FLORIDA PUBLIC SERVICE COMMISSION
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M E M O R A N D U M

MARCH 25, 1998

TO: DIRECTOR, DIVISION OF RECORDS AND REPORTING (BAYO)

FROM: DIVISION OF COMMUNICATIONS (SIRIANNI, CORDIANO, FOGELMAN, KING, NORTON, OLLILA, STAVANJA)
DIVISION OF AUDITING/FINANCIAL ANALYSIS (CASSEAUX, LEE, MAUREY)
DIVISION OF LEGAL SERVICES (PELLEGRINI, KEATING)

RE: DOCKET NO. 960757-TP - PETITION BY METROPOLITAN FIBER SYSTEMS OF FLORIDA, INC. FOR ARBITRATION WITH BELLSOUTH TELECOMMUNICATIONS, INC. CONCERNING INTERCONNECTION RATES, TERMS, AND CONDITIONS, PURSUANT TO THE FEDERAL TELECOMMUNICATIONS ACT OF 1996.

DOCKET NO. 960833-TP - PETITION BY AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC. FOR ARBITRATION OF CERTAIN TERMS AND CONDITIONS OF A PROPOSED AGREEMENT WITH BELLSOUTH TELECOMMUNICATIONS, INC. CONCERNING INTERCONNECTION AND RESALE UNDER THE TELECOMMUNICATIONS ACT OF 1996.

DOCKET NO. 960846-TP - PETITION BY MCI TELECOMMUNICATIONS CORPORATION AND MCI METRO ACCESS TRANSMISSION SERVICES, INC. FOR ARBITRATION OF CERTAIN TERMS AND CONDITIONS OF A PROPOSED AGREEMENT WITH BELLSOUTH TELECOMMUNICATIONS, INC. CONCERNING INTERCONNECTION AND RESALE UNDER THE TELECOMMUNICATIONS ACT OF 1996.

AGENDA: APRIL 6, 1998 - SPECIAL AGENDA - POST HEARING DECISION - PARTICIPATION IS LIMITED TO COMMISSIONERS AND STAFF

SPECIAL INSTRUCTIONS: S:\PSC\CMU\WP\960833TP.RCM

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LIST OF ACRONYMS USED IN RECOMMENDATION

ACSI	American Communications Services, Inc., American Communications Services of Jacksonville Inc.
ADSL	Asymmetrical Digital Subscriber Line
AIN	Advanced Intelligent Network
AFIG	Assignment Facilities Inventory Group
ALEC	Alternative Local Exchange Carrier
AT&T	AT&T Communications of the Southern States, Inc.
BDFB	Battery distribution fuse bay
BOC	Bell Operating Companies
BR	Brief of Evidence
BST	BellSouth Telecommunications, Inc.
CABS	Carrier Access Billing System
CAM	Cost Allocation Manual
CAPM	Capital Asset Pricing Model
CBG	Census Block Group
CGI	Common Gateway Interface
CLEC	Competitive Local Exchange Carrier
CO	Central Office
CPG	Circuit Provisioning Group
DAML	Digital Additional Main Line

DCF	Discounted Cash Flow
DCS	Digital cross-connect system
DDM	Dividend Discount Models
DIP	Dedicated Inside Plant
DOP	Dedicated Outside Plant
DA	Directory Assistance
DLC	Digital Loop Carrier
DOE	Direct Order Entry
DSX	Digital signal cross-connect
EDI	Electronic Data Interchange
EXACT	Exchange Access Control and Tracking System
EXH	Exhibit
FCC	Federal Communications Commission
FOC	Firm Order Confirmation
FPSC	Florida Public Service Commission
GNP	Gross National Product
HDSL	High-bit rate Digital Subscriber Line
HVAC	Heating, Ventilation, and Air Conditioning
IBES	Institutional Brokers' Estimate Service
ICB	Individual Case Basis
ICI	Intermedia Communications of Florida, Inc.
ILEC	Incumbent Local Exchange Carrier

ISDN	Integrated Services Digital Network
IXC	Interexchange Carrier
LCSC	Local Carrier Service Center
LENS	Local Exchange Navigation System
LEO	Local Exchange Ordering
LESOG	Local Exchange Service Order Generator
LFAC	Loop Facilities Assignment Center
LRIC	Long Run Incremental Cost
M/B	Market-to-Book
MCI	MCI Metro Access Transmission Services, Inc. & MCI Telecommunications Corporation
MDF	Main distribution frame
MFS	Metropolitan Fiber Systems of Florida, Inc.
OSP	Outside Plant
OSS	Operational Support Systems
PE	Price-Earnings
POT	Point of termination
RBHC	Regional Bell Holding Company
RBOC	Regional Bell Operating Company
RNS	Regional Negotiation System
S&P	Standard & Poor's
SCIS	Switching Cost Information System
SME	Subject Matter expert

SONET	Synchronous Optical Network
SONGS	Service Order Negotiation System
Sprint	Sprint Communications Company Limited Partnership/Sprint Metropolitan Network, Inc.
Sq. Ft.	Square Feet
TA96/Act	Telecommunications Act of 1996
TAFI	Trouble Analysis Facilitation Interface
TCG	TCG of South Florida
TELRIC	Total Element Long Run Incremental Cost
Time Warner	Time Warner AxS of Florida, L.P./Time Warner Connect
TIRKS	Trunk Information Record Keeping System
TPI	Telephone Plant Index
TR	Transcript
TSLRIC	Total Service Long Run Incremental Cost
UNE	Unbundled Network Element
USOA	Uniform Systems of Accounts
xDSL	All types of DSL (e.g., ADSL & HDSL)
YTM	Yield-to-Maturity

EXECUTIVE SUMMARY

Issue 1 addresses the appropriate permanent recurring and non-recurring rates for the following unbundled network elements (UNEs):

(a) Network interface device (NID);
(b) 2-wire/4-wire Loop Distribution;
(c) Virtual Collocation:
(d) Physical Collocation;
(e) Directory Assistance;
(f) Dedicated Transport (Non-recurring only);
(g) 4-wire analog port;
(h) 2-wire ADSL-compatible loop; and
(i) 2-wire/4-wire HDSL-compatible loop.

Staff recommends that the Commission set rates for these elements as outlined on pages 12-13 of staff's recommendation statement. In developing costs to be used to establish permanent rates for many of these elements, staff determined that decisions on certain inputs directly affect the cost development of multiple UNEs. These common issues are discussed in Subparts I - VII.

Subpart I addresses the appropriate cost of capital to be used in developing costs for UNEs. Staff recommends an overall cost of capital of 9.9%. This is the fall-out of staff's recommended capital structure of 60% equity and 40% debt, a forward-looking cost of debt of 6.7%, and a cost of equity of 12.0%.

Subpart II addresses the appropriate depreciation rates to be used in developing costs for UNEs. Staff is recommending projection lives and net salvage, to the extent there is available information in the record, on Florida specific data and planning. Staff recommends the depreciation rates in Attachment A be used in the cost studies.

