mr. Weiss recognizes that TELRIC requires replacement of the total
14 element, then it seems Mr. Weiss would have the Commission believe that
15 Qwest could replace all of its feeder loops, interoffice facilities, central office
16 equipment, switching equipment, central office buildings, serving area interfaces
17 and distribution loops, for example, without ever having to warehouse or
18 transport any of it. This is an example of the kind of hypothetical, fantasy
19 network assumptions that the joint intervenors propose as discussed by Mr.
20 Fleming in his rebuttal testimony. In the real world, it would be impossible to
21 construct such a network without warehousing and transportation of these

elements. Qwest's studies represent the activities that would be necessary for a forward-looking replacement of the network in the real world.

Q. WHAT IS THE SECOND REASON THAT MAKES IT IMPORTANT TO CORRECT MR. WEISS' TABLE NO. 3?

A. The second reason for understanding correctly what is represented in the table relates to Mr. Weiss comments about the applicability of Arizona sales tax in the TIF. Mr. Weiss states that to the best of his knowledge, Arizona does not assess sales taxes. (Weiss testimony, page 59). This is not quite accurate. Arizona has a transactions tax that functions like a sales tax because, although it is assessed against the seller of a product, it may be passed on to the purchaser. Nevertheless, central office equipment is exempt from this tax. Therefore, when Qwest calculates the TIF for Plug-Ins on a state specific basis, there is no state sales tax included in the calculation. However, because Qwest calculates Hardwired equipment on a region-wide basis, the TIF includes a weighted average calculation for sales tax. This means that the resulting 4.83% region-wide sales tax is calculated by averaging in the zero percent sales tax for Arizona.

As Qwest witness Fleming points out in his rebuttal testimony, it is not Qwest's intent to apply sales tax inappropriately through a regional calculation, therefore, the TIF for Hardwired equipment in Arizona is being resubmitted to reflect a state

1 specific calculation that excludes sales tax. Cost studies impacted by the
2 application of the TIF are being updated and new results presented as part of
3 Exhibit TKM-01R.

4 **Q. DOES MR. WEISS CRITICIZE OTHER COMPONENTS OF THE TIF?**

5 A. Yes. Mr. Weiss describes the circumstances under which an allowance for funds
6 used during construction ("AFUDC") applies and then states that in his
7 experience "few, if any, projects of the type that would involve the plant elements
8 at issue in this case would require charges be made [for AFUDC]." Mr. Weiss'
9 conclusion rests on the assumption that plant provided to the CLECs would not
10 be charged to total plant under construction ("TPUC") before being transferred to
11 telephone plant in service ("TPIS"), thus, no AFUDC, also referred to as interest
12 during construction ("IDC"), should be charged. However, as Mr. Weiss points
13 out in his testimony, 47 C.F.R. § 32.2003 allows carriers book expenditures to
14 TPUC (short term) and to accrue AFUDC on projects that take longer than two
15 months to complete or involve more than $100,000 in construction expenditures.
16 Otherwise, these expenditures are booked directly to TPIS, and no AFUDC is
17 accrued.

18 Once again, as in the case of warehousing and transportation, Mr. Weiss'
19 assumptions portray a situation which could not exist in the real world. Qwest's
20 cost studies reflect the economies obtained from replacement of the entire

network as required by TELRIC. This means that unless Qwest could hypothetically snap its fingers to replace the entire network at once, such an effort would take time and large expenditures of capital of the type that the rules under 47 C.F.R. § 32.2003 contemplate. Otherwise, Mr. Weiss would have the Commission believe that Qwest could replace all of its loop plant, it switching and central office equipment, its interoffice facilities and its central office buildings in less than two months. Again, this is a fantasy that has nothing to do with the real world. It is Qwest's position that the factor it develops for IDC as part of the TIF is a conservative estimate, based on its current experience, of the relationship between its material investment dollars and IDC expenditures under the FCC's accounting rules. This means that IDC is not applied to every material dollar, but only to those incremental projects that meet the accounting threshold (i.e., longer than two months or more than $100,000). If Qwest were actually replacing its entire network it would definitely take longer than two months and cost more than $100,000, so it is likely that IDC would apply to nearly every material dollar.

Q. WHAT DOES MR. WEISS SAY ABOUT QWEST'S VENDOR AND TELCO LABOR COMPONENTS?

A. Mr. Weiss is surprised that vendor and telco labor amount to 66% (8%, vendor and 58% telco labor) of material costs. He claims to have observed installation labor at much lower rates, between 10% and 25%. However, the factors suggested by Mr. Weiss are completely unsubstantiated. They are based, as he

says, on his experience in the industry. However, when Qwest asked Mr. Weiss' clients (i.e., the joint intervenors) about their experiences regarding the cost to install equipment in their networks, they objected that the information Qwest sought was not relevant and declined to provide a response.

Qwest on the other hand, bases its assumptions on the relationship of actual material investment costs to related expenditures for recent time periods and reflect Qwest's actual experience installing equipment. Qwest's TIF calculations are based on the General Ledger Journal files, as reflected in the company books. Qwest believes that its own recent experience installing network equipment provides a realistic forward-looking view of the costs it will incur in the future. As the following analysis of the TIF for account cost 257C Mountings shows, Qwest's combined expenditures for vendor and telco labor have declined steadily between 1993 and 1998, with a significant increase in 1999, while its TIFs have remained fairly constant:

Year	Vendor Lbr	Telco Labor	TIF w/Whse&Trans.	TIF w/Trans. only
1993	6,403,431	29,013,684	2.1497	1.9728
1994	6,281,766	28,462,424	2.1535	1.9766
1995	6,162,412	27,921,638	2.1584	1.9813
1996	6,045,326	27,391,127	2.1616	1.9845
1997	5,930,465	26,870,695	2.1652	1.9882
1998	5,817,786	26,360,152	2.1685	1.9915
1999	5,310,807	39,084,701	2.1195	1.9906

Mr. Weiss, however, does not explain whether the labor costs included in his factors are for employees subject to a labor contract, or what level of experience the employees have. Nor is there evidence of the level of benefits bargained by the employees. Without further substantiation, it is impossible to discern whether the basis of the factors suggested by Mr. Weiss is similar to those developed by Qwest.

Qwest believes that its TIF factors accurately represent all of the relevant costs and should be approved by the Commission.

Q. WHAT OTHER ASPECTS OF QWEST'S COST STUDIES DOES MR. WEISS ADDRESS?

A. Mr. Weiss discusses the equipment utilization rate or fill factor used by Qwest in its studies. However, he focuses on only one out of several fill factors used by Qwest, and of course, picks the lowest utilization rate to discuss in relationship to his recommendation. Mr. Weiss takes only one of Qwest's eight possible architectures for DS1s (SONET Fiber Mux) and uses as an example the utilization rate for common equipment, which happens to be 37%. Qwest's actual experience with utilization of DS1s using a SONET Fiber Mux architecture is 28 out of 84, or 33%, and this architecture is only deployed for high capacity loops in less than 5% of locations in Arizona. So Qwest believes that an assumption of 37% utilization and deployment in 46% of locations is a forward-

looking fill factor that more than accounts for expanding use of high capacity loops yet comports with reality. Mr. Weiss fails to mention that Qwest's utilization for DS1 Plug-ins for the SONET Fiber Mux architecture is 97%. He also fails to use as examples any of Qwest's other architectures. These other architectures include utilization rates of 39%, 65%, 71%, 74% and 100%.

Q. HAS THE FCC ADDRESSED FILL FACTORS IN THE SECTION 271 APPLICATIONS THAT HAVE BEEN APPROVED THUS FAR?

A. Yes. In discussing the Commission's review of a 40% fill factor presented by Verizon in Massachusetts, the FCC stated that "[t]he Commission noted that it adopted fill factors ranging from 50 to 75 percent for the USF cost model, that the Kansas Commission adopted a 53 percent distribution cable fill factor, and that the New York Commission adopted a 50 percent distribution cable fill factor." [footnote omitted].[3] The FCC went on to find the Verizon rates in Massachusetts to be within a reasonable TELRIC range. The FCC concluded that in spite of approving a low fill factor "any errors made by the Massachusetts Department in establishing loop rates were not so great as to render the resulting rates outside the range that a reasonable application of the TELRIC principles would produce." (Massachusetts Order at para. 40). Although, this discussion centers around

[3] CC Docket No. 01-9, *In the Matter of Application of Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions) and Verizon Global Networks Inc., For Authorization to Provide In-Region, InterLATA Services in Massachusetts*, Memorandum Opinion and Order, released April 16, 2001, at para. 39.

appropriate fills for the distribution portion of the loop, it is indicative of the FCC's position on fill factors, generally. It is clear that the FCC does not believe that TELRIC requires the use of any particular fill factor, nor is it willing to overturn the decision of a Commission that approves a fill factor on the low end of the range.

Q. MR. WEISS RECCOMMENDS THAT QWEST USE AN 85% FILL FACTOR WHEN CALCULATING INVESTMENTS FOR DS1 AND DS3 CAPABLE LOOPS. IS THIS A REALISTIC ASSUMPTION?

A. No. Mr. Weiss presents a detailed discussion in support of an 85% fill factor, however, his discussion is fatally flawed in one very important respect, the hypothetical suggested by Mr. Weiss to achieve 85% utilization does not exist in an environment that uses actual facilities and equipment to provision DS1 and DS3 capable loops.

On January 8, 2001, when the United States Court of Appeals for the Eighth Circuit vacated the pricing decisions of the Missouri Public Service Commission it stated that "it was not permissible for the PSC 'to set prices based on the forward-looking costs of an idealized network,'...."[4] In its discussion the Court confirmed its opinion in Iowa Utils. Bd. V. FCC, 219 F.3d 744, 751 (8th Cir. 2000) (Iowa Utils. II) stating that:

[4] Southwestern Bell Telephone Company v. Missouri Public Service Commission, 2001 U.S. App. LEXIS 156, (8th Cir., 2001).

> At bottom..., Congress has made it clear that it is the cost of providing actual facilities and equipment that will be used by the competitor (and not some state of the art presently available technology ideally configured but neither deployed by the ILEC nor to be used by the competitor) which must be ascertained and determined.

As discussed by Mr. Fleming (Fleming rebuttal, page 13), even AT&T has argued before the Supreme Court that TELRIC reflects the actual costs a LEC incurs in providing its facilities. As stated by AT&T:

> ...the FCC's TELRIC regulation would be valid even if the Eighth Circuit were correct that Section 252(d)(1) requires rates to be set based on the LEC's cost of providing their "actual" facilities. The FCC repeatedly found that TELRIC determines the "economic costs" of incumbent LECs in providing their facilities....TELRIC simply was not intended to do anything other than measure a LEC's cost of providing its "actual facilities". (Page 28)

Thus, in setting appropriate utilization rates when determining costs it is important to consider, as Qwest has, what is actually deployed in the system and what will be used by the competitor on a forward-looking basis. Mr. Weiss has completely ignored this important concept in concluding that 85% is an appropriate fill factor.

Q. PLEASE EXPLAIN HOW QWEST HAS APPROACHED EQUIPMENT UTILIZATION IN ITS DS1 COST STUDY.

A. To begin with Qwest deploys a variety of use of architectures to meet the demand for DS1 capable loops in Arizona, including two copper-based HDSL architectures and six fiber-based architectures. Each of these is assigned

different utilizations or fill factors based on a forward-looking deployment of that architecture in Qwest's network. For example, Qwest does not deploy the fiber OC3-type solution that Mr. Weiss uses in his analysis (Exhibit THW-4, discussed in Weiss' testimony, pages 50–53) until demand by local end-user customers for DS1s at a given location exceeds 11 DS1s. Any less demand than that, and the cost to deploy OC3s is much higher that the cost for lower capacity copper-based solutions. This is because an OC3 provides capacity for 84 DS1s at a given location, and demand cannot be aggregated from one location to another without adding additional costs for fiber and OC3 electronics. Therefore, when spread over sufficient demand the OC3 fiber solution is, as Mr. Weiss says, the low cost solution. However, when demand for DS1s at a location is low, the cost per DS1 using OC3s is much higher than the cost per DS1 using copper.

In Arizona, of the 3275 locations where DS1s are currently deployed to serve end-user customers, only 16% of all DS1 circuits are being provided over OC3s, even fewer are provided over OC12 and OC48 architectures. Nevertheless, Qwest in taking a forward-looking view of DS1 deployment in the future, only weighted its copper-based architectures 27%, while weighting the fiber-based OC3 architecture 46%. Qwest then assumed 65% utilization of the copper-based architectures in spite of current average end-user demand levels of only 2.09 DS1s per location across the entire state. The copper-based architectures provide capacity for 4 or 8 DS1s per location. Qwest also assumed 37%

utilization (i.e., 31 DS1s utilized out of a capacity of 84) for its OC3-based SONET Fiber Mux architecture, although current utilization of OC3s is only 28 DS1s, or 33%.