Subpart III addresses the appropriate tax factors to be used in developing costs for UNEs. Staff is recommending the following Florida-specific tax factors: a combined state and federal income tax factor of 38.57%, a gross receipts factor of 1.53%, and an ad valorem and other factor of 1.20%.

Subpart IV addresses the appropriate shared and common costs to be included in developing costs for UNEs. Staff recommends that BST reduce its network operating expenses in accounts 6531-6535 and 6512 by an additional 30%, and its G&A expenses in accounts 6711-6712 and 6721-6728 by an additional 15%. Staff also recommends that there be no shared costs included in labor rates; instead, the shared costs should be reflected in the shared cost factors. As a

result of staff's adjustments, staff recommends a common cost factor of 5.12%, and the shared cost factors shown on Attachment B, be used in developing rates for UNEs.

Subpart V addresses BST's proposed residual revenue requirement. Staff is recommending that the residual recovery requirement be excluded from BellSouth's proposed recurring rates for loops and ports.

Subpart VI addresses Operational Support Systems. Staff is not making a recommendation in this proceeding as to whether OSS is an unbundled network element. Staff has determined that BST's LCSC costs are a component of its operational support systems and thus must be excluded from recovery at this time. Pursuant to Commission Order No. PSC-96-0123-PCO-TP, all ordering charges, manual or electronic, are not part of the non-recurring rates being set in this proceeding.

Subpart VII addresses non-recurring charges. Staff is recommending that work times, labor rates, and discount factors that make up the calculations of disconnect costs should be excluded from the calculation of installation costs that determine the non-recurring charges.

CASE BACKGROUND

On December 16, 1996, the Commission issued Order No. PSC-96-1531-FOF-TP, in Docket No. 960757-TP. In that Order, which involved Metropolitan Fiber Systems of Florida, Inc. (MFS) and BellSouth Telecommunications, Inc., (BellSouth), the Commission ordered BellSouth to file cost studies so that permanent rates could be established for specific unbundled network elements. On December 31, 1996, the Commission issued Order No. PSC-96-1579-FOF-TP in Docket Nos. 960833-TP and 960846-TP. In that Order, which involved Bellsouth, AT&T, and MCI Telecommunications Corporation and MCI Metro Access Transmission Services, Inc., (MCI), the Commission again ordered BellSouth to file cost studies. Specifically, BellSouth was ordered to file cost studies on those elements for which the Commission established interim rates so that permanent rates could be established.

Section 252(g) of the Telecommunications Act of 1996, provides that a State Commission may, to the extent practical, consolidate proceedings under sections 214(e), 251(f), 253 and 252 to reduce administrative burdens on telecommunications carriers, other parties to the proceedings, and the State commission in carrying out its responsibilities under the Act. Thus, Dockets Nos. 960833-TP, 960846-TP, and 960757-TP were consolidated and set for hearing by Order No. PSC-97-1303-PCO-TP, issued October 21, 1997.

On October 3, 1997, MFS filed a request to include issues in this proceeding regarding geographically deaveraged loops. MFS also requested oral argument before the prehearing officer. By Order No. PSC-97-1303-PCO-TP, issued October 21, 1997, MFS's request for oral argument and its request to add an issue on geographic deaveraging were denied.

By Order No. PSC-97-1399-PCO-TP, issued November 6, 1997, American Communications Services, Inc., and American Communications Services of Jacksonville, Inc., (ACSI) were granted intervention in this proceeding. Following that Order, Intermedia Communications of Florida, Inc. (Intermedia), Time Warner AxS of Florida, L.P. (Time Warner), and Sprint Communications Limited Partnership (Sprint) filed petitions to intervene. By Order No. PSC-98-0007-PCO-TP, issued January 2, 1998, however, the prehearing officer reversed Order No. PSC 97-1399-PCO-TP granting intervention to ACSI. On that same day, the prehearing officer issued Order No. PSC-98-0008-PCO-TP denying Intermedia, Time Warner and Sprint intervenor status. Subsequently, ACSI, Sprint, Time Warner and Intermedia filed Petitions for reconsideration which were also denied by the Commission.

On January 26-28, 1998 a hearing was held for the consolidated dockets. This is staff's recommendation to set permanent rates for the specific unbundled network elements identified in Order Nos. 960833-TP, 960757-TP, and 960846-TP.

DISCUSSION OF ISSUES

ISSUE 1: What are the appropriate permanent recurring and non-recurring rates for the following unbundled network elements:

(a) Network interface device (NID);
(b) 2-wire/4-wire Loop Distribution;
(c) Virtual Collocation:
(d) Physical Collocation;
(e) Directory Assistance;
(f) Dedicated Transport (Non-recurring only);
(g) 4-wire analog port;
(h) 2-wire ADSL-compatible loop; and
(i) 2-wire/4-wire HDSL-compatible loop?

RECOMMENDATION: Staff recommends that the recurring rates in Table I and the non-recurring rates in Table II be set. These rates cover BellSouth's TSLRIC costs and provide some contribution toward joint and common costs.

TABLE I

Network Element	Staff's Recommended Recurring Rates
Network Interface Device - 2-wire	$1.08
Loop Distribution - 2-wire Analog	$7.95
Loop Distribution - 4-wireAnalog	$10.68
ADSL Loop - 2-wire	$15.19
HDSL Loop - 2-wire	$11.50
HDSL Loop - 4-wire	$17.63
Ports - 4-wire Analog	$9.14
Local channel DS-1	$44.35
DS-1 interoffice per mile	$0.6013
DS-1 facility termination	$101.61
Physical Collocation	
Application Fee	$15.53
Space Preparation	N/A
Space Construction - per 100 sq. ft. - Wire Cage - Gypsum Cage - Fire Rated Cage Space Construction - per additional 50 sq. ft. - Wire Cage - Gypsum Cage - Fire Rated Cage	 $41.99 $84.10 $99.73 $4.14 $9.35 $11.30
Floor Space - per sq. ft.	$4.25
Cable - Installation, per cable Cable Rack	$2.77 $22.94
Power, per Amp	$6.95
Cross Connects, 2-wire, Per 100 Circuits 4-wire, Per 100 Circuits DS-1-DCS Per 28 Circuits DS-1-DSX Per 28 Circuits DS-3-DCS Per Circuit DS-3-DSX Per Circuit Optical ckts. Per Connection	 $5.24 $5.24 $226.39 $11.51 $56.97 $10.06 $6.46
Virtual Collocation	
Floor Space - per sq. ft.	$4.25
Cable - Installation, per cable Cable Rack Per 1/4 Rack	$12.45 $2.24
Power, per Amp	$6.95
Cross Connects, 2-wire, Per 100 Circuits 4-wire, Per 100 Circuits DS-1-DCS Per 28 Circuits DS-1-DSX Per 28 Circuits DS-3-DCS Per Circuit DS-3-DSX Per Circuit Optical ckts. Per Connection	 $5.02 $5.02 $226.39 $11.51 $56.97 $10.06 $6.71
Virtual to Virtual Connection Fiber Per Cable DS-1/DS-3 Per Cable	 $.19 $.17

TABLE II

Network Element	Staff's Recommended Non-Recurring Rates First	Additional
Installation of 2-wire/4-wire ALEC NID	$70.32	$54.35
Cross Connect, 2-wire or 4-wire	$6.15	$6.15
Loop Distribution - 2-wire Analog	$78.29	$58.33
Loop Distribution - 4-wire Analog	$112.07	$92.11
ADSL Loop - 2-wire	$113.85	$99.61
HDSL Loop - 2-wire	$113.85	$99.61
HDSL Loop - 4-wire	$116.91	$101.71
Ports - 4-wire Analog	$5.86	$5.86
DS-1 Facility Termination	$45.91	$44.18
Local channel DS-1	$246.50	$230.49
Installation per trunk or signaling connection	$332.42	$8.82
Physical Collocation		
Application Fee	$3248.00	
Space Preparation	ICB	
Cable - Installation, per cable	$1,056.00	
Cross Connects,		
2-wire, Per 100 Circuits	$1,157.00	
4-wire, Per 100 Circuits	$1,157.00	
DS-1-DCS Per 28 Circuits	$1,950.00	
DS-1-DSX Per 28 Circuits	$1,950.00	
DS-3-DCS Per Circuit	$528.00	
DS-3-DSX Per Circuit	$528.00	
Optical circuits. Per Connection	$2,431.00	
Security Escort		
Regular Time Per 1/4 Hour	$10.89	
Overtime Per 1/4 Hour	$13.64	
Premium Time Per 1/4 Hour	$16.40	
Cards - per 5 cards	$85.12	
Virtual Collocation		
Application Fee:		
Initial Request	$4,122.00	
Additional Cable Request	$1,249.00	
Cable - Installation, per cable	$965.00	
Cross Connects,		
2-wire, Per 100 Circuits	$1,157.00	
4-wire, Per 100 Circuits	$1,157.00	
DS-1-DCS Per 28 Circuits	$1,950.00	
DS-1-DSX Per 28 Circuits	$1,950.00	
DS-3-DCS Per Circuit	$528.00	
DS-3-DSX Per Circuit	$528.00	
Optical circuits. Per Connection	$2,431.00	
Virtual to Virtual Connection		
Fiber Per Cable	$526.17	
DS-1/DS-3 Per Cable	$134.46	
Security Escort & Equipment Maint		
Regular Time Per 1/4 Hour	$10.89	
Overtime Per 1/4 Hour	$13.64	
Premium Time Per 1/4 Hour	$16.40	

POSITION OF PARTIES

AT&T: The appropriate recurring and non-recurring prices are those found in Attachment A to AT&T's brief. These prices are based on the AT&T/MCI Collocation Model and Non-Recurring Cost Model, and adjustments to BellSouth's cost studies.

BELLSOUTH: BellSouth proposes that prices that cover total cost be set for the following elements: (a) Network Interface Device, (b) 2-Wire/4-Wire loop distribution, (c) Virtual collocation, (d) Physical collocation, (e) Directory Assistance, (f) Dedicated transport, (g) 4-Wire analog port, (h) 2-Wire ADSL Compatible loop, and (i) 2-Wire and 4-Wire HDSL Compatible loop. The rates for these UNEs and collocation should be set at the rates proposed by BellSouth on Exhibit AJV-1 to the Direct Testimony of A. Varner (Hearing Exhibit 9).

MCI: The Commission should adopt the MCI/AT&T rates for UNEs. These proposed rates are based on the cost of forward-looking, efficient procedures and technologies. The Non-Recurring Cost Model establishes forward-looking non-recurring rates. The Collocation Model establishes forward-looking rates for physical and virtual collocation. The recommendations for recurring rates for the remaining elements are based on adjustments and corrections to BellSouth's studies recommended by MCI and AT&T witnesses.

WORLDCOM: The Commission should approve the negotiated interim rates on Exhibit 32 (DNP-2). Alternatively, the Commission should adopt the MCI/AT&T rate proposal. BellSouth's proposed rates should be rejected because they include costs for unnecessary functions and unrealistically inflated tasks that unfairly shift sunk labor costs to competitors. The TSLRIC-based recurring charge should be no more than $16.32, and the non-recurring charges, should be $19.50 for the first loop and $10.87 for each additional loop. BellSouth's attempt to include shared and common costs and a residual recovery charge in the recurring charge are inappropriate. BellSouth's proposed non-recurring charges in excess of $600 are grossly excessive as they include unnecessary and inflated work functions and times.

STAFF ANALYSIS:

By Commission Order No. PSC-96-1579-FOF-TP, issued December 31, 1996, BellSouth was required to file cost studies in support of prices for unbundled network elements (UNEs). On November 13, 1997, BST filed its TELRIC Calculator, which is its model that determines the recurring and non-recurring economic costs associated with a particular UNE. (Caldwell TR 313) While the model

has been named the TELRIC Calculator, because the model is flexible and, based on the user's inputs, it can also develop TSLRIC outputs. (Caldwell TR 315) The TELRIC Calculator can be used to produce TSLRIC studies by eliminating the shared and common costs from the calculation. Thus, the TELRIC economic costs equal the TSLRIC results plus shared and common costs. (EXH 13, P-1)

The TELRIC Calculator uses the outputs from several other models and price calculators as inputs in determining the cost associated with a UNE. The basic models used by BellSouth include: 1) the Capital Cost Calculator; 2) the Loop Model; 3) the Switching Cost Information System (SCIS) model, and 4) the Shared and Common Cost Model. (Caldwell TR 317) The Capital Cost Calculator produces depreciation, cost of money, and income tax factors which are applied to investments to calculate the capital costs. (EXH 13, P-1) The Loop Model is used to develop the material costs for narrowband loop and loop-related UNEs. (Caldwell TR 317) The SCIS Model is used in this proceeding to produce switch-related costs associated with ports and features. (Caldwell TR 317) The Shared and Common Cost Model determines the level of shared and common costs attributable to the UNEs. (Caldwell TR 317)

BST also used three price calculators in conjunction with the basic models listed above: 1) the Synchronous Optical Network (SONET) Price Calculator; 2) the Loop Multiplexer Price Calculator; and 3) the Digital Loop Carrier (DLC) Price calculator. These price calculators develop the material cost of specialized components that are used in the provision of various UNEs. (Caldwell TR 318) Staff would also point out that AT&T proposed a non-recurring cost model and a collocation model to determine the cost of certain UNEs. The models proposed by BST and AT&T to determine the cost associated with a particular UNE are discussed in detail in the following staff analysis.