Q. WOULDN'T YOU CONSIDER THE DS1 DEMAND ACROSS MULTIPLE LOCATIONS WHEN DETERMINING THE APPROPRIATE UTILIZATION?

A. No. In an OC3 environment, demand across multiple locations cannot simply be aggregated when considering the appropriate utilization. Provisioning an OC3 in the central office provides capacity for 84 DS1s so long as OC3 electronics are also provisioned at the end-user location. So while it is possible to deploy an OC3 ring architecture to serve the demand at more than one location, this results in high utilization rates in the central office and low utilization at the end-user locations. In other words, to serve multiple locations an OC3 could be deployed in the central office with fiber to and electronics at each of three end-user locations (A, B and C). This could result in utilization of all 84 DS1s in the central office, but only a portion (for example, 28 out of 84 DS1s) at each of the three locations, because the OC3 in the central office could only serve a total of 84 DS1s. This limitation results in the use of a total of four sets of OC3 electronics to serve demand for 84 DS1s, not two OC3s to serve demand for 168 DS1s as suggested by Mr. Weiss. In addition, 4 fibers would be required between location A and B, and between location B and C. The additional fiber and electronics increases the costs significantly above what Qwest models currently. The fact is

that unless there is demand for 168 DS1s in a single location, it is not possible to serve that demand with only two OC3s. Given the current level of end-user demand (i.e., an average of 2 DS1s per location across more than 3200 locations) it is unlikely that Mr. Weiss' example will exist in Qwest's network for a very, very long time. Mr. Weiss' analysis simply does not work in the real world. Therefore, his analysis of an 85% utilization factor could only exist in an imaginary network.

Q. PLEASE PUT YOUR DISCUSSION OF OC3 RING ARCHITECTURE INTO THE CONTEXT OF THE COST OF DS1S.

A. Mr. Weiss suggests that the appropriate utilization for DS1s is 85% and he uses an OC3 example to make his point. First, it is important to understand that Mr. Weiss bases his 85% on Qwest total use of DS1s in its network. Mr. Weiss has misinterpreted the FCC's direction on that point. The FCC stated that the ILECs had to take into effect the total use of the network element, including their own use, to calculate the cost. In this case the network element is DS1 capable loops (i.e., DS1s that reach from the central office to the end-user customer), <u>not</u> all DS1s deployed throughout Qwest's network. It is inappropriate to include the utilization for DS1s deployed for anything other than as DS1 capable loops when calculating the cost of that element.

Second, in using OC3s as his basis for an 85% utilization rate, Mr. Weiss has failed to make other necessary adjustments to the costs that are required by his assumption. As stated above, the only way for Qwest to achieve the kind of utilization suggested by Mr. Weiss is to deploy OC3 ring architectures that allow for the aggregation of end-users across multiple locations. However, since Qwest's model only assumes a point-to-point configuration, it would be necessary to add the cost of additional fiber for each leg of the ring, as well as OC3 electronics at each additional location to determine costs appropriately. This results in a much higher equipment cost to accomplish 85% utilization. It is not appropriate to merely substitute the higher utilization rate into Qwest's existing model, as Mr. Weiss has, without also adjusting the equipment investment to reflect the change in architecture assumptions.

Q. IS THERE ANOTHER FLAW IN MR. WEISS' ANALYSIS OF UTILIZATION RATES?

A. Yes. Assuming that Mr. Weiss has used the correct demand levels in his analysis (Exhibit THW-4), his utilization levels are inflated by his assumption that Qwest would increment with additional OC3s to serve his assumed levels of demand. The reality is that each time an OC3 is added, it requires that four additional fibers be utilized. What is more likely to occur in the real world is that if demand at a given location were to approach the levels suggested by Mr. Weiss, Qwest would not place another OC3 but would instead expand capacity by

replacing an existing OC3 with an OC12. This solution quadruples the capacity through the use of electronics without having to use any additional fiber. However, if capacity is increased from 168 to 420 DS1s instead of 252, according to Mr. Weiss' chart on Exhibit THW-4 utilization at the start of the next period would drop to 38% and the end of period utilization would be 57%, not 94%. In fact, utilization would not reach 95% until the time period represented by column E. This, of course, would result in a period average utilization of much less than 85% as suggested by Mr. Weiss.

It is interesting to note that Mr. Weiss' chart does not assign a measure of time to any of the time periods represented, so it is impossible to tell how long he believes it could take to reach the next increment of demand. Based on Qwest's experience in Arizona (i.e., an average of 2 DS1s per location) it could be the next century before demand for 559 DS1 capable loops, represented in column G, would be reached for a single end-user location. By then, Qwest would have replaced the OC3 with an OC48 with capacity for 1,344 DS1s and utilization would be 41.6%, not 95% as portrayed by Mr. Weiss' exhibit.

Q. WHAT ABOUT MR. WEISS' CLAIM THAT DS1 DEMAND WILL SKYROCKET DUE TO RESIDENTIAL DEMAND FOR ADSL AND HDSL TECHNOLOGIES, WON'T THAT RESULT IN INCREASED DEMAND?

A. No. Mr. Weiss' claim is misleading. First, demand for ADSL does not result in providing DS1 capable loops to the end-user location (i.e., the residential

customer's home). An increase in that type of demand is more likely to result in fiber being provided to a remote terminal, but that is not the definition of a DS1 capable loop. A DS1 capable loop provides a connection from the Qwest Central Office to the end-user location. Second, it is highly unlikely that the mass market of residential end-user customers would require, or be willing to pay for, the capacity afforded by DS1s in the near future. However, in the event that there was demand for DS1s in the residential market, it would still be for only one or maybe two DS1s per home. This kind of residential demand supports Qwest's position that there will continue to be a need for copper-based DS1 solutions with low capacity, not the fiber-based OC3 solution analyzed by Mr. Weiss.

Q. MR. WEISS CRITICIZES QWEST FOR ITS UNWILLINGNESS TO RESPOND TO REQUESTS THAT SEEK INFORMATION REGARDING ITS COST OF MATERIALS. IS THIS A FAIR AND ACCURATE CHARACTERIZATION?

A. No. Mr. Weiss repeatedly throughout his testimony accuses Qwest of withholding information related to the material costs used in its cost models. These accusations do not tell the true story. Qwest has made it clear in responses to numerous interrogatories from the joint intervenors that the vendor pricing information sought in the requests is the subject of vendor proprietary contracts. This means that the contracts between Qwest and its vendors include clauses that prohibit Qwest from releasing the pricing information contained within the contracts to other parties. Those clauses typically require Qwest to provide notice to the vendors, only after having been compelled by some

authority to release the contracts to others, so that the vendors have the opportunity to appear and make their case as to the propriety of the information being sought. Mr. Weiss fails to mention in his testimony that, although, Qwest objected to providing such proprietary information it, nevertheless, approached its vendors seeking voluntary permission to provide the requested information. As of this filing, Qwest has received permission from more than 90% of its Arizona vendors and has provided the requested contracts to the joint intervenors. Qwest believes that it has acted in good faith to obtain the information sought in the requests. Surely, neither Mr. Weiss nor his clients would have expected Qwest to breach the contracts with its vendors in order to accommodate their data requests.

Q. DOES MR. WEISS ADDRESS UNBUNDLED DEDICATED INTEROFFICE TRANSPORT (UDIT)?

A. Yes. Mr. Weiss believes he has the same issues with regard to the TIFs and fills used to calculate the investment for UDIT as he has with other UNEs. Qwest believes that it is using appropriate forward-looking TIFs for UDIT for the same reasons discussed earlier in my testimony. With regard to fills, Qwest is using fills ranging from 67% for fiber to 74% for equipment, which it also believes represent appropriate, forward-looking fills. As discussed above, such fills are well within the range of fill factors the FCC found to appropriately reflect TELRIC in Massachusetts, Kansas and New York.

Q. MR. WEISS DISCUSSES THREE PROBLEMS THAT HE FINDS WITH QWEST'S SHARED TRANSPORT COSTS, PLEASE ADDRESS HIS CONCERNS.

A. Mr. Weiss has concerns with regard to three aspects of Qwest's cost for shared transport, including billing and collection costs, cost factors and investment in transport facilities. I will discuss the billing and collection costs and Mr. Weiss' incorrect calculation of the investment in transport facilities. Qwest witness Ms. Gude discusses cost factors in her rebuttal testimony.

Q. MR. WEISS BELIEVES THAT THE BILLING AND COLLECTION COST FOR SHARED TRANSPORT SHOULD BE NO HIGHER THAN FOR OTHER UNES, IS HE CORRECT?

A. No. There are two reasons Mr. Weiss' opinion is wrong: 1) he makes an incorrect assumption about the development of the billing and collection ("B&C") factor; and 2) he ignores a simple principle of math. First, his expectation that B&C costs should be similar from one cost study to the next appears to based on an assumption that Qwest calculates a single factor for billing and collections, however, this is not the case. Qwest does not develop a single, standard B&C factor that applies to all UNEs. This means that the costs for billing and collection associated with UNEs that are billed a monthly recurring rate "per line" or unit basis are different from those that are billed on a "per minute of use" or usage basis. In the first instance, billing per line merely requires that the number of lines be counted and a consistent rate applied. In the case of shared

transport, billing is more complex because the measurement of both the number of units and the minutes of use for each unit must be determined. The more complex the measurement process is for a UNE, the higher the billing costs are.

Qwest also uses different billing systems depending on the type of UNE product being billed. Some UNEs are billed from Qwest's Customer Record Information System (CRIS), while other UNEs are billed from the IABS system. Because B&C costs vary depending on the billing system used and the nature of the unit being billed, Qwest believes that its practice of assigning B&C costs based on the nature of the UNE is more accurate. The costs assigned to shared transport are an appropriate reflection of the B&C activities associated with shared transport.

Q. PLEASE DISCUSS MR. WEISS' MATH ERROR.

Mr. Weiss ignores a simple math concept to his discussion of B&C costs. In order for the billing and collection costs to be consistent as a percentage of investment across all UNEs, the direct investment amounts for all the UNEs would have to be the same. Since Qwest calculates a cost for B&C that is applied to individual investment amounts, the relative amount of B&C costs varies from product to product. Put another way, assume the direct investment for a product such as shared transport is relatively low due to high volumes of traffic. However, the B&C cost for shared transport is relatively higher due to the

complex measurement required for the unit being billed (i.e., minutes of use). When the ratio of B&C cost to shared transport cost is calculated, a higher percentage results because of the low direct cost of shared transport as compared to the cost for billing and collection. An examination of the B&C cost for other usage based UNEs reveals that for the local switching UNE the result is 14%, while the result for local tandem switching is 16%. Both of these UNEs have relatively higher direct investment than shared transport. On the other hand, the B&C cost for the UNE loop is relatively low, representing a monthly recurring cost per line. When that B&C cost is compared to the relatively higher direct investment of the loop the resulting percentage is much lower. Thus, it is inappropriate to assume that B&C costs as a percent of direct investment from one UNE to another would be consistent.

Q. YOU STATED THAT MR. WEISS MADE AN INCORRECT CALCULATION OF INVESTMENT WITH RESPECT TO SHARED TRANSPORT, PLEASE EXPLAIN.

A. Mr. Weiss states on page 79 of his direct testimony that "Qwest's calculations for transport facility investments reflect understated fill factors and overstated total investment factors." This is the same criticism he makes of Qwest's investment costs for a number of the UNEs he discusses. However, in spite of this criticism, Mr. Weiss <u>does not</u> adjust the fill factors or TIFs used to calculate the investment for shared transport. Instead, Mr. Weiss takes a calculation that Qwest makes to put shared transport on a "per minute of use" basis, and divides the result by

twelve. Not only does Mr. Weiss not mention in his testimony that he made such an adjustment, but it is an inappropriate calculation. It is as if he were trying to put shared transport on a "per minute per month" basis. This is unnecessary, and must be a mistake, since Qwest's calculation already assumes the appropriate unit of measure. When Mr. Weiss' error is corrected the resulting rate is $0.000888 ($0.000074 x 12), which is much closer to Qwest's rate of $0.001573. Of course, as explained above, Qwest does not believe that Mr. Weiss is correct in making adjustments to fill factors and TIFs, either.

Q. MR. WEISS ALSO DISCUSSES A NUMBER OF PROBLEMS HE SEES WITH QWEST'S NONRECURRING COST STUDIES, PLEASE RESPOND TO HIS CONCERNS.

A. First, Mr. Weiss points out that Qwest has included costs for disconnection in its nonrecurring rates. Mr. Weiss' solution is to simply eliminate the disconnection costs. This is not an appropriate solution. Regardless of when Qwest incurs the costs for disconnection, there is no question that there are activities Qwest will perform to disconnect customers from a CLEC and that Qwest and its retail customers should not be required to absorb the costs associated with these CLEC activities. The reason for incorporating the costs into the initial nonrecurring charge is because traditionally the Commissions have recognized that it is sometimes difficult to collect disconnection charges from customers who no longer require service. Thus, it is likely that the CLECs will themselves collect such charges from their customers in advance.

1 As pointed out by the CLECs, the Commissions have also recognized that the
2 business-to-business relationship with the CLECs should mean that an ILEC will
3 not be left "holding the bag" as it might in a retail relationship. However, even
4 these business-to-business relationships have been tenuous recently, as the
5 CLECs have also been quick to point out, due to the failure of so many CLEC
6 business plans. Even some of the longest established names in the
7 telecommunications industry have been troubled by their inability to collect
8 revenues from their business-to-business partners. Thus, Qwest believes now
9 more than ever, that it is appropriate to seek recovery of disconnect costs in its
10 initial nonrecurring charge.