The objective in this proceeding is to set recurring and non-recurring rates for certain UNEs. In determining the rates for the UNEs, staff has analyzed the various cost studies and models provided by the parties. Based on staff's review of the studies, we determined that decisions on certain inputs directly affect the cost development of multiple UNEs. As a result, staff's analysis first deals with these common issues, broken down into various subparts:

I) Cost of Capital;
II) Depreciation;
III) Tax Factors;
IV) Shared and Common Costs;
V) Residual Revenue Requirement;
VI) Operational Support Systems; and
VII) Non-Recurring costs (Disconnect Factor).

After the discussion of the areas that are common to many UNEs, analyses specific to the individual network elements are discussed in the following order:

a) network interface device (NID);
b) 2-wire/4-wire distribution;
h) 2-wire ADSL-compatible loop;
I) 2-wire/4-wire HDSL-compatible loop;
d) Physical collocation;
c) virtual collocation;
e) Directory Assistance;
f) Dedicated Transport (non-recurring); and
g) 4-wire analog port.

ANALYSIS COMMON TO ALL UNBUNDLED ELEMENTS

I. COST OF CAPITAL

The Telecommunications Act of 1996 (TA96/ACT) requires all incumbent local exchange carriers (ILECs), including Bell Operating Companies (BOCs) such as BellSouth Telecommunications, Inc. (BST), to provide interconnection and unbundled network elements to competitive local exchange carriers (CLECs). Section 251 of TA96/ACT requires that the provision of these services and elements must be rendered on rates, terms, and conditions that are just, reasonable, and non-discriminatory. With respect to the rates charged by ILECs to CLECs, Section 252 requires state commissions to determine the just and reasonable rates for interconnection and network elements on the basis of the cost of providing these services, determined without reference to a rate-of-return or other rate-based proceeding. (See 47 U.S.C. - Section 251(c)(2) and (c)(3), Section 252(d))

As the witnesses appearing in this proceeding have interpreted these provisions, TA96/ACT expressly prohibits the use of the traditional rate of return on rate base methodology as the cost standard for the pricing of ILEC interconnection and unbundled network elements. This means that familiar costing concepts in public utility regulation, such as embedded costs and fully-allocated costs, cannot be applied in determining the just, reasonable, and non-discriminatory rates that CLECs should pay for the services and elements purchased from ILECs. Thus, in light of the indicated prohibitions, the witnesses have testified that TA96/ACT implicitly endorses the use of marginal or incremental costs as the pricing standard for setting, among other rates, the appropriate cost of capital in a 251/252 proceeding. (Cornell TR 1419-1422; Billingsley EXH 29, pp.9-11)

Two witnesses filed testimony in this proceeding regarding the appropriate forward-looking economic cost of capital of BST for the provision of unbundled network elements. Witness Billingsley, appearing on behalf of BST, did not recommend a specific cost of capital but instead testified that BST's use of an 11.25% cost of capital in its cost study was reasonable and conservative. (TR 894) Witness Cornell, appearing on behalf of AT&T Communications of the Southern States, Inc. (AT&T) and MCI Telecommunications Corporation and MCI Metro Access Transmission Services, Inc. (MCI), testified that the midpoint of his cost of capital range for BST of 9.43% was a conservative estimate of the cost of capital that should be used in this proceeding. (TR 1415, 1464)

To determine the appropriate forward-looking cost of capital to be included in the prices for unbundled network elements, it is necessary to estimate the forward-looking cost of debt and equity for BST. In addition, it is necessary to determine the appropriate mix of debt and equity in the capital structure. Combining these inputs produces the cost of capital estimates endorsed by the respective witnesses. (Billingsley TR 927-928; Cornell TR 1416)

Capital Structure

In its cost study, BST assumed a capital structure of 60% equity and 40% debt. (EXH 4, p.1) Witness Billingsley relied upon this relative level of capitalization in his determination of the reasonableness of the overall cost of capital of 11.25% used by BST in its cost study. (TR 926-927)

AT&T/MCI witness Cornell considered the average capital structures of his index of comparable companies to determine the appropriate capital structure for BST. His index included the Regional Bell Holding Companies (RBHCs) and the larger independent telephone companies. (TR 1424) On a book value basis, he found the average capitalization for his index to be 44% equity and 56% debt. On a market value basis, he found the average to be 76% equity and 24% debt. In employing both the book value and market value averages to establish his range for the weighted average cost of capital for BST, witness Cornell implicitly assumed an average capital structure of 60% equity and 40% debt in arriving at his recommended overall cost of capital of 9.43%. (TR 1452-1454)

Over the last four years, the actual equity ratio for BST has varied from a high of 59.9% in 1994 to a low of 56.6% in 1995. The most recent equity ratio available was 58.8% for the period through the third quarter of 1997. (EXH 4, pp.35-36) Staff has strong reservations regarding whether this level of equity capitalization is truly necessary given witness Cornell's testimony that the leasing of unbundled network elements is one of the least

risky businesses engaged in by the RBHCs. (TR 1451, 1456-1458) However, since both witnesses employed the same relative percentages of equity and debt in their analyses, staff is compelled to recommend the Commission recognize a capital structure of 60% equity and 40% debt in determining the appropriate weighted average cost of capital for purposes of this proceeding.

Cost of Debt

In its cost study, BST assumed a cost of debt of 8.00%. (EXH 4, p.1) There is no evidence in the record to support this cost rate. (EXH 5, p.79h; EXH 29, pp.11-12) BST witness Billingsley testified that the forward-looking cost of debt for BST is 7.25%. (TR 908) He arrived at this rate by adding the average spread between the yields on AAA-rated public utility bonds and 30-year Treasury bonds from October 1987 through October 1997 of .79% to the yield to maturity (YTM) on 30-year Treasury bonds for the period August 1997 to October 1997 of 6.47%. (TR 925) Finally, BST estimated that its marginal cost of debt is approximately 7.10%. This estimate was based upon the three-month (September - November 1997) average yield on 30-year Treasury bonds of 6.31% plus a risk premium of .80%. The risk premium was the average spread between the yield on AAA-rated public utility bonds versus the 30-year Treasury bond from October 1987 through November 1997. (EXH 4, p.42)

In his recommendation, AT&T/MCI witness Cornell assumed a cost of debt of 7.06%. He arrived at this rate by calculating the YTM as of December 31, 1996, of all of BST's outstanding debt issues, including the debt of the holding company and any subsidiaries. (TR 1426) However, in updating his analysis through December 31, 1997, he calculated the YTM for BST of 6.65%. (EXH 52, p.131) He testified that the YTM is a forward-looking cost of debt that measures the rate BST would have to pay if the bonds were issued at the measurement date, and reflects investors' expectations regarding the future returns on these publicly-traded bonds. (Cornell TR 1425-1426, 1455)