11 Second, Mr. Weiss recommends removing individual activities associated with
12 ordering and plant record function "to recognize that such activities will not be
13 performed manually...." This recommendation fails to account for the fact that
14 Qwest's studies already assume mechanization for certain activities, such as
15 design, that will be impacted on a forward-looking basis by the development of
16 fully functional OSS. Mr. Weiss' assumes hypothetical systems that go beyond
17 the level of mechanization that currently exists in Qwest's systems, and beyond
18 what Qwest is able to do for itself in the real world.

19 Third, Mr. Weiss takes issue with certain activities that he believes are
20 unnecessary in Qwest's studies. He states that activities performed by the

Service Delivery Implementor have been performed earlier in the service provisioning process. Mr. Weiss assumes incorrectly that the activities of the Service Delivery Implementation group occur toward the end of service delivery and include verification that earlier work had been performed. This interpretation is in error. The Service Delivery Implementor has overall coordination responsibility for service provisioning and performs work activities throughout the entire timeline of service order provisioning. The Implementor is in contact with all work groups as necessary along the critical date path of the order. The activity "Verify Local Network Operations (LNO) Circuit" is an abbreviated reference for a number of work activities performed by the Implementor throughout the service establishment process. Thus the implementation activities do not occur at the end of service delivery and do not verify earlier work.

Finally, Mr. Weiss criticizes Qwest's time estimates because he believes that the overall function can be performed in less time than Qwest's experts have estimated for the individual steps. Mr. Weiss provides no support for this statement, other than that evidently he thinks it should take less time than Qwest's experience suggests. AT&T's own nonrecurring cost model (NRCM) is based on individual steps or activities to which a "panel of experts" has assigned time estimates. Qwest believes that absent a valid reason for adjustments to its individually proposed times, Qwest's times are more likely to be representative

because they based on the experience of experts who currently perform the tasks being measured. This is more appropriate than relying on the opinion of "experts" who provide no proof of having current experience performing the work.

Q. DOES MR. WEISS MAKE ADJUSTMENTS TO QWEST'S NONRECURRING COSTS?

A. No. Mr. Weiss chooses not to adjust Qwest's nonrecurring cost study in Arizona, as he did in Washington, and instead sponsors the AT&T/WorldCom nonrecurring cost model ("NRCM") in conjunction with Mr. Lathrop. I address my concerns with the NRCM in my discussion of Mr. Lathrop's testimony.

Q. MR. WEISS CONCLUDES HIS TESTIMONY WITH A DISCUSSION OF THE SUBLOOP AND INTRABUILDING CABLE. DID QWEST PROVIDE A SEPARATE STUDY FOR INTRABUILDING CABLE?

A. Yes. I am confused about the point Mr. Weiss is trying to make in this discussion. Qwest prepared a separate study for intrabuilding cable that recognized the desire of the CLECs to access the subloop, in most instances, at a technically feasible point where the distribution subloop enters a customer's premises.

F. Testimony of Mr. Lathrop

Q. WHAT ASPECTS OF MR. LATHROP'S TESTIMONY WILL YOU ADDRESS?

A. I rebut the assumptions and methodology contained in the Non-recurring Cost Model ("NRCM") presented by Mr. Lathrop on behalf of the Joint Intervenors.

Q. CAN YOU DESCRIBE, GENERALLY, YOUR CONCERNS WITH THE NRCM?

A. Yes. In the NRCM, AT&T and WorldCom have developed a spreadsheet model that is relatively easy to use, and looks good on the surface. However, it is important to understand that the major flaws in the NRCM are in the assumptions that underlie the calculations. In essence, the NRCM is a slick looking model that produces very flawed results. Some of the flaws can be corrected by changing "user defined" inputs, but the vast majority of the flawed assumptions exist in the hard-coded portions of the model.

Q. PLEASE DISCUSS SOME OF THE SPECIFIC CONCERNS YOU HAVE WITH NRCM.

A. One of the most glaring errors in the NRCM is that it does not include *any* service center (in Qwest's study, interconnect service center or ISC) costs. While Mr. Lathrop talks about 98% as a reasonable, forward-looking flow through rate, the model actually assumes that <u>no</u> service representative or order writer will *ever* be involved in processing an order. This amounts to 100% flow through, an assumption that is totally unrealistic. As new generations of OSS and electronic interfaces are developed and become available, it is possible that manual intervention by ISC personnel will be reduced. However, since ISC personnel

perform up-front tasks that support the processing of an order it is completely inappropriate at this point to assume that such intervention will never be required, even assuming some ultimate hypothetical view of systemization.

First, part of the ISC function is to provide a "stopgap" for orders that are submitted incorrectly and error out of the system. In Qwest's experience no system is 100% infallible under all circumstances. Qwest's nonrecurring studies assume in many instances that 85% to 95% of the orders will be processed without the need for manual intervention from this group. For some UNEs such as DS1 and DS3 capable loops, the orders and activities associated with placing orders and coordinating with the CLECs are too complex to be performed in a mechanized fashion at this time. Qwest does not believe that the systems exist yet to eliminate some of the manual activities associated with those UNEs.

Second, Mr. Lathrop's assumption also overlooks the fact that many of the CLECs placing orders with Qwest do not have the sophisticated systems that AT&T or WorldCom employ for their end of the service order process. In fact, as recently as April 2001, Qwest was still receiving 24% of its orders from CLECs via fax in Arizona. It would be unfair and inappropriate to cause Qwest to have staff available to process orders it receives from the CLEC manually, and then eliminate all of their work tasks from the nonrecurring study when calculating the

cost for the service. As with other TELRIC studies, a reasonable forward-looking study focuses on systems that are currently available and deployable by Qwest.

Q. THE NRCM SHOWS ACTIVITIES ASSOCIATED WITH SERVICE CENTER PROCESSES, WHY DO YOU SAY THAT IT DOES NOT INCLUDE ANY OF THOSE COSTS?

A. The NRCM is somewhat deceptive in the way that it presents nonrecurring costs. While it has many processes and activities identified, most have little or no cost associated with them when the model actually develops nonrecurring costs for the various UNEs. For example, while there are five service representative activities listed, two are assumed to be performed by the CLEC and, for the other three, it is assumed that the costs are included in recurring costs (denoted by the "R" in the rate column). It is interesting to note that these assumptions are hard-coded into the model so that there is no "user input" that allows service representative time to be added. Further, the NRCM assumption for POTS type service is that 100% of facilities are dedicated. This eliminates all nonrecurring costs by assuming that there is no need to perform activities in the field, such as dispatching a technician to run jumpers, and that any costs will be recovered through recurring charges. This assumption works for UNE-P where the service is dedicated and no field activities are required, but it allows no recovery of costs for any new installations or additional lines. Further, it is in direct conflict with AT&T's assumptions in the HAI model regarding the sizing of the loop. In HAI, as discussed by Mr. Buckley in his rebuttal testimony, AT&T makes sizing

assumptions in its distribution cable that do not provide for dedicated additional lines. Thus, AT&T expects that Qwest will perform the activities necessary to connect the unbundled loops it wishes to purchase without compensating Qwest for the work.

Q. ARE NONRECURRING ACTIVITIES INCLUDED IN QWEST'S RECURRING COST STUDIES?

A. No, absolutely not. For example, nonrecurring service representative activities are specifically excluded from the cost factors that are used to develop Qwest's recurring cost estimates. Thus, the total exclusion of such costs from NRCM cost estimates results in a gap between the costs Qwest recovers in its recurring rates and the activities it performs to accommodate CLEC orders and provisioning. Using the cost estimates from NRCM insures that Qwest will be unable to recover its costs for those activities.

Q. IS IT APPROPRIATE FOR THE COMMISSION TO EXPECT QWEST TO RECOVER ITS NONRECURRING COSTS THROUGH RECURRING CHARGES?

A. No. As explained in more detail in Mr. Fleming's rebuttal testimony, the FCC has stated that nonrecurring costs could be recovered over a reasonable period of time only if ILECs are ensured full compensation for their nonrecurring costs.[5] This does not rise to the level of endorsing recovery of nonrecurring costs

[5] CC Docket No. 93-162, Second Report and Order, Released June 13, 1997, at ¶ 33.

through recurring charges. The NRCM acknowledges that there are numerous activities associated with the nonrecurring functions as evidenced by the long list of activities detailed in the model. However, even after listing all of the steps that the joint intervenors believe are necessary, the NRCM assumes them away by assigning them to be recovered through recurring charges. As explained above, Qwest does not include the costs for any of these activities in its recurring studies. Further, nowhere do the joint intervenors explain or demonstrate how these costs are to be recovered through the recurring charges, other than vague references in HAI that these costs are in the factors. Effectively, this approach requires Qwest to incur the costs for the activities it performs up front and then defer recovery of those costs to some uncertain point in the future. Thus, Qwest bears all of the risk and uncertainty of ever collecting anything for these activities, while the CLECs enjoy the benefit of avoiding the costs by having Qwest perform the work. If Qwest is unable to recover these costs from the CLECs, that recovery shifts to Qwest and its retail customers.

Q. DOES NRCM ASSUME THAT MOST WORK ACTIVITIES WILL BE COMPLETED WITH A 98% FLOW THROUGH?

A. Not exactly. As mentioned previously, the NRCM lists numerous work activities. Mr. Lathrop, at page 12 of his testimony, discusses nonrecurring costs as being transactional in nature, rather than including equipment and non-labor costs. He then assumes that the only costs related to most of the transactional,

nonrecurring activities on the list are OSS investment-related costs that belong, he says, in a recurring charge. This assumption necessarily results in Qwest being required to recover such transactional costs through cost factors in its recurring studies which would be applied to both its wholesale and retail customers. Thus, in effect, the NRCM assumes 100% flow through for each of these activities, not the 98% that is implied by Mr. Lathrop. The NRCM does list, for certain UNEs, "fall-out" activities, and assumes that each of these activities would take place 2% of the time.

Q. IS THIS METHODOLOGY REASONABLE?

A. No. First, Qwest does not believe that the activities listed in the NRCM reflect a realistic view of the forward-looking technologies and systems that could be deployed by Qwest. Second, the NRCM identifies no fall out for specific activities, rather it identifies a separate set of activities that occur when "fall out" happens. It then applies a 2% fallout percentage only to those activities. In addition, the NRCM grossly understates the time estimates that apply when fall out does occur.

Q. ARE THERE EXAMPLES OF ACTIVITIES WHERE NRCM ACTUALLY DOES ESTIMATE NONRECURRING COSTS?

A. Yes. For example, for "POTS/ISDN BRI – Install UNE Loop" the NRCM does calculate some costs for the activities related to installing cross connects on the

MDF. However, these activities only occur when there is a straight copper loop, and the model assumes that copper loops exist only 40% of the time. As the NRCM documentation states, this is a significant variable because of the additional work steps associated with copper plant. (NRCM Model Description, page 17). The remaining plant is assumed to be Integrated Digital Loop Carrier ("IDLC"), specifically GR303 which has software that enables mechanized customer connections, and assumes that none of these activities is required for IDLC. (Weiss testimony, page 84). The problem with that assumption is that Qwest has not deployed 60% IDLC, and certainly has not deployed 60% GR303. Thus, once again, in the real world Qwest is expected to perform work activities on its existing network in order to accommodate the CLECs, while at the same time assuming away the cost for those activities based on a hypothetical network. As discussed previously, these types of assumptions in a nonrecurring cost model merely shift the recovery of costs away from the CLECs and on to Qwest and its retail customers.

Q. MR. LATHROP AND MR. WEISS BOTH CRITICIZE QWEST FOR THE TIME ESTIMATES PROVIDED BY ITS SUBJECT MATTER EXPERTS WHO PERFORM THE ACTIVITIES ASSOCIATED WITH NONRECURRING COSTS. HOW ARE THE TIME ESTIMATES FOR NRCM DEVELOPED?

A. The time estimates and probabilities used in NRCM are developed by a "panel of experts" gathered by AT&T to for that purpose. Unlike Qwest's experts, these so-called "experts" are <u>not</u> people who are currently performing the tasks that

make up the nonrecurring costs experienced by Qwest. In addition, no backup material has been provided that supports any of the assumptions made in the NRCM. Further, no evidence or time and motion studies have been provided to support the nonrecurring activities specified in the model, or the work times and probabilities that are applied to the activities. Although, the joint intervenors would like to convince the Commission that the time estimates provided by Qwest's experts (who currently perform the tasks being studied, and are aware of the improvements that Qwest expects to achieve in the near future) are not to be relied on, they have provided no additional evidence that proves that their time estimates are more reliable. When asked for supporting data for its time estimates, Qwest provided detailed backup that included the estimates of each task, time and probability of occurrence for every nonrecurring charge.[6] In many cases this backup included the name of the person or persons providing the estimate. When Qwest requested similar documentation from the joint intervenors regarding their panel of experts, they referred Qwest to the NRMC documentation filed on CD-ROM with the model, which contains no such detail.[7]

Q. IS MR. LATHROP'S PROPOSAL FOR NON-RECURRING RATES A REASONABLE PROPOSAL FROM AN IMPLEMENTATION PERSPECTIVE?

[6] Response to ACC Request WD 4-122.

[7] Response to Qwest Request 1-70.

1 A. No. The 49 different rates for the handful of services identified by the brief
2 descriptions does not cover the wide range of services proposed by Qwest in this
3 proceeding. They do not provide Qwest with recovery of many non-recurring
4 activities that it will provide to the CLECs. They do not address many of the
5 services agreed upon in the SGAT workshops. These non-recurring elements
6 have vague descriptions of the work being performed and will be impossible to
7 implement accurately. In addition, for Qwest to attempt to develop systems and
8 processes to administer, train, maintain, and bill these rates will be unique to
9 Arizona and extremely inefficient, costly and impractical. From an
10 implementation perspective, this structure and associated rates should not be
11 considered as a reasonable proposal and should be rejected on this basis alone.

12 **G. Testimony of Mr. Chandler**

13 **Q. WHAT ISSUES IN MR. CHANDLER'S TESTIMONY DO YOU ADDRESS?**

14 A. I rebut Mr. Chandler's contention that Qwest's Unbundled Packet Switching
15 ("UPS") cost study is not forward-looking and is inappropriate for applications
16 used by current DSL subscribers.

17 **Q. WHAT IS YOUR IMPRESSION OF MR. CHANDLER'S TESTIMONY ON**
18 **QWEST'S UNBUNDLED PACKET SWITCHING OFFERING?**

19 A. After reviewing Mr. Chandler's testimony, it is not entirely clear to me what he is
20 suggesting, however, as best as I can tell his understanding of the UPS product

is vastly different than what Qwest intended. He appears to be very confused. Mr. Chandler states that it is difficult for him to tell what service could be offered to end-users by UPS. (Chandler, page 3). As stated in its Third Report and Order and Fourth Further Notice of Proposed Rulemaking, CC Docket No. 96-98, released November 5, 1999,[8] the FCC required packet switching to be unbundled in certain circumstances. As explained in Ms. Brohl's testimony, those circumstances are limited, and serve as an exception to the FCC's decision to decline to unbundle packet switching. Key to that exception is Qwest's ability to offer remote collocation where it has remotely deployed DSLAMs. While I did not file a remote collocation cost study in this proceeding, Qwest offers such a product and is in the process of developing costs for it. Qwest intends to have space available for CLECs to remotely collocate their own DSLAMs in locations where Qwest has deployed them, obviating the need for the unbundled packet switching product.

Nevertheless, as described in Ms. Brohl's rebuttal testimony, the UPS service Qwest offers is Qwest's retail Remote DSL service unbundled and priced at TELRIC. Mr. Chandler states that he believes that the service offering is an inferior service that is not "always on" (Chandler testimony, page 3). As Qwest witness Mr. Craig explains, Mr. Chandler could not be more incorrect. Qwest's Remote DSL service is "always on". Mr. Craig disagrees with many of the

[8] At paragraph 313.

technical terms and explanations provided by Mr. Chandler. Mr. Craig's testimony provides clarity on how the terms are used and understood by Qwest. Mr. Chandler is also unclear about the bit rate used by Qwest in its retail Remote DSL service. Mr. Craig clarifies this issue. Finally, Mr. Chandler states his belief that the technology that Qwest plans, but has not yet fully deployed, is not "forward-looking" (Chandler testimony, page 2). As Mr. Craig explains, the technology that Qwest plans to deploy for its Remote DSL service is the latest and most advanced technology for this type of application. So new in fact, that vendors do not have these products established in their standard product offerings.

In my opinion, Mr. Chandler's testimony provides little useful information for decisions in this proceeding. As Qwest witnesses explain in simple and non-confusing words, the FCC requires Qwest to unbundle its retail Remote DSL offering in special circumstances. Qwest has met that requirement by offering its UPS service.

Q. MR. CHANDLER STATES AT PAGE 14 OF HIS TESTIMONY THAT COPPER FEEDER THAT CARRIES A T1 (DS1) DIGITAL SIGNAL IS OBSOLETE. IS HE CORRECT?

A. No. As I discussed above in my rebuttal of Mr. Weiss' testimony regarding DS1s, there are still valid reasons for deploying copper architectures to accommodate DS1 demand. In addition, as discussed Mr. Buckley's testimony, AT&T's own

HAI model assumes the use of copper feeder in the loop, as does the AT&T NRCM model which assumes 40% copper feeder.

H. Testimony of Mr. Denney

Q. WHAT ASPECT OF MR. DENNEY'S TESTIMONY DO YOU ADDRESS?

A. I will discuss Qwest's new proposal for deaveraging of the UNE loop based on Mr. Denney's criticism of the current proposal.

Q. WHAT DOES MR. DENNEY SAY IN HIS TESTIMONY ABOUT QWEST'S CURRENT DEAVERAGING PROPOSAL?

A. Mr. Denney agrees that the deaveraging proposals of Qwest and AT&T are similar in this proceeding. Both are proposing to only deaverage the loop at this time and both calculate loop cost at the wire center level and assign wire centers to deaveraged zones based on cost. However, Mr. Denney recommends the use of the HAI Model, version 5.2a, as the basis of the loop cost. Mr. Denney also criticizes Qwest for using effectively the same method that AT&T used in the prior deaveraging proceeding to establish its cost-based zones.

Q. DO YOU ADDRESS MR. DENNEY'S CLAIM THAT THE RESULTS FROM THE HAI MODEL FORM A BETTER BASIS FOR THE LOOP COST?

A. No. Qwest witnesses, Mr. Buckley and Dr. Fitzsimmons, focus on the HAI Model as the basis for loop costs. Their testimony rebuts the assumption in the HAI

Model and explains why Qwest's LoopMod is a better choice for establishing loop costs.

Q. IS MR. DENNEY CORRECT, DID QWEST CRITICIZE THE METHODOLOGY PREVIOUSLY USED BY AT&T AS ARBITRARY?

A. Yes. However, as I stated in my March 15, 2001, direct testimony, Qwest understood from the Commission's decision in the interim deaveraging docket that although the it selected Qwest's interim proposal, the Commission favored the proposals submitted by both AT&T and staff for establishing permanent rates. Since both AT&T and staff used the method currently proposed by Qwest in this proceeding, Qwest believed that it was proposing a method that would be acceptable to the Commission.

Q. IS QWEST PROPOSING A DIFFERENT METHOD OF DEAVERAGING BASED ON MR. DENNEY'S COMMENTS?

A. Yes. As Mr. Denney says, Qwest did criticize its method as arbitrary in the last proceeding. Qwest agrees with Mr. Denney that the methods of grouping wire centers by cost that were used by both the Washington and Minnesota Commission's are valid approaches to deaveraging. In addition, Qwest has examined the deaveraging optimization program developed by Mr. Denney and agrees that it works the way that he explains in his testimony beginning on page 46. Therefore, Qwest proposes to approach deaveraging in Arizona by grouping the two lowest cost wire centers (i.e., Phoenix Main and Tempe) into Zone 1, and

using the deaveraging optimization program to determine the appropriate break-point between Zones 2 and 3. This results in the following costs, line counts and percent distribution of lines for three deaveraged zones in Arizona:

	Cost	# of Lines	% of Lines
•	Zone 1 = $16.89	145,780	5.6%
•	Zone 2 = $22.57	1,658,501	63.1%
•	Zone 3 = $34.34	823,336	31.3%

Statewide Average Loop Rate = $25.95

The above costs and line counts are based on excluding the wire centers that have been identified as being for sale from the calculation. Qwest believes, however, that unless or until the sale is executed and becomes final, the appropriate charge for a deaveraged loop is one that is based on the costs, including the exchanges that are for sale.

J. Testimony of Mr. Dunkel

Q. WHAT ISSUES IN MR. DUNKEL'S TESTIMONY DO YOU ADDRESS?

A. Mr. Dunkel states that Qwest is not treating unaffiliated DSL providers in a nondiscriminatory manner with respect to its treatment of its cable TV affiliate, Broadband Services, Inc. ("BSI"). I explain that Mr. Dunkel is incorrect and how Qwest's treatment of BSI is absolutely appropriate pursuant to the FCC's Affiliate Transactions rules under Part 32.27. I also explain how the Commission's determination of permanent rates in this docket will guarantee that treatment of BSI is nondiscriminatory with respect to the CLECs.

Q. CAN YOU EXPLAIN HOW MR. DUNKEL IS INCORRECT IN HIS ASSERTIONS REGARDING THE PRICES QWEST CHARGES BSI?

A. Yes. Mr. Dunkel misconstrues the affiliate transactions rules in his testimony. For example, on page 29 of his testimony Mr. Dunkel discusses a nonrecurring charge of $80 for line sharing that Qwest currently assesses as an interim charge to the CLECs until a permanent rate can be established. Mr. Dunkel claims that Qwest "has simply decided that it does not consider this $80 charge a "prevailing company price" or a "fair market value," and therefore chooses to charge its affiliate using another method, which is the fully distributed cost method." (Dunkel testimony, page 29-30). Mr. Dunkel fails to acknowledge that the $80 charge is a negotiated rate that is assessed for the connections necessary to accommodate line sharing for CLECs. Qwest's proposal for a permanent nonrecurring rate for the shared loop is $37.71 based, in part, on the flow-

through assumptions incorporated in Qwest's nonrecurring study since the $80 was negotiated.

Pursuant to the affiliate transactions rules Qwest cannot use this interim rate as it is neither a prevailing company price nor a fair market value. Qwest appropriately charges a fully distributed cost to BSI for the same types of activities performed for it by Qwest personnel as required by the affiliate transactions rules. Qwest makes the same evaluation of the appropriate charge under the affiliate rules with regard to every service that it provides to its affiliates, including its cable TV affiliate, BSI. The charges that Qwest applies to BSI under the affiliate rules are subject to audit by a neutral third party, and are filed with the FCC in Qwest's Cost Accounting Manual pursuant to the FCC's accounting safeguards rules (Docket No. 96-150).

Effectively, Qwest charges BSI for time and materials on a fully loaded basis for all of the work Qwest performs in much the same way as it would determine cost on an individual case basis. However, unlike the ICB charges to CLECs, which are based on forward-looking TELRIC costs, the charges to BSI are fully distributed actual costs. This means that for cross-connects and other installation activities, as well as for the ordering and sales functions performed by Qwest, BSI receives none of the benefit of the forward-looking TELRIC costs that Qwest develops for CLECs. For example, where Qwest assumes 85% flow-

through on the ISC activities in its proposed nonrecurring charge to the CLECs, Qwest currently charges BSI for those activities with no "flow-through" assumed. Thus it is highly likely that BSI pays as much or more than the CLECs do for the same activities.

Q. IN MR. DUNKEL'S TESTIMONY, AT FOOTNOTE #41, HE STATES THAT QWEST "PROMISES" IT WILL CHARGE BSI THE NONRECURRING ONCE THE COMMSSION APPROVES THE TARIFF, IS HE CORRECT?

A. Yes. Pursuant to the affiliate transactions rules Qwest must charge its affiliates a tariff price if one exists. Therefore, Qwest has stated that once the Commission sets a permanent, published rate for a UNE element, that rate will apply to Qwest's affiliates, including BSI. Whatever nonrecurring rate the Commission establishes for activities associated with Qwest making the line sharing connection will become the rate that Qwest charges the CLECs and BSI alike, and Qwest will no longer charge BSI a fully distributed cost for those activities.

Q. DO YOU HAVE ANOTHER EXAMPLE OF HOW QWEST FOLLOWS THE FCC'S AFFILIATE RULE TO PRICE SERVICES TO BSI?

A. Yes. Mr. Dunkel uses other examples of line sharing and collocation to "prove" that Qwest does not charge appropriate prices to BSI. With regard to the line sharing charge, particularly those related to collocation of the splitter, Mr. Dunkel has failed to point out that the reason BSI does not pay for collocation of a splitter in the central office is because BSI uses a different architecture to provide its

video services. BSI does not make use of a splitter collocated in a central office, instead, BSI owns a piece of equipment called a Universal System Access Multiplexer ("USAM"). The USAM performs the splitter function and is located at the remote terminal. Qwest charges BSI a fully distributed cost for the connections required for BSI to access Qwest's distribution plant at the remote location. Mr. Dunkel fails to mention that BSI also pays Qwest 50% of the Commission approved subloop rate (or $7.67) to access the high frequency portion of the subloop. This is much higher than the $5 loop charge that Qwest proposes to charge the CLECs for line sharing over the entire loop. As stated in response to ACC Request WD 6-158(D), the CLECs have this same option available to them if they choose, as BSI has, to purchase and install similar equipment remotely and then access Qwest's subloop. Qwest also provides the CLECs the option of collocating the splitter in the central office, and has developed the list of options and prices to which Mr. Dunkel refers, for that purpose.

Q. DOES BSI COLLOCATE IN QWEST CENTRAL OFFICES, AND DOES BSI PAY FOR SUCH COLLOCATION?

A. Yes. While BSI does not collocate line splitters in the central office, it does collocation other equipment in Qwest's central offices for which it pays collocation charges. These collocation charges are based on the published rates contained in the interconnection agreement between Qwest and Covad for

cageless collocation. Other nonrecurring costs not covered in the Covad agreement are charged directly to BSI at fully distributed cost.

Q. MR. DUNKEL STATES THAT BSI IS NOT REQUIRED TO PAY THE OSS CHARGE THAT QWEST PROPOSES TO CHARGE THE CLECS, IS THIS CORRECT?