BST's embedded cost of debt through the third quarter of 1997 was 6.44%. (EXH 4, p.41) However, because there is a debate whether embedded costs can be used for setting prices in this proceeding, this rate is noted only as a point of reference. (BST BR p.9; AT&T BR p.2) Using the methodology employed by BST for estimating its marginal cost of debt but updating the inputs through December 31, 1997, BST's forward-looking cost of debt is 6.91%. This rate was determined by adding the three month (October - December 1997) average yield on 30-year Treasury bonds of 6.12% and a risk premium of .79% to account for the average difference between the yields on AAA-rated public utility bonds and 30-year

Treasury bonds (October 1987 - December 1997). (EXH 4, p.42; EXH 29, p.112) The 6.91% rate, however, only reflects the cost of long-term debt. AT&T/MCI witness Cornell testified that network assets have varied expected economic lives, not all of which are necessarily long-term. Moreover, the network element leasing business, like any other business, would be financed with a variety of sources and maturities. (TR 1491; EXH 52, pp.23-25) BST witness Billingsley admitted BST employs short-term debt in its capital structure and will continue to do so on a going forward basis. (EXH 29, p.15) Through the third quarter of 1997, approximately 14% of BST's total debt was in the form of commercial paper. (EXH 4, p.41) On a going forward basis, BST's commercial paper program is projected not to exceed 17% of total debt. (EXH 5, p.13) Through the third quarter of 1997, BST's average cost rate for commercial paper was 5.50%. (EXH 4, p.41) Staff believes that assuming a cost rate of 5.50% for commercial paper is conservative since interest rates have come down since the end of the third quarter of 1997. (EXH 29, p.112) Assuming a conservative mix of 85% long-term debt at a cost rate of 6.91% and 15% short-term debt at a cost rate of 5.50%, the forward-looking total cost of debt for BST's provision of unbundled network elements is 6.70%.

Staff believes the 6.70% cost of debt is a conservatively high estimate of BST's true forward-looking cost of debt. This rate is very close to the current YTM as of December 31, 1997 for BST's total debt issues calculated by AT&T/MCI witness Cornell of 6.68%, excluding the two securities issued by BellSouth Capital Funding. (EXH 52, p.131) This rate is above the current embedded total cost of debt for BST of 6.44%. (EXH 4, p.41) The 6.70% rate recommended by staff exceeds the average yield on 30-year Treasury bonds for December 1997 of 5.96% by 74 basis points. (EXH 29, p.112) Finally, while the average yield for the index of AAA-rated public utility bonds exceeded the yield on 30-year Treasury bonds on average by approximately 79 basis points over the last 10 years, over the last 4 years BST's actual experience has been a spread of only 39 basis points on average over the yield on 30-year Treasury bonds. (EXH 4, pp.43-44) Based on this fact, it could be argued that BST's actual experience indicates its true forward-looking cost of long-term debt is only 6.51%. To be conservative, staff used the indicated 6.91% cost rate for long-term debt in its estimation of BST's total cost of debt. For these reasons, staff recommends a cost of debt of 6.70% for purposes of determining BST's forward-looking cost of capital in this proceeding.

Cost of Equity

BST witness Billingsley used three models to estimate the cost of equity of BST. Since BST is a subsidiary of BellSouth Corporation (BellSouth), it does not have equity traded in the

market. Thus, there is no direct market information upon which to estimate BST's cost of equity capital. Therefore, it was necessary for witness Billingsley to infer BST's cost of equity by evaluating the available market data for publicly traded companies that are demonstrated to be comparable in risk with BST. In his first approach, witness Billingsley applied the discounted cash flow (DCF) model to a group of firms he identified as comparable in risk to BST. In his second approach, he used the capital asset pricing model (CAPM). Finally, he conducted a risk premium analysis. From these analyses, he concluded that the current cost of equity capital for BST is within the range of 14.72% to 15.20%. (TR 892-893)

AT&T/MCI witness Cornell relied upon two models for estimating the cost of equity for BST. For the same reasons cited by witness Billingsley, witness Cornell had to rely on market data of publicly traded companies to estimate the cost of equity capital of BST. In his first approach, witness Cornell applied the DCF model to a group of companies he identified as comparable in risk to BST. The second method he used was the CAPM model. These two models produced a range of estimates of the cost of equity capital from 10.99% to 11.05%. He assumed the midpoint of this range of 11.02% as the appropriate cost of equity for BST. (TR 1427, 1450)

BST witness Billingsley used the constant growth or single stage form of the DCF model which assumes growth remains constant over an indefinite or infinite holding period. The growth rates used in this analysis were the 5-year earnings growth rates forecasted by Institutional Brokers' Estimate Service (IBES) and Zacks Investment Research, Inc. His DCF model included an adjustment of 5% for the recovery of flotation costs and recognized the quarterly compounding of dividends. He applied this form of the DCF model to an index of companies he identified as comparable in risk to BST. Witness Billingsley used a cluster analysis to identify his index of 20 firms. Based upon this analysis, he concluded that his DCF analysis indicated a cost of equity for BST in the range of 15.11% to 15.20%. (TR 915-918)

AT&T/MCI witness Cornell used the variable growth or three stage form of the DCF model which distinguishes between short and long-term growth rate projections. He assumed the first stage lasts five years because that is the longest horizon over which analysts' forecasts of growth are available. For this period, he used the 5-year earnings growth rates forecasted by IBES. He assumed the second stage lasts 15 years during which the growth rate falls from the high level of the first five years to the growth rate of the U.S. economy by the end of year 20. From the twentieth year onward the growth rate is set equal to the growth rate of the economy because he believes rates greater than that

cannot be sustained into perpetuity. The long-term growth forecast used after year 20 was derived by averaging the long-term Gross National Product (GNP) growth forecasts obtained from the Wharton Econometric Forecasting Associates and from Ibbotson Associates. Witness Cornell used the annual form of the DCF model. His model did not include an adjustment for flotation costs. He applied this form of the DCF model to an index of companies he identified as comparable in risk to BST. Witness Cornell selected the RBHCs and larger independent telephone companies from the list of telephone operating companies in Standard & Poor's (S&P) Industry Survey. Based upon this analysis, he concluded that his DCF analysis indicated a cost of equity for BST in the range of 10.74% to 11.07%. (TR 1424, 1429-1435)

Staff has reviewed the DCF analyses conducted by each of the witnesses. Regarding which DCF model is more appropriate for estimating the cost of equity capital of BST, staff has determined that the multi-stage DCF model employed by AT&T/MCI witness Cornell is superior to the single stage DCF model used by BST witness Billingsley. Witness Cornell testified that the form of the DCF model he used is well supported in the financial community. (TR 1472-1473) He noted that prominent economists familiar with cost of capital research have recognized that the simple perpetual growth DCF model using short-term forecasts is inappropriate to use if a company's short-term growth rate is expected to exceed the long-term growth of the economy. He noted that Stewart Myers and Lynda Borucki state that:

> [f]orecasted growth rates are obviously not constant forever. Variable growth-rate DCF models, which distinguish short- and long-term growth rates, should give more accurate estimates of the cost of equity. Use of such models guards against the naive projection of short-run earning changes into the indefinite future. (Cornell TR 1473)

In addition, he noted that Ibbotson Associates state that:

> [t]he reason it is difficult to estimate the perpetual growth rate of dividends, earnings, or cash flows is that these quantities do not in fact grow at stable rates forever. Typically it is easier to forecast a company-specific or project-specific growth rate over the short run than over the long run. To produce a better estimate of the equity cost of capital, one can use a two stage DCF model. ... For the resulting cost of capital estimate to be useful, the growth rate over the latter period should be sustainable indefinitely.