A. Yes. However, Mr. Dunkel only shared half of the response that Qwest provided to ACC Request WD 4-106 in making his statement. Qwest specifically stated that the reason for not charging the OSS rate to its affiliate is that BSI does not use any of the OSS modifications made by Qwest to make line sharing available to the CLECs. BSI instead pays for the OSS that it does use on a fully distributed basis.

Q. IF BSI REQUESTED CHANGES TO BE MADE TO SYSTEMS OWNED BY IT OR QWEST, WOULD BSI PAY FOR THOSE CHANGES?

A. Yes. As stated in response to ACC Request WD 6-161 any systems changes made on behalf of BSI, or at its request, (whether to its own systems or to systems owned by Qwest) are billed directly to BSI by the entity performing the work at the time the work is performed. Therefore, unlike the OSS costs that Qwest is seeking to recover from the CLECs, BSI pays up front for any changes it required. The CLECs, on the other hand, are being allowed to pay through recurring charges over time for expenditures that Qwest has already made to a

third party (i.e., Telcordia) to modify its OSS to accommodate the CLEC requirements regarding line sharing.

Q. CAN YOU COMMENT ON MR. DUNKEL'S RECOMMENDATION THAT THE TARIFF CHARGES THAT APPLY TO UNAFFILIATED DSL PROVIDERS ALSO APPLY TO QWEST'S AFFILIATED DSL PROVIDERS?

A. Qwest will continue to bill its affiliates for the use of its assets, facilities and services pursuant to the affiliate transactions rules. These rules are under the control and jurisdiction of the FCC and provide the hierarchy that controls what price Qwest charges its affiliates. As the FCC's affiliate transactions rules <u>require</u> Qwest to use tariff prices to price goods and services to its affiliates to the extent that they exist, once the Commission approves permanent rates for UNEs, Qwest <u>must</u> use those rates to bill its affiliates for the use of its assets, facilities and services on the same basis that it charges unaffiliated providers for the use of its UNEs. That does not mean, however, that BSI would be required to pay Qwest for facilities or services, such as the OSS systems modifications related to line sharing, that it does not use. BSI will continue to pay Qwest under the affiliate transactions rules for OSS systems that it does use.

V. CONCLUSION

Q. BASED ON YOUR REBUTTAL TESTIMONY, WHAT IS YOUR RECOMMENDATION FOR THE COMMISSION?

1 A. The Commission should accept Qwest's newly filed Cost Studies prepared in
2 response to the discussion by Mr. Weiss of Qwest's cost of money and the
3 inappropriate application of a composite sales tax in the TIF in Arizona. The
4 Commission should accept other changes to the studies made in response to
5 various intervenors and discussed in the testimony of Mr. Fleming, Ms. Gude and
6 Mr. Buckley. The Commission should also accept Qwest's deaveraging proposal
7 and its DS1 and DS3 capable loops. Qwest has provided ample additional
8 evidence of the validity of its TIFs, except as modified for sales taxes, and has
9 demonstrated that the utilization factors used in its cost studies do not need to be
10 changed. Finally, the Commission should disregard what Mr. Dunkel has said
11 about line sharing with respect to affiliated versus unaffiliated DSL providers. As
12 explained above, his testimony consistently misconstrues Qwest's application of
13 the FCC's affiliate transactions requirements to its cable TV affiliate, BSI.

14 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

15 A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.	]]]]]]	**DOCKET NO. T-00000A-00-0194** **PHASE II REBUTTAL**

EXHIBITS OF

TERESA K. MILLION

JUNE 27, 2001

INDEX OF EXHIBITS

The following Exhibits are provided in CD format:

TKM-01R	Summary of Recurring and Nonrecurring Costs
TKM-02R	#5206 - Integrated Cost Model (ICM)
TKM-03R	#5207 - Enhanced Nonrecurring Cost Study (ENRC)
TKM-04R	#5361 - Line Sharing - Collocation
TKM-05R	#5205 - Line Sharing - OSS
TKM-06R	#5238 - Collocation
TKM-07R	#5301 - DS1/DS3 Capable Loops, DS1 Capable Feeder, Dark Fiber
TKM-08R	#5235 - Subloop Distribution, Building Cable
TKM-09R	#5296 - Vertical Features
TKM-10	LIS EICT - Study is Being Withdrawn
TKM-11R	#5354 - Channel Regeneration
TKM-12R	Pole Attachment
TKM-13R	Conduit Attachment
TKM-14R	#5211 - Daily Usage Record File
TKM-15R	#5352 - Direct CLEC to CLEC Interconnection
TKM-16R	#5236 - Low Side Channel Performance
TKM-17R	#5212 - Interconnection CLEC Service (ICNAM)
TKM-18R	#5210 - Category 11 Records
TKM-19R	#5297 - CLASS Call Trace
TKM-20R	#5307 - Unbundled Packet Switching (UPS) – Recurring
TKM-21R	#5300 - UPS DS1/DS3 ATM Switch Interface Port – Nonrecurring
TKM-22R	#5299 - UPS Customer Channel/Distribution Connection – Nonrecurring
TKM-23R	#5357 - Space Availability Report – Nonrecurring

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-02R

Study No. 5206
Integrated Cost Model (ICM)

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-03R

Study No. 5207
ENRC - Nonrecurring

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-04R

Study No. 5361
Line Sharing Collocation

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-05R

Study No. 5205
Line Sharing OSS

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-06R

Study No. 5238
Collocation

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-07R

Study No. 5301
Hi-Cap Unbundled Network Elements
(DS1/DS3 Capable Loops, DS1 Capable Feeder, Dark Fiber)

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-08R

Study No. 5235
Subloop Distribution, Building Cable

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-09R

Study No. 5296
Vertical Features

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-10

LIS-EICT: Study Being Withdrawn

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-11R

Study No. 5354
Channel Regeneration

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-12R

Pole Attachment

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-13R

Conduit Attachment

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-14R

Study No. 5211
Daily Usage Record

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-15R

Study No. 5352
Direct CLEC to CLEC

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-16R

Study No. 5236
Low Side Channel Performance

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-17R

Study No. 5212
ICNAM

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-18R

Study No. 5210
Category 11

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-19R

Study No. 5297
CLASS Call Trace

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-20R

Study No. 5307
Unbundled Packet Switching (UPS) – Recurring

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-21R

Study No. 5300
UPS DS1/DS3 ATM Switch Interface Port – Nonrecurring

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-22R

Study No. 5299
UPS Customer Channel/Distribution Connection – Nonrecurring

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation
Exhibit TKM-23R

Study No. 5357
Space Availability Report – Nonrecurring

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
6.2	**CUSTOMER TRANSFER CHARGE (CTC)**				
	Customer Transfer Charge POTS First Mechanized			$0.68	5207
	Customer Transfer Charge POTS Each Addl Mechanized			$0.14	5207
	Customer Transfer Charge POTS First Manual			$16.28	5207
	Customer Transfer Charge POTS each addl Manual			$2.71	5207
	CTC for Private Line Transport Services				
	Customer Transfer Charge Private Line First			$41.05	5207
	Customer Transfer Charge Private Line Each Addl			$41.05	5207
	Customer Transfer Charge Advanced Communication Service Per CKT			$51.57	5207
7.0	**INTERCONNECTION**				
	Entrance Facilities/EUDIT with Customer Location Electronics				
	DS1 Entrance Facility		$86.70	$219.79	5206/5207
	DS3 Entrance Facility		$458.43	$416.07	5206/5207
	DIRECT TRUNK TRANSPORT				
	DS1 Over 0 to 8 Miles	$31.14	$1.45		5206
	DS1 Over 8 to 25 Miles	$31.40	$1.18		5206
	DS1 Over 25 to 50 Miles	$31.87	$2.14		5206
	DS1 Over 50 Miles	$31.83	$1.12		5206

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	DS3 Over 0 to 8 Miles	$197.32	$61.17		5206
	DS3 Over 8 to 25 Miles	$200.35	$18.78		5206
	DS3 Over 25 to 50 Miles	$184.41	$23.73		5206
	DS3 Over 50 Miles	$194.79	$16.34		5206
	MULTIPLEXING				
	Multiplexing DS3 to DS1, Per System		$232.15		5206
	Multiplexing DS3 to DS1, Per Subsequent Channel			$268.62	5207
	TRUNK NONRECURRING CHARGES				
	DS1 Interface, First Trunk			$355.22	5207
	DS1 Interface, Each Additional Trunk			$5.93	5207
	DS3 Interface, First Trunk			$362.03	5207
	DS3 Interface, Each Additional Trunk			$12.75	5207
	LOCAL TRAFFIC				
	End office call termination, per minute of use		$0.002143		5206
	Tandem Switched Transport				
	Tandem Switching, per Minute of Use		$0.001589		5206
	Tandem Transmission, per Minute of Use				
	0 to 8 miles	$0.000456	$0.0000428		5206
	8 to 25 miles	$0.000465	$0.0000212		5206
	25 to 50 miles	$0.000448	$0.0000109		5206
	Over 50 miles	$0.000433	$0.0000039		5206
	Category 11 Mechanized Record Charge, per Record		$0.001827		5210

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
8.0	**COLLOCATION**				
	Collocation Entrance Facility, Per Fiber				
	Standard Shared per Fiber		$16.01	$627.99	5238
	Cross Connect per Fiber		$16.17	$735.39	5238
	Express per Cable		$276.84	$9,198.71	5238
	Cable Splicing				
	Fiber Per Set Up			$476.82	5238
	Per fiber Spliced			$38.12	5238
	-48 Volt Power Usage				
	Power Plant per Amp Ordered		$10.94		5238
	Power Usage-Less than 60 AMPS per Amp Ordered		$3.70		5238
	Power Usage-More than 60 AMPS per Amp Ordered		$7.41		5238
	Backup AC Power Feed Usage				
	120 V per Amp per Month		$19.03		5238
	208 V, Single Phase per Amp per Month		$32.98		5238
	208 V, Three Phase per Amp per Month		$57.06		5238
	240 V, Single Phase per Amp per Month		$38.06		5238
	240 V, Three Phase per Amp per Month		$65.84		5238
	480 V, Three Phase per Amp per Month		$131.68		5238
	Backup AC Power Cable - Per Foot, per Month				
	20 Amp, Single Phase per Foot		$0.0117	$8.02	5238
	20 Amp, Three Phase per Foot		$0.0145	$9.94	5238
	30 Amp, Single Phase per Foot		$0.0126	$8.64	5238
	30 Amp, Three Phase per Foot		$0.0173	$11.87	5238
	40 Amp, Single Phase per Foot		$0.0149	$10.16	5238
	40 Amp, Three Phase per Foot		$0.0204	$13.99	5238
	50 Amp, Single Phase per Foot		$0.0176	$12.06	5238
	50 Amp, Three Phase per Foot		$0.0246	$16.84	5238
	60 Amp, Single Phase per Foot		$0.0199	$13.63	5238
	60 Amp, Three Phase per Foot		$0.0283	$19.38	5238
	100 Amp, Single Phase per Foot		$0.0247	$16.88	5238
	100 Amp, Three Phase per Foot		$0.0385	$26.36	5238

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Inspector - Regular Business Hours Per 1/2 Hour			$32.03	5238
	Inspector - Outside Regular Business Hours Per 1/2 Hour			$41.25	5238
	COLLOCATION TERMINATIONS				
	DS0 Cable Placement per 100 Pair Block or,		$0.4837	$244.42	5238
	DS0 Cable Placement per Termination		$0.0091	$4.59	5238
	DS0 Cable per 100 Pair Block or,		$0.6222	$314.40	5238
	DS0 Cable per Termination		$0.0085	$4.31	5238
	DS0 Blocks per 100 Pair Block or,		$1.0849	$548.18	5238
	DS0 Blocks per Termination		$0.0149	$7.51	5238
	DS0 Block Placement per 100 Pair Block or,		$0.5017	$253.50	5238
	DS0 Block Placement per Termination		$0.0069	$3.47	5238
	DS1 Cable Placement per block (28 DS1s) or,		$0.5940	$406.52	5238
	DS1 Cable Placement per Termination		$0.0639	$43.71	5238
	DS1 Cable per block (28 DS1s) or,		$0.5304	$362.96	5238
	DS1 Cable per per Termination		$0.0570	$39.03	5238
	DS1 Panel per block (28 DS1s) or,		$0.6052	$414.16	5238
	DS1 Panel per Termination		$0.0731	$50.00	5238
	DS1 Panel Placement per block (28 DS1s) or,		$0.1268	$86.74	5238
	DS1 Panel Placement per Termination		$0.0136	$9.33	5238
	DS3 Cable Placement per Termination		$0.2419	$165.51	5238
	DS3 Cable per Termination		$0.3425	$234.38	5238
	DS3 Panel/Connector per Termination		$0.3529	$241.50	5238
	DS3 Panel/Connector Placement per Termination		$0.0364	$24.92	5238
	SECURITY				
	Access Card per Employee		$0.86		5238
	Card Access Per Person per Office per Month		$7.90		5238
	C O Clock Synchronization per Port		$7.42		5238
	Space Availability Report, Per Office			$335.01	5357

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	CAGELESS COLLOCATION				
	Quotation Preparation Fee			$4,399.84	5238
	Space Construction for 2 Bays and 1 - 40A Power Feed		$43.77	$29,953.55	5238
	Space Construction Adjustment for 20A Initial Power Feed		-$3.20	-$2,187.15	5238
	Space Construction Adjustment for 30A Initial Power Feed		-$2.04	-$1,395.83	5238
	Space Construction Adjustment for 40A Initial Power Feed		Included in Space Construction		
	Space Construction Adjustment for 60A Initial Power Feed		$2.80	$1,916.17	5238
					5238
	Space Construction Adjustment for Each Additional Bay		$4.44	$3,038.06	5238
	Additional DC Power Feeds - Does not apply to Initial Feed				
	Each Additional 20A Power Feed		$8.11	$5,552.65	5238
	Each Additional 30A Power Feed		$9.27	$6,343.97	5238
	Each Additional 40A Power Feed		$11.31	$7,739.80	5238
	Each Additional 60A Power Feed		$14.11	$9,655.97	5238
	Floor Space Lease, Per Sq. Ft.		$3.69		5238
	CAGED COLLOCATION				
	Quotation Preparation Fee - Caged Construction			$4,783.90	5238
	Space Construction				
	Cage-Up to 100 Sq Ft		$75.84	$51,901.16	5238
	Cage-101 Sq Ft to 200 Sq Ft		$78.70	$53,858.34	5238
	Cage-201 Sq Ft to 300 Sq Ft		$80.92	$55,380.28	5238
	Cage-301 Sq Ft to 400 Sq Ft		$83.71	$57,287.56	5238

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Space Construction Adjustment for 20A Initial Power Feed		-$12.39	-$8,481.43	5238
	Space Construction Adjustment for 30A Initial Power Feed		-$11.28	-$7,721.61	5238
	Space Construction Adjustment for 40A Initial Power Feed		-$8.96	-$6,133.10	5238
	Space Construction Adjustment for 60A Initial Power Feed		Included in Space Construction		
	Space Construction Adjustment for 100A Initial Power Feed		$13.72	$9,389.08	5238
	Space Construction Adjustment for 200A Initial Power Feed		$43.80	$29,974.50	5238
	Space Construction Adjustment for 300A Initial Power Feed		$80.36	$54,995.90	5238
	Space Construction Adjustment for 400A Initial Power Feed		$123.60	$84,587.92	5238
	Additional DC Power Feeds - Does not apply to Initial Feed				
	Each Additional 20A Power Feed		$10.24	$7,004.36	5238
	Each Additional 30A Power Feed		$11.35	$7,764.18	5238
	Each Additional 40A Power Feed		$13.67	$9,352.68	5238
	Each Additional 60A Power Feed		$22.63	$15,485.78	5238
	Each Additional 100A Power Feed		$36.35	$24,874.87	5238
	Each Additional 200A Power Feed		$66.43	$45,460.29	5238
	Each Additional 300A Power Feed		$102.99	$70,481.68	5238
	Each Additional 400A Power Feed		$146.23	$100,073.71	5238
	Rent per Square Foot		$3.69		5238
	Grounding				
	#2 AWG per Foot		$0.0185	$12.65	5238
	1/0 AWG per Foot		$0.0308	$21.05	5238
	4/0 AWG per Foot		$0.0349	$23.92	5238
	350 KCMIL per Foot		$0.0485	$33.18	5238
	500 KCMIL per Foot		$0.0540	$36.97	5238
	750 KCMIL per Foot		$0.0828	$56.65	5238

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	VIRTUAL COLLOCATION				
	Quotation Preparation Fee - Virtual			$4,399.84	5238
	Maintenance - Regular Business Hours Per 1/2 Hour			$28.10	5238
	Maintenance - Outside Regular Business Hours Per 1/2 Hour			$37.60	5238
	Training - Regular Business Hours Per 1/2 Hour			$28.10	5238
	Equipment Bay per Shelf		$3.61		5238
	Engineering - Regular Business Hours Per 1/2 Hour			$32.03	5238
	Engineering - Outside Regular Business Hours Per 1/2 Hour			$41.25	5238
	Installation - Regular Business Hours Per 1/2 Hour			$30.31	5238
	Installation - Outside Regular Business Hours Per 1/2 Hour			$39.13	5238
	Rent per Square Foot		$3.69		5238
	-48 V DC Power Cables				
	20A Power Feed, Per Feed		$8.11	$5,552.65	5238
	30A Power Feed, Per Feed		$9.27	$6,343.97	5238
	40A Power Feed, Per Feed		$11.31	$7,739.80	5238
	60A Power Feed, Per Feed		$14.11	$9,655.97	5238
	CLEC TO CLEC CONNECTIONS				
	Flat Charge (Design Engineering & Installation - NO CABLES.)			$791.63	5352
	Cable Racking (per foot), DS0		$0.17261		5352
	Cable Racking (per foot), DS1		$0.18290		5352
	Cable Racking (per foot), DS3		$0.15906		5352
	Virtual Connections (NO CABLES) DS0 (per 100 Connections)			$224.01	5352
	Virtual Connections (NO CABLES) DS1 (per 28 Connections)			$102.17	5352
	Virtual Connections (NO CABLES) DS3 (per 1 Connection)			$8.84	5352
	Cable Hole (if applicable)			$442.49	5352

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	CLEC TO CLEC CROSS CONNECTION			$256.37	5207
9.0	**UNBUNDLED NETWORK ELEMENTS (UNEs)**				
	Interconnection Tie Pairs (ITP) – Per Termination				
	DS0 Per Connection		$0.48		5238
	DS1 Per Connection		$1.52		5238
	DS3 Per Connection		$15.33		5238
	UNBUNDLED LOOPS				
	Analog Loops				
	Unbundled Loop (2 Wire) Statewide Average		$25.95		5206
	Unbundled Loop (2 Wire) Zone 1		$16.89		5206
	Unbundled Loop (2 Wire) Zone 2		$22.57		5206
	Unbundled Loop (2 Wire) Zone 3		$34.34		5206
	Unbundled Loop (4 Wire) Statewide Average		$51.87		5206
	Unbundled Loop (4 Wire) Zone 1		$33.76		5206
	Unbundled Loop (4 Wire) Zone 2		$45.12		5206
	Unbundled Loop (4 Wire) Zone 3		$68.66		5206
	Unbundled Loop Grooming (2 Wire)		$1.59		5206
	Unbundled Loop Grooming (4 Wire)		$3.64		5206
	Non-loaded Loops				
	CABLE UNLOADING/BRIDGE TAP REMOVAL			$652.83	5207
	Digital Capable Loops				
	Basic Rate ISDN Capable Loop/xDSL/ADSL		Same as 9.2.1		
	DS1 Capable Loop Zone 1		$84.48		5301
	DS1 Capable Loop Zone 2		$84.57		5301
	DS1 Capable Loop Zone 3		$91.39		5301
	DS1 Capable Loop State Avg.		$86.70		5301

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	DS3 Capable Loop Zone 1		$897.72		5301
	DS3 Capable Loop Zone 2		$899.73		5301
	DS3 Capable Loop Zone 3		$1,053.66		5301
	DS3 Capable Loop State Avg.		$947.85		5301
	2-Wire Extension Technology		$4.13		5206
	2-Wire Extension Technology - Unbundled Loop Grooming		$1.60		5206
	DSO Loop Installation Charges				
	LOOP BASIC INSTALLATION FIRST			$88.29	5207
	LOOP BASIC INSTALLATION EA ADDL			$76.07	5207
	LOOP BASIC INSTALL WITH PERFORMANCE TESTING FIRST			$192.29	5207
	LOOP BASIC INSTALL WITH PERFORMANCE TESTING EA ADD'L			$137.97	5207
	LOOP COORD INSTALL, COOP TESTING FIRST			$232.25	5207
	LOOP COORD INSTALL, COOP TESTING EA ADDL			$137.97	5207
	LOOP COORD INSTALL, W/O TESTING FIRST			$95.38	5207
	LOOP COORD INSTALL, W/O TESTING EA ADDL			$83.16	5207
	LOOP BASIC INSTALL COOP TESTING FIRST			$192.29	5207
	LOOP BASIC INSTALL COOP TESTING EA ADDL			$137.97	5207
	DS1 Loop Installation				
	DS1 CAPABLE LOOP BASIC INSTALL FIRST			$144.15	5207
	DS1 CAPABLE LOOP BASIC INSTALL EA ADDL			$110.79	5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	DS1 CAPABLE LOOP BASIC INSTALL PERFORMANCE TEST FIRST			$278.18	5207
	DS1 CAPABLE LOOP PERFORMANCE TEST EA ADDL			$203.72	5207
	DS1 CAPABLE LOOP COORD INSTALL WITH COOPERATIVE TEST FIRST			$318.14	5207
	DS1 CAPABLE LOOP COORD INSTALL WITH COOPERATIVE TEST EA ADDL			$203.72	5207
	DS1 CAPABLE LOOP COORD INSTALL W/O TEST FIRST			$153.26	5207
	DS1 CAPABLE LOOP COORD INSTALL W/O TEST EA ADDL			$119.90	5207
	DS1 CAPABLE LOOP BASIC INSTALL WITH COOPERATIVE TEST FIRST			$278.18	5207
	DS1 CAPABLE LOOP BASIC INSTALL WITH COOPERATIVE TEST EA ADDL			$203.72	5207
	DS3 LOOP INSTALLATION				
	DS3 CAPABLE LOOP BASIC INSTALL FIRST			$144.15	5207
	DS3 CAPABLE LOOP BASIC INSTALL EA ADDL			$110.79	5207
	DS3 CAPABLE LOOP BASIC INSTALL PERFORMANCE TEST FIRST			$278.18	5207
	DS3 CAPABLE LOOP PERFORMANCE TEST EA ADDL			$203.72	5207
	DS3 CAPABLE LOOP COORD INSTALL WITH COOPERATIVE TEST FIRST			$318.14	5207
	DS3 CAPABLE LOOP COORD INSTALL WITH COOPERATIVE TEST EA ADDL			$203.72	5207
	DS3 CAPABLE LOOP COORD INSTALL W/O TEST FIRST			$153.26	5207
	DS3 CAPABLE LOOP COORD INSTALL W/O TEST EA ADDL			$119.90	5207
	DS3 CAPABLE LOOP BASIC INSTALL WITH COOPERATIVE TEST FIRST			$278.18	5207
	DS3 CAPABLE LOOP BASIC INSTALL WITH COOPERATIVE TEST EA ADDL			$203.72	5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	SUB-LOOP				
	Distribution - Statewide Average		$21.24		5235
	Distribution - ZONE 1		$12.12		5235
	Distribution - ZONE 2		$17.33		5235
	Distribution - ZONE 3		$29.72		5235
	Unbundled Distribution Sub-Loop First			$121.43	5207
	Unbundled Distribution Sub-Loop Each Add'l			$55.50	5207
	2-Wire Non Loaded		Same as 9.3.1		
	Building Cable - Per Pair		$1.19		5235
	DS1 Capable Feeder Loop State Avg.		$74.83		5301
	DS1 Capable Feeder Loop Zone1		$72.62		5301
	DS1 Capable Feeder Loop Zone2		$72.71		5301
	DS1 Capable Feeder Loop Zone3		$79.53		5301
	DS1 Feeder Sub-Loop First			$293.36	5207
	DS1 Feeder Sub-Loop Each Add'l			$219.50	5207
	Field Connection Point Quotation Preparation Fee			$1,638.81	5207
	LINE SHARING				
	Shared Loop (per loop per order)		$5.00	$37.71	5207
	OSS Per Line Per Month		$2.68		5205
	Splitter Shelf Charge		$4.77	$537.89	5361
	Splitter in the Common Area - Data to 410 Block		$5.82	$3,189.86	5361
	Splitter in the Common Area - Data Direct to CLEC		$6.11	$3,347.79	5361
	Splitter on the MDF - Data to 410 Block		$1.91	$1,044.37	5361
	Splitter on the MDF - Data Direct to CLEC		$4.09	$2,242.86	5361
	Splitter on the IDF - Data to 410 Block		$1.85	$1,015.26	5361
	Splitter on the IDF - Data Direct to CLEC		$3.47	$1,900.90	5361
	Engineering			$1,280.21	5361

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Network Interface Device (2 Wire) Statewide Average/Network Interface Device				
	NID		$1.39	$68.79	5206/5207
	UDIT				
	UDIT DS0			$307.95	5207
	Over 0 to 8 Miles, Fixed & Over 0 to 8 Miles, Per Air Mile	$19.27	$0.13		5206
	Over 8 to 25 Miles, Fixed & Over 8 to 25 Miles, Per Air Mile	$19.29	$0.12		5206
	Over 25 to 50 Miles, Fixed & Over 25 to 50 Miles, Per Air Mile	$19.33	$0.12		5206
	Over 50 Miles, Fixed & Over 50 Miles, Per Air Mile	$19.28	$0.06		5206
	UDIT DS1			$352.92	5207
	Over 0 to 8 Miles, Fixed & Over 0 to 8 Miles, Per Air Mile	$31.14	$1.45		5206
	Over 8 to 25 Miles, Fixed & Over 8 to 25 Miles, Per Air Mile	$31.40	$1.18		5206
	Over 25 to 50 Miles, Fixed & Over 25 to 50 Miles, Per Air Mile	$31.87	$2.14		5206
	Over 50 Miles, Fixed & Over 50 Miles, Per Air Mile	$31.83	$1.12		5206
	UDIT DS3			$352.92	5207
	Over 0 to 8 Miles, Fixed & Over 0 to 8 Miles, Per Air Mile	$197.32	$61.17		5206
	Over 8 to 25 Miles, Fixed & Over 8 to 25 Miles, Per Air Mile	$200.35	$18.78		5206
	Over 25 to 50 Miles, Fixed & Over 25 to 50 Miles, Per Air Mile	$184.41	$23.73		5206
	Over 50 Miles, Fixed & Over 50 Miles, Per Air Mile	$194.79	$16.34		5206