> An example of an indefinitely sustainable growth rate is the expected long-run growth rate of the economy. (Cornell TR 1473)

Finally, he referenced the finance text book, Investments, in which the authors William Sharpe, Gordon Alexander, and Jeffery Bailey state:

> Over the last 30 years, dividend discount models (DDMs) have achieved broad acceptance among professional common stock investors. ... Valuing common stock with a DDM technically requires an estimate of future dividends over an infinite time horizon. Given that accurately forecasting dividends three years from today, let alone 20 years in the future, is a difficult proposition, how do investment firms actually go about implementing DDMs? One approach is to use constant or two-stage dividend growth models as described in the text. However, although such models are relatively easy to apply, institutional investors typically view the assumed dividend growth assumptions as overly simplistic. Instead, these investors generally prefer three-stage models, believing that they provide the best combination of realism and ease of application. (Cornell TR 1474)

In contrast to these views, witness Cornell pointed out that the only support witness Billingsley cited for the application of the constant growth DCF model using short-term growth forecasts was the fact that this method was often used in traditional rate regulation, when the telephone business was highly regulated and stable. (TR 1472-1476) Moreover, it appears far more reasonable that the true estimate of BST's cost of equity is produced by a DCF analysis that assumes a growth rate of 8.7% for the first 5 years and linearly decreases to a long-run sustainable rate of 6.2% by year 20, than the estimate produced by a DCF analysis that assumes the growth rate will remain constant at 13.0% forever. This is particularly true in light of BellSouth's forecasted growth rate over the next 5 years of 8.4%. (TR 1429-1432; EXH 4, pp.163-188; EXH 52, p.129)

Regarding the debate over whether the quarterly or annual form of the DCF model is more appropriate, staff recognized the results of the approach preferred by each witness. For example, the estimates indicated by BST witness Billingsley's adjusted CAPM and risk premium analyses recognize the quarterly compounding of dividends and the estimates indicated by AT&T/MCI witness Cornell's adjusted DCF and CAPM analyses do not. However, it is interesting

to note that, based upon witness Billingsley's testimony, the difference between the DCF estimates using the quarterly model versus the annual model was negligible. (TR 928-929; EXH 29, pp.70-71, 92-97)

Regarding flotation costs, staff believes an adjustment should be made to allow the recovery of these costs. Based upon AT&T/MCI witness Cornell's DCF analysis, the average of the difference between including and excluding a 5% adjustment for flotation costs is approximately 24 basis points. (EXH 6, p.14) Adding this adjustment to the estimate indicated by witness Cornell's DCF analysis results in a revised estimate of the cost of equity for BST of 11.25%.

Staff also reviewed the indices of firms that each witness testified are comparable in risk to BST. Staff has strong reservations regarding BST witness Billingsley's testimony that his index is more comparable in risk to BST than AT&T/MCI witness Cornell's index. Regarding witness Billingsley's index, witness Cornell testified that "if one were to accept the results of his cluster analysis, then one would have to believe that the risk of the network leasing business was more similar to the risks faced by Coca Cola, McDonalds and Wal-Mart stores, as examples, than to the risks faced by BST's parent company, BellSouth (which owns LECs and the underlying network elements)." Witness Cornell also testified that by selecting a group of companies with growth rates that exceed a reasonable forecast of the aggregate economy and assuming that these growth rates will remain constant into perpetuity, witness Billingsley "systematically guarantees an inaccurately high cost of equity estimate inconsistent with investor expectations." (TR 1470-1473; EXH 52, p.66)

Although BST witness Billingsley claims he has proven that his index is comparable in risk to BST and that the RBHCs and selected independent telephone companies in AT&T/MCI witness Cornell's index are not, a detailed comparison of the two indices does not bear this out. Staff compared the averages of several key measures of investment risk for each index. The measures were provided by each witness and were calculated as of December 31, 1996. Staff first compared the average market-to-book (M/B) ratio for each index. The average M/B ratio for witness Billingsley's index is 6.0. The average M/B ratio for witness Cornell's index is 4.5. The average M/B ratio for BellSouth for the same period was 3.0. (EXH 4, pp.163-188; EXH 52, p.129) Witness Billingsley acknowledged that investment risk can be measured by the relative M/B ratio of the firm. (EXH 29, p.67) The average price-earnings (PE) ratio for witness Billingsley's index is 22.5. The average PE ratio for witness Cornell's index is 15.8. The PE ratio for BellSouth for the same period was 14.1. (EXH 4, pp.163-188; EXH 52,

p.129) Witness Billingsley acknowledged that investment risk can be measured by the relative PE ratio of the firm. (EXH 29, p.67) The average BARRA beta for witness Billingsley's index is .90. The average BARRA beta for witness Cornell's index is .72. The BARRA beta for BellSouth for the same period was .72. Finally, the average of the IBES 5-year growth rate projections for witness Billingsley's index is 13.02%. The average of the IBES 5-year growth rate projections for witness Cornell's index is 8.73%. The 5-year IBES growth rate projection for BellSouth for the same period was 8.41%. (EXH 4, pp.163- 188; EXH 52, p.129) It is clear from this analysis that contrary to BST witness Billingsley's testimony, his index is not comparable in risk to BST and therefore the results of his DCF analysis on this index are not reflective of the true cost of equity for BST. Moreover, this analysis shows that the index of RBHCs and large independent telephone companies relied on by AT&T/MCI witness Cornell is comparable in risk to BST and therefore the results of his DCF analysis on this index are reflective of the true cost of equity for BST.

BST witness Billingsley next employed the common form of the CAPM model. To use this model, he had to make assumptions regarding the appropriate beta, market return, and risk-free rate. He used a prospective measure of beta supplied by BARRA. (TR 918-919) The beta coefficient measures the systematic risk of investing in a security. The systematic risk is the risk that cannot be eliminated through diversification. (Cornell TR 1436) Generally speaking, the higher the beta, the greater the risk and vice versa. The average beta for witness Billingsley's index was .90. To estimate the market return, he applied the same form of the DCF model discussed earlier to the S&P 500 index of companies. Using market data for the month of October 1997, he estimated an expected return on the S&P 500 of between 15.61% and 15.77%. Finally, for the risk-free rate, he used the average expected yield implied by the prices of 20-year Treasury bond futures contracts quoted during October 1997 of 6.73%. Based upon this analysis, he concluded that his CAPM analysis indicated a cost of equity for BST in the range of 14.72% to 14.87%. (TR 918-921)

In his other analysis, AT&T/MCI witness Cornell used the market risk premium form of the CAPM model. To employ this model, he had to make assumptions regarding the appropriate beta, market risk premium, and risk-free rate. He considered two measures of beta. The first measure, based on historical stock returns, was provided by Dow Jones Beta Analytics. The average beta for his index from this source was .77. To confirm the reasonableness of this approach, he also considered the prospective measure of beta supplied by BARRA. The beta for BellSouth as of the same period was .72. He defined the market risk premium as the added expected return that investors require to hold a broad portfolio of common

stocks instead of risk-free Treasury securities. Based on a DCF analysis of the S&P 500 using the same DCF model discussed earlier, he determined a market risk premium over one-month Treasury bills of 5.90% and a market risk premium over 20-year Treasury bonds of 4.53%. He also considered the historical spread between total stock returns and treasury returns as calculated by Ibbotson Associates. The arithmetic average spreads (indicated market risk premiums) over one-month Treasury bills ranged from 5.37% to 9.03%. The average spreads over long-term Treasury bonds ranged from 4.04% to 8.00%. Based on these analyses, he concluded that reasonable estimates of the market risk premium are 7.5% over one-month Treasury bills and 5.5% over 20 year Treasury bonds. Finally, for the risk-free rate, he used the average yields on one-month Treasury bills and 20-year Treasury bonds. For one-month Treasury bills he used a long-run average yield of 5.36% and for 20-year Treasury bonds he used the average yield for December 1996 of 6.73%. Based upon this analysis, he concluded that his CAPM analysis indicated a cost of equity for BST in the range of 10.97% to 11.14%. (TR 1436-1449; EXH 52, p.33)

Staff believes BST witness Billingsley's CAPM analysis overstates the true cost of equity of BST. AT&T/MCI witness Cornell testified that had witness Billingsley properly taken into account the fact that the growth rates used in his analysis would eventually slow, he would have arrived at market risk premiums more consistent with what is supported in the current financial literature. Witness Cornell noted several current articles which discuss the forward-looking market premium over Treasury bonds in the 2.0% to 6.0% range. (TR 1493-1494; EXH 6, p.133) In witness Billingsley's analysis, the difference between his indicated market return through December 1997 of 15.48% and the YTM on 20-year Treasury bond futures contracts through December 1997 of 6.35% indicates a market premium of 9.13%, well in excess of the level supported by independent sources. The unrealistically high market risk premium aside, if one accepts the 15.48% indicated market return and calculates the CAPM result using the updated YTM on 20-year Treasury bonds of 6.35% and the forward-looking BARRA beta for BellSouth as of December 31, 1997 of .76, the CAPM estimate is 13.3%. (EXH 29, pp.92-98, 105) However, considering the testimony of AT&T/MCI witness Cornell that BST witness Billingsley's single stage DCF analysis of the S&P 500 produces an upwardly biased estimate of the market return and that the derived market risk premium is well above the level discussed in current financial literature, staff believes the 13.3% indicated return is above the top of the range of reasonableness. (TR 1493-1494)

In discussing his CAPM analysis, AT&T/MCI witness Cornell conceded that for purposes of estimating the long-term cost of capital there is a preference for using the long-term interest

rate. (EXH 52, pp.37-38) He also agreed that it would be reasonable to use the predicted BARRA beta instead of a historical measure of beta in the CAPM analysis. (EXH 52, p.33) Using the same measure of beta and the risk-free rate assumed in the revision to BST witness Billingsley's CAPM analysis and the top of the range of forward-looking market risk premiums of 6.0% from witness Cornell's analysis, the indicated CAPM estimate of BST's cost of equity is 10.9%. (TR 1448, 1493-1494; EXH 52, pp.41-44; EXH 29, pp.92-98)

In his final approach, BST witness Billingsley applied a market risk premium analysis. He defined the equity market risk premium as the difference between the return on a broad basket of equity securities (the market) and the return on a low-risk or riskless benchmark security. In this analysis, he calculated the risk premium as the difference between the expected return on the S&P 500 and the current market yields on public utility bonds from the period October 1987 through October 1997. To estimate the market return, he applied the same form of the DCF model discussed earlier to the S&P 500 index of companies. Because BST's debt is rated AAA, he used the yield on AAA-rated public utility bonds. His analysis showed that the average risk premium from 1987 to 1997 was 6.80%. Adding this premium to the three month (August - October 1997) average return on AAA-rated public utility bonds of 7.30% produced a cost of equity for the S&P 500 of 14.10%. However, he testified that when interest rates decline, the equity risk premium widens and when interest rates rise, the equity risk premium narrows. He cited a study conducted by R.S. Harris and F.C. Marston to support this opinion. As a result of this study, witness Billingsley testified the risk premium must be increased. During the period of Harris and Marston's study, the average risk premium was 6.47% and the average yield on long-term Treasury bonds was 9.84%. Because the yield on 30-year Treasury bonds had decreased to 6.33% (October 1997), witness Billingsley argued that the appropriate risk premium was 8.76% instead of the 6.47% risk premium indicated by the Harris and Marston study. Using this alternative approach, he concluded that his analysis indicated an expected return on the S&P 500 of 15.09%, which is the current average level of 30-year Treasury bonds of 6.33% plus the adjusted risk premium of 8.76%. (TR 921-924)

Staff believes BST witness Billingsley's risk premium analysis overstates the true cost of equity of BST. In reviewing witness Billingsley's market risk premium analysis, staff noted that the market premium is not constant but instead increases and decreases over time. Exhibit 29 shows that the risk premium over the period covered by witness Billingsley's analysis varied from as little as 3.92% to as great as 8.49%. (EXH 29, pp.99-105) For this reason, it appears the average risk premium calculated by this

analysis already accounts for changes in the risk premium due to changes in the level of interest rates. Staff believes it would be double counting to include the additional 2.29% premium (8.76-6.47=2.29) witness Billingsley included in his risk premium estimate of BST's cost of equity. Removing this 2.29% premium, the indicated return for the S&P 500 is 12.8%, without accounting for the fact that the average yield on 30-year Treasury bonds continued to decline from October 1997 through December 1997. (EXH 29, p. 112) Moreover, this number is conservatively high because it reflects the cost of equity for the S&P 500. The S&P 500, with an assumed beta of 1.00, is generally considered more risky than individual companies with betas significantly less than 1.00, such as BellSouth with a beta of .76. (Cornell TR 1442; EXH 52, p.65)

Staff has reviewed all the testimony and exhibits presented by the two cost of capital witnesses in this proceeding. Based upon the evidence in the record and a detailed review of the cost of equity methodologies presented, staff has determined that the cost of equity for BST falls within the range of 10.9% to 12.8%. Since a point estimate of the cost of equity must be used to establish the overall cost of capital, staff recommends 12.0% be used for purposes of this proceeding.