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	UDIT OC3			$352.92	5207
	Over 0 to 8 Miles, Fixed & Over 0 to 8 Miles, Per Air Mile	$655.37	$205.64		5206
	Over 8 to 25 Miles, Fixed & Over 8 to 25 Miles, Per Air Mile	$660.44	$66.12		5206
	Over 25 to 50 Miles, Fixed & Over 25 to 50 Miles, Per Air Mile	$633.02	$86.07		5206
	Over 50 Miles, Fixed & Over 50 Miles, Per Air Mile	$650.60	$60.95		5206
	UDIT OC12			$352.92	5207
	Over 0 to 8 Miles, Fixed & Over 0 to 8 Miles, Per Air Mile	$1,837.87	$97.75		5206
	Over 8 to 25 Miles, Fixed & Over 8 to 25 Miles, Per Air Mile	$1,837.87	$94.58		5206
	Over 25 to 50 Miles, Fixed & Over 25 to 50 Miles, Per Air Mile	$1,837.87	$106.76		5206
	Over 50 Miles, Fixed & Over 50 Miles, Per Air Mile	$1,837.87	$122.10		5206
	Low Side Channel Performance		$11.52		5236
	Low Side Channel Performance with MULTIPLEXING		$7.35		5236
	Multiplexing DS3 to DS1, Per system		$232.15		5206
	Multiplexing DS1 to DS0, Per System		$210.68		5206
	UDIT M1-3 Multiplexing, Per System			$2,569.47	5207
	UDIT M1-0 Multiplexing High side, Per system			$273.68	5207
	UDIT M1-0 Multiplexing Low side, Per Channel		$7.35	$239.83	5236/5207
	DS1 E-UDIT Without Customer Location Electronics		$55.78	$411.42	5206/5207
	DS3 E-UDIT Without Customer Location Electronics		$317.26	$411.42	5206/5207
	OC3 E-UDIT Without Customer Location Electronics		$692.68	$411.42	5206/5207
	OC12 E-UDIT Without Customer Location Electronics		$1,301.75	$411.42	5206/5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	UDIT DS0 REARRANGEMENT DUAL OFFICE			$219.07	5207
	UDIT DS0 REARRANGEMENT SINGLE OFFICE			$176.26	5207
	UDIT HICAP REARRANGEMENT DUAL OFFICE			$266.02	5207
	UDIT HICAP REARRANGEMENT SINGLE OFFICE			$238.39	5207
	Unbundled Dark Fiber				
	DARK FIBER - INITIAL RECORDS INQUIRY CO TO CO OR CO TO CUST PREM			$159.49	5207
	DARK FIBER - MID-SPAN SPLICE/STRUCTURE POINT INQUIRY (Complex)			$203.37	5207
	DARK FIBER - FIELD VERIFICATION AND QUOTE PREPARATION			$1,485.33	5207
	UDF IOF				
	Interoffice Dark Fiber - Per Route Mile		$83.07		5301
	2 Fiber Termination - Wire Center		$6.77		5301
	2 Fiber Cross Connect		$4.03		5301
	Optical Cross Connect/Fiber Pair/Central Office			$21.56	5207
	Dark fiber NRC Per Occurrence, Per route - First fiber Pair			$563.63	5207
	Dark fiber NRC Per Occurrence, Per route - Ea. Add'l Fiber Pair			$271.89	5207
	UDF Loop				
	Unbundled Dark Fiber Loop - Per 2 Fiber Loop		$110.86		4700
	2 fiber Loop Termination - Wire Center		$7.01		4700
	2 fiber loopTermination - Premises		$6.42		4700
	Optical Cross Connect/Fiber Pair/Central Office			$21.56	5207
	Dark fiber NRC Per Occurrence, Per route - First fiber Pair			$563.63	5207
	Dark fiber NRC Per Occurrence, Per route - Ea. Add'l Fiber Pair			$271.89	5207
	Shared Transport				
	Shared Transport per MOU		$0.001519		5206

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Local Tandem Switching				
	DS1 Trunk Port Facility		$56.98	$220.95	5206/5207
	Member Trunk Port 1st			$211.06	5207
	Member Trunk Port Ea. Add'l			$24.49	5207
	Local Tandem Switching per MOU		$0.002376		5206
	Local Switching				
	DS0 Analog Line Port		$1.28	$145.57	5206/5207
	Each Addditional DS0 Analog Line Port		$1.28	$95.75	5206/5207
	Local Switching UNE per MOU		$0.002599		5206
	VERTICAL FEATURES				
	10XXX Direct Dialed Blocking		$0.08		5296
	Account Codes - per system		$7.27	$80.01	5011/5207
	Attendant Access Line - per station line		$0.08	$1.16	5011/5207
	Audible Message Waiting		$0.13	$1.01	5011/5207
	Authorization Codes - per system		$3.13	$239.29	5011/5207
	Auto Callback		$0.08		5296
	Automatic Line		$0.07	$0.34	5011/5207
	Automatic Route Selection - Common Equip. per system		$2.12	$2,099.56	5011/5207
	Blocking of pay per call services		$0.10		5296
	Bridging		$0.08		5296
	Call Drop		$0.07	$0.34	5011/5207
	Call Exclusion - Automatic		$0.07	$1.01	5011/5207
	Call Exclusion - Manual		$0.07	$0.67	5011/5207
	Call Forward Don't Answer - All Calls		$0.13		5296
	Call Forwarding Incoming Only		$0.08		5296
	Call Forwarding Intra Group Only		$0.08		5296
	Call Forwarding Variable Remote		$0.11		5296
	Call Forwarding: Busy Line (Expanded)		$0.09		5296
	Call Forwarding: Busy Line (External)		$0.09		5296

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Call Forwarding: Busy Line (External) Don't Answer		$0.15		5296
	Call Forwarding: Busy Line (Overflow)		$0.09		5296
	Call Forwarding: Busy Line (Overflow) Don't Answer		$0.15		5296
	Call Forwarding: Busy Line (Programmable)		$0.10		5296
	Call Forwarding: Busy Line/Don't Answer Programmable Svc. Establishment			$15.66	5207
	CF DON'T ANSWER/CF BUSY CUSTOMER PROGRAMMABLE - PER LINE			$1.01	5207
	Call Forwarding: Busy Line/Don't Answer (Expanded)		$0.15	37.7.92	5296/5207
	Call Forwarding: Don't Answer		$0.13	$37.92	5296/5207
	Call Forwarding: Don't Answer (Expanded)		$0.13		5296
	Call Forwarding: Don't Answer (Programmable)		$0.13		5296
	Call Forwarding: Variable		$0.10		5296
	Call Forwarding: Variable - no call complete option		$0.10		5296
	Call Hold		$0.08		5296
	Call Hold/3-Way/Call Transfer		$0.32		5296
	Call Park (Basic - Store & Retrieve)		$0.09		5296
	Call Pickup		$0.08		5296
	Call Transfer		$0.32		5296
	Call Waiting Dial Originating		$0.08		5296
	Call Waiting Indication - per timing state		$0.46	$1.01	5296/5207
	Call Waiting Originating		$0.09		5296
	Call Waiting Terminating - All Calls		$0.11		5296
	Call Waiting Terminating - Incoming Only		$0.11		5296
	Call Waiting/ Cancel Call Waiting		$0.14		5296
	CENTREX COMMON EQUIPMENT			$1,206.23	5207
	Centrex Management System (CMS)		$0.60		5296
	Centrex Plus DID numbers per number		$0.11		5296
	Centrex Plus to Centrex Plus		$5.28		5296
	Centrex Plus to IC Carrier		$5.28		5296
	Centrex Plus to PBX/Key Blocked		$5.28		5296
	Centrex Plus to PBX/Key Non-Blocked		$5.28		5296
	CFBL - All Calls		$0.09		5296
	CFBL - Incoming Only		$0.09	$37.92	5296/5207
	CFDA Incoming Only		$0.08	$37.92	5296/5207
	CLASS - Anonymous Call Rejection		$0.33		5296

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	CLASS - Call Waiting ID		$0.10		5296
	CLASS - Calling Name & Number		$0.41		5296
	CLASS - Calling Number Delivery		$0.10		5296
	CLASS - Calling Number Delivery - Blocking		$0.34		5296
	CLASS - Continuous Redial		$0.23	$1.26	5296/5207
	CLASS - Last Call Return		$0.10	$1.27	5296/5207
	CLASS - Priority Calling		$0.19	$1.20	5296/5207
	CLASS - Selective Call Forwarding		$0.16	$1.26	5296/5207
	CLASS - Selective Call Rejection		$0.23	$1.20	5296/5207
	Common Equipment per 1.544 Mbps facility (DS1)		$58.01		5296
	Conference Calling - Meet Me		$14.03	$42.47	5296/5207
	Conference Calling - Preset		$10.27	$42.47	5296/5207
	Custom Ringing First Line (Short/Long/Short)		$0.09		5296
	Custom Ringing First Line (Short/Short)		$0.09		5296
	Custom Ringing First Line (Short/Short/Long)		$0.09		5296
	Custom Ringing Second Line (Short/Long/Short)		$0.09		5296
	Custom Ringing Second Line (Short/Short)		$0.09		5296
	Custom Ringing Second Line (Short/Short/Long)		$0.09		5296
	Custom Ringing Third Line (Short/Long/Short)		$0.08		5296
	Custom Ringing Third Line (Short/Short)		$0.08		5296
	Custom Ringing Third Line (Short/Short/Long)		$0.08		5296
	Data Call Protection (DMS 100)		$0.07		5296
	Dir Sta Sel/Busy Lamp Fld per arrangement		$1.76	$0.34	5296/5207
	Directed Call Pickup with Barge-in		$0.18	$20.16	5296/5207
	Directed Call Pickup without Barge-in		$0.10	$20.16	5296/5207
	Distinctive Ring/Distinctive Call Waiting		$0.09	$40.31	5296/5207
	Distinctive Ringing		$0.09		5296
	EBS - Set Interface - per station line		$1.39		5296
	Executive Busy Override		$0.08		5296
	Expensive Route Warning Tone- per system		$0.07	$71.91	5296/5207
	Facility Restriction Level - per system		$0.07	$44.24	5296/5207
	Feature Display		$0.08		5296
	Group Intercom		$0.15	$0.46	5296/5207
	Hot Line - per line		$0.13	$1.01	5296/5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Hunting: Multiposition Circular Hunting		$0.26		5296
	Hunting: Multiposition Hunt Queuing		$0.22	$38.59	5296/5207
	Hunting: Multiposition Series Hunting		$0.26		5296
	Hunting: Multiposition with Announcement in Queue		$3.08	$38.59	5296/5207
	Hunting: Multiposition with Music in Queue		$1.10	$40.75	5296/5207
	Incoming Calls Barred		$0.08		5296
	International Direct Dial Blocking		$0.08		5296
	ISDN Short Hunt		$0.56	$1.70	5296/5207
	Line Side Answer Supervision		$0.09		5296
	Loudspeaker Paging - per trunk group		$21.11	$176.53	5296/5207
	Make Busy Arrangements - per group		$0.35	$0.67	5296/5207
	Make Busy Arrangements - per line		$0.14	$0.67	5296/5207
	Message Center - per main station line		$0.07	$0.34	5296/5207
	Message Waiting Indication Audible/Visual		$0.13		5296
	Message Waiting Visual		$0.13	$0.34	5296/5207
	Music On Hold - per system		$21.99	$23.13	5296/5207
	Network Speed Call		$0.08		5296
	Night Service Arrangement		$0.08		5296
	Outgoing Calls Barred		$0.08		5296
	Outgoing Trunk Queuing		$0.13		5296
	Privacy Release		$0.08	$0.47	5296/5207
	Query Time		$0.24	$0.34	5296/5207
	Speed Calling 1 Digit Controller		$0.08		5296
	Speed Calling 1 Digit User		$0.08		5296
	Speed Calling 1# List Individual		$0.08		5296
	Speed Calling 2 Digit Controller		$0.08		5296
	Speed Calling 2 Digit User		$0.08		5296
	Speed Calling 2# List Individual		$0.08		5296
	Speed Calling 30 Number		$0.08		5296
	Speed Calling 8 Number		$0.08		5296
	Station Camp-On Service - per main station		$8.18	$0.34	5296/5207
	Station Dial Conferencing (6 Way)		$1.64		5296
	Station Message Detail Recording (SMDR)		$0.18		5296
	Three Way Calling		$0.32		5296

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Time and Date Display		$0.18		5296
	Time of Day Control for ARS - per system		$0.07	$125.82	5296/5207
	Time of Day NCOS Update		$0.08	$0.54	5296/5207
	Time of Day Routing - per line		$0.13	$0.52	5296/5207
	Toll Restriction Service		$0.08		5296
	Trunk Answer Any Station		$0.08		5296
	Trunk Verification from Designated Station		$0.07	$0.39	5296/5207
	UCD in hunt group - per line		$7.92	$0.67	5296/5207
	UCD with Music After Delay		$5.24		5296
	CMS - SYSTEM ESTABLISHMENT - INITIAL INSTALLATION			$971.60	5207
	CMS - SYSTEM ESTABLISHMENT - SUBSEQUENT INSTALLATION			$485.80	5207
	CMS - PACKET CONTROL CAPABILITY, PER SYSTEM			$485.80	5207
	SMDR-P - SERVICE ESTABLISHMENT CHARGE, INITIAL INSTALLATION			$339.30	5207
	SMDR-P - ARCHIVED DATA			$177.29	5207
	CLASS - Call Trace (per occurrence)		$2.39		5297
	Subsequent Order Charge			$13.57	5207
	Unbundled 2 Wire Digital Line Port (BRI/ISDN)		$10.56	$219.37	5206/5207
	Unbundled 2 Wire Digital Line Port (BRI/ISDN) Ea. Add'l		$10.56	$219.37	5206/5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Digital Trunk Ports				
	UnBundled DS1 DID Trunk Port Facility		$3.38	$212.74	5206/5207
	UNBUNDLED (DS0) DIGITAL TRUNK PORT - 1ST			$209.14	5207
	UNBUNDLED (DS0) DIGITAL TRUNK PORT - ADDITIONAL			$50.84	5207
	Unbundled DS1 PRI - ISDN Trunk Port		$228.78	$648.55	5206/5207
	MEMBER (DS0) TRUNK PORT - 1ST		$15.78	$209.14	5206/5207
	MEMBER (DS0) TRUNK PORT - ADDITIONAL		$15.78	$50.84	5206/5207
	DS0 Trunk Port		$15.78		5206
	Unbundled (DS0) Analog Trunk Port, First			$123.11	5207
	Unbundled (DS0) Analog Trunk Port, E.a Add'l			$28.57	5207
	Local Switching UNE per Minute of Use		$0.002599		5206
	COMMON CHANNEL SIGNALING/SS7				
	STP Port		$249.69	$440.28	5206/5207
	CCSAC OPTIONS BASIC FIRST ACTIVATION PER ORDER			$115.34	5207
	CCSAC OPTIONS BASIC EACH ADDL ACTIVATION PER ORDER			$9.58	5207
	CCSAC OPTIONS DATABASE FIRST ACTIVATION PER ORDER			$134.49	5207
	CCSAC OPTIONS DATABASE EA ADDL ACTIVATION PER ORDER			$57.45	5207
	ISUP Signal Formulation		$0.0020272		5206
	ISUP Signal Transport		$0.0013148		5206
	TCAP Signal Transport		$0.0002914		5206
	ISUP Signal Switching		$0.0009192		5206
	TCAP Signal Switching		$0.0005754		5206
	LIDB per Query		$0.0009435	Same as 9.13.2.2	5206

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	8XX DATABASE QUERY SERVICE				
	Basic Query, per Query		$0.02007675	Same as 9.13.2.2	5206
	POTS Translation		$0.00000165		5206
	Call Handling & Destination Feature		$0.00000055		5206
	ICNAM, PER QUERY				
	UCNAM Query - per Query		$0.000836	Same as 9.13.2.2	5212
	Miscellaneous Elements				
	ADDITIONAL ENGINEERING - BASIC (PER HALF HOUR)			$31.84	5207
	ADDITIONAL ENGINEERING - OVERTIME (PER HALF HOUR)			$39.38	5207
	ADDITIONAL LABOR INSTALLATION - OVERTIME (PER HALF HOUR)			$9.05	5207
	ADDITIONAL LABOR INSTALLATION - PREMIUM (PER HALF HOUR)			$18.10	5207
	ADDITIONAL LABOR OTHER - BASIC (PER HALF HOUR)			$27.75	5207
	ADDITIONAL LABOR OTHER - OVERTIME (PER HALF HOUR)			$37.06	5207
	ADDITIONAL LABOR OTHER - PREMIUM (PEER HALF HOUR)			$46.39	5207
	TESTING AND MAINTENANCE - BASIC (PER HALF HOUR)			$29.48	5207
	TESTING AND MAINTENANCE - OVERTIME (PER HALF HOUR)			$39.38	5207
	TESTING AND MAINTENANCE - PREMIUM (PER HALF HOUR)			$49.28	5207
	MAINTENANCE OF SERVICE - BASIC (PER HALF HOUR)			$27.75	5207
	MAINTENANCE OF SERVICE - OVERTIME (PER HALF HOUR)			$37.06	5207
	MAINTENANCE OF SERVICE - PREMIUM (PER HALF HOUR)			$46.39	5207
	ADDITIONAL COOP ACCEPTANCE TESTING - BASIC (PER HALF HOUR)			$29.48	5207
	ADDITIONAL COOP ACCEPTANCE TESTING - OVERTIME (PER HALF HOUR)			$39.38	5207
	ADDITIONAL COOP ACCEPTANCE TESTING - PREMIUM (PER HALF HOUR)			$49.28	5207
	NONSCHEDULED COOP TESTING - BASIC (PER HALF HOUR)			$29.48	5207
	NONSCHEDULED COOP TESTING - OVERTIME (PER HALF HOUR)			$39.38	5207
	NONSCHEDULED COOP TESTING - PREMIUM (PER HALF HOUR)			$49.28	5207
	NONSCHEDULED MANUAL TESTING - BASIC (PER HALF HOUR)			$29.48	5207
	NONSCHEDULED MANUAL TESTING - OVERTIME (PER HALF HOUR)			$39.38	5207
	NONSCHEDULED MANUAL TESTING - PREMIUM (PER HALF HOUR)			$49.28	5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	COOPERATIVE SCHEDULED TESTING - LOSS (PER MONTH)			$0.08	5207
	COOPERATIVE SCHEDULED TESTING - C-MESSAGE NOISE (PER MONTH)			$0.08	5207
	COOPERATIVE SCHEDULED TESTING - BALANCE (PER MONTH)			$0.33	5207
	COOPERATIVE SCHEDULED TESTING - GAIN SLOPE (PER MONTH)			$0.08	5207
	COOPERATIVE SCHEDULED TESTING - C-NOTCHED NOISE (PER MONTH)			$0.08	5207
	MANUAL SCHEDULED TESTING - LOSS (PER MONTH)			$0.17	5207
	MANUAL SCHEDULED TESTING - C-MESSAGE NOISE (PER MONTH)			$0.17	5207
	MANUAL SCHEDULED TESTING - BALANCE (PER MONTH)			$0.67	5207
	MANUAL SCHEDULED TESTING - GAIN SLOPE (PER MONTH)			$0.17	5207
	MANUAL SCHEDULED TESTING - C-NOTCHED NOISE (PER MONTH)			$0.17	5207
	ADDITIONAL DISPATCH CHARGE			$84.60	5207
	DATE CHANGE			$10.40	5207
	DESIGN CHANGE			$74.10	5207
	DS1 Regeneration		$1.97	$480.53	5354
	DS3 Regeneration		$6.09	$1,817.89	5354

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	UNE-Platform				
	UNE-PLATFORM POTS, CENTREX, PAL, ANALOG PBX FIRST MECHANIZED EXISTING SERVICE			$0.68	5207
	UNE-PLATFORM POTS, CENTREX, PAL, ANALOG PBX EA ADDL MECHANIZED EXISTING SERVICE			$0.14	5207
	UNE-PLATFORM POTS, CENTREX, PAL, ANALOG PBX FIRST MANUAL EXISTING SERVICE			$16.28	5207
	UNE-PLATFORM POTS, CENTREX, PAL, ANALOG PBX EA ADDL MANUAL EXISTING SERVICE			$2.71	5207
	UNE-PLATFORM PBX DID TRUNKS EXISTING SERVICE			$20.70	5207
	UNE-PLATFORM PBX DID TRUNKS EXISTING SERVICE EACH ADDL			$3.13	5207
	UNE-PLATFORM ISDN BRI EXISTING SERVICE FIRST			$15.15	5207
	UNE-PLATFORM ISDN BRI EXISTING SERVICE EACH ADDL			$3.13	5207
	UNE-PLATFORM ISDN PRI, DSS Per DS1 Facility EXISTING SERVICE			$51.22	5207
	UNE-PLATFORM ISDN PRI, DSS Per First Trunk EXISTING SERVICE			$18.85	5207
	UNE-PLATFORM ISDN PRI, DSS Per Each Addl Trunk EXISTING SERVICE			$3.13	5207
	UNE-PLATFORM POTS FIRST LINE MECHANIZED NEW SERVICE			$55.56	5207
	UNE-PLATFORM POTS EA ADDL LINE MECHANIZED NEW SERVICE			$15.94	5207
	UNE-PLATFORM POTS FIRST LINE MANUAL NEW SERVICE			$82.49	5207
	UNE-PLATFORM POTS EA ADDL LINE MANUAL NEW SERVICE			$18.52	5207

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	UNE-COMBINATION PRIVATE LINE				
	DS0/DS1/DS3/OCN/INTERGRATED T1 EXISTING SERVICE			$41.05	5207
	ENHANCED EXTENDED LOOP (EEL)				
	DS0 ENHANCED EXTENDED LOOP FIRST			$250.19	5207
	DS0 ENHANCED EXTENDED LOOP EACH ADDITIONAL			$218.81	5207
	DS1 ENHANCED EXTENDED LOOP FIRST			$308.19	5207
	DS1 ENHANCED EXTENDED LOOP EACH ADDIDTIONAL			$262.31	5207
	DS3 ENHANCED EXTENDED LOOP FIRST			$332.66	5207
	DS3 ENHANCED EXTENDED LOOP EACH ADDIDTIONAL			$286.78	5207
	DS1 ENHANCED EXTENDED LOOP TRANSPORT MUX			$258.16	5207
	DS3 ENHANCED EXTENDED LOOP TRANSPORT MUX			$258.16	5207
	EEL Transport				
	DS0 EEL Transport			$307.95	5207
	DS0 Over 0 to 8 Miles	$19.27	$0.13		5206
	DS0 Over 8 to 25 Miles	$19.29	$0.12		5206
	DS0 Over 25 to 50 Miles	$19.33	$0.12		5206
	DS0 Over 50 Miles	$19.28	$0.06		5206
	DS1 EEL Transport			$352.92	5207
	DS1 Over 0 to 8 Miles	$31.14	$1.45		5206
	DS1 Over 8 to 25 Miles	$31.40	$1.18		5206
	DS1 Over 25 to 50 Miles	$31.87	$2.14		5206
	DS1 Over 50 Miles	$31.83	$1.12		5206
	DS3 EEL Transport			$352.92	5207
	DS3 Over 0 to 8 Miles	$197.32	$61.17		5206
	DS3 Over 8 to 25 Miles	$200.35	$18.78		5206
	DS3 Over 25 to 50 Miles	$184.41	$23.73		5206
	DS3 Over 50 Miles	$194.79	$16.34		5206

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
	Multiplexing				
	DS3 to DS1, Per System-Rec., Per Channel-NRC		$232.15	$268.62	5206/5207
	DS1 to DS0, Per System-Rec., Per Channel-NRC		$210.68	$268.62	5206/5207
	DS0 Channel Performance				
	DS0 Low Side Channelization		$11.52		5236
	DS1/DS0 MUX, Low Side Channelization		$7.35	$239.83	5236/5207
	Unbundled Packet Switching				
	Unbundled Packet Switch Customer Channel		$23.45		5307
	UPS Customer Channel and Shared Distribution Loop			$60.14	5299
	UPS Customer Channel and Unbundled Distribution Subloop			$127.17	5299
	UPS Customer Channel and CLEC Provided Loop			$60.14	5299
	Unbundled Packet Switch Port DS3 Interface		$208.02	$227.50	5307/5300
	Unbundled Packet Switch Port DS1 Interface		$135.05	$227.50	5307/5300
	Unbundled Packet Switch DSLAM Functionality		$20.29		
10.8	**ACCESS TO POLES, DUCTS, CONDUITS AND RIGHT OF WAY**				
	Pole Inquiry Fee, per Mile			$322.99	5207
	Innerduct Inquiry Fee, per Mile			$388.25	5207
	ROW Inquiry Fee			$143.49	5207
	ROW Document Preparation			$143.49	5207
	Field Verification Fee, per Pole			$35.87	5207
	Field Verification Fee, per Manhole			$466.34	5207
	Planner Verification, Per Manhole			$16.00	5207
	Manhole Verification Inspector per Manhole			$286.98	5207
	Manhole Make-Ready Inspector per Manhole			$430.47	5207
	Pole Atachment Fee, per Foot, Per Pole, per Year		$4.28	Poles Attachment Formula	
	Innerduct Occupancy Fee, per Foot, per Year		$0.36	Conduit Attachment Formula	

Summary of Recurring and Nonrecurring Costs

Section Number	Cost Element	Recurring & Recurring/Fixed (if appropriate) TELRIC + Common	Rec & Rec/Mile (if applicable) TELRIC + Common	Non-Recurring (TELRIC+Common)	COST STUDY ID#
12.0	**OPERATIONAL SUPPORT SYSTEMS**				
	Daily Usage Record File, per Record		$0.0007460		5211
17.0	**BONA FIDE REQUEST PROCESS**			$2,410.58	5207