Overall Cost of Capital

BST witness Billingsley discussed at length his opinions of the risk being faced by companies in the telecommunications industry since the passage of TA96/ACT. (TR 894-898) However, in his discussion of risk he overlooked two very fundamental points. First, witness Billingsley completely ignored the benefits that will accrue to BST as a result of the passage of TA96/ACT. If investors are sophisticated enough to recognize the risks associated with increased competition as a result of TA96/ACT, then they are clearly sophisticated enough to recognize that BST is well positioned to take advantage of all of the provisions of TA96/ACT. (Cornell TR 1483-1484) Although witness Billingsley's assessment of the level of competition may apply to some lines of business engaged in by a few of the companies in this industry, the following passages from the May 1997 S&P Utility Credit Report for BST support the view that BST is well positioned to take advantage of the new environment created by the passage of TA96/ACT.

> The adoption of price cap plans in most of BellSouth Telecom's state regulatory jurisdictions increases long-term earnings prospects, in light of the company's demonstrated ability to effectively control costs. Continued expense management, coupled with new product initiatives and aggressive marketing of vertical services, should enable the

> company to maintain profitability levels as increasing competition emerges in BellSouth Telecom's local markets over the next several years. (EXH 5, p.6)
>
> Given BellSouth Corp.'s telephone operating company's market strength, brand awareness with in-region customers, and strong financial position, these companies should be able to maintain their competitive position in the changing telecommunications environment. (EXH 5, p.7)

In addition, in BellSouth's debt rating reference manual prepared for S&P and Moody's Investor Services the Company presented two schedules for the bond rating services entitled Summary of All Competitive Impacts (Assumed Losses to Revenue) and New Product Revenues. These reports were filed under protection of confidentiality and therefore staff cannot discuss the actual figures. However, it is clear from comparing these two reports, which cover the years 1997 through 1999, that BellSouth has been and projects to be a net beneficiary of the changes brought about in the telecommunications industry as a result of deregulation. (EXH 8) The implication of witness Billingsley's testimony that investors would only be concerned with the risks associated with competition in this industry ignores the fact that BST is well positioned to grow and prosper in this new environment and that these views would also be factored into investors' perception of risk and expected return.

Second, BST witness Billingsley misstates the risk that is relevant to this proceeding. AT&T/MCI witness Cornell testified that the telecommunications industry is a very broad category which includes such businesses as BellSouth's wireless communications endeavors and its international operations. However, he pointed out that the business for which the cost of capital is being estimated in this proceeding is the business of leasing local exchange telephone network elements to retail providers. (TR 1456-1458, 1483-1485) Witness Cornell noted that in its August 1996 order, the FCC explicitly defined the relevant risk in this type of proceeding as the risk incurred in the business of leasing unbundled network elements. (TR 1485; FCC Order 96-325, ¶702) Witness Billingsley admitted that for purposes of setting prices in this proceeding, the Commission should only consider the forward-looking cost of capital associated with the provision of unbundled network elements. (EXH 29, pp.9, 82) Witness Cornell testified that the business of leasing network elements is of relatively low risk compared to many of the risky business endeavors being pursued by the telephone holding companies. (TR 1456-1457, 1459-1460) He also noted that in its August 1996 order, the FCC described the

current competitive position of the ILEC's network element business as being natural or bottleneck monopolies which do not now face significant competition. (TR 1486; FCC Order 96-325, ¶11 and ¶702) For these reasons, the discussion of risk in witness Billingsley's testimony, to the extent it deals with the global state of the telecommunications industry rather than the actual business of leasing unbundled network elements in Florida, is irrelevant to the determination of the cost of capital in this proceeding.

Based upon its analysis of all the evidence in the record, staff recommends an overall cost of capital of 9.9%. This is the fall-out of staff's recommended capital structure of 60% equity and 40% debt, a forward-looking cost of debt of 6.7% and a cost of equity of 12.0%. The following table presents the positions of each of the witnesses and staff's recommendation.

	BST witness Billingsley	AT&T/MCI witness Cornell	Staff Recommendation
Capital Structure	60% equity 40% debt	60% equity 40% debt	60% equity 40% debt
Cost of Debt	8.0% (filing) 7.25% (testimony) 7.10% (BST)	7.06% (12/31/96) 6.65% (12/31/97)	6.7%
Cost of Equity	14.72% - 15.20%	11.02%	12.0%
Overall Cost of Capital	11.25%	9.43%	0.099

For the reasons discussed earlier, staff believes this level is a conservatively high estimate of BST's true forward-looking cost of capital. AT&T/MCI witness Cornell testified that BST's use of an 11.25% cost of capital "is far in excess of the forward-looking cost of capital for the provision of network elements or universal service, and is inconsistent with publicly available cost of capital estimates by parties outside the context of this proceeding." (TR 1468) He noted that the 11.25% was determined by the FCC in September 1990. Since the time of that order, 30-year Treasury bond rates have fallen over 300 basis points from an average of 8.99% in September 1990 to an average of 5.96% in December 1997. (EXH 29, pp.108-112) Witness Cornell also provided reports from Merrill Lynch and Salomon Brothers which document these companies' estimates of the cost of capital of the RBHCs. In a report dated January 1996, Salomon Brothers estimated the cost of capital for the RBHCs of approximately 8.6%. In its proxy statement dated September 1996 regarding the merger of Bell

Atlantic and NYNEX, Merrill Lynch performed a DCF analysis of the companies and assigned discount rates (implied costs of capital) of 8% to 10% for the telephone operations. (TR 1495; EXH 52, pp.54-57) Witness Cornell concluded that given the significant decline in capital costs as indicated by the drop in yields on 30-year Treasury bonds and "the real-world, investor-oriented evidence" discussed in his testimony, there is no evidence to support 11.25% as the true cost of capital of BST. (TR 1495) Staff believes the 9.9% cost of capital it has recommended is supported by competent, substantial evidence in the record.

II. DEPRECIATION

Both of the cost models presented by the parties in this proceeding contain assumptions regarding depreciation rates and resulting expenses. Two witnesses testified on the appropriate depreciation lives and resultant rates to use in UNE calculations. Direct and rebuttal testimonies were presented by witness Majoros on behalf of AT&T and MCI; rebuttal testimony was also presented by BST witness Cunningham. While there is disagreement between the parties regarding the specific lives and salvage values to use in this proceeding, both witnesses agree that it is appropriate to use projection lives since, by definition, these lives represent newly placed plant and therefore comport with the FCC's requirement of using forward-looking costs. (Cunningham TR 853; Majoros TR 1507) Remaining lives are inappropriate since they relate to the life remaining of the embedded assets. (Majoros TR 1508) The lives and salvage values staff recommends as appropriate for use in UNE calculations in this proceeding are shown on Attachment A.

AT&T/MCI witness Majoros recommends that the lives and salvage values used in BST's cost studies should be those projection lives and future net salvage values underlying the depreciation rates prescribed by the FCC for BST of Florida in 1995. (TR 1507) Based on his review of recent trends in the depreciation reserve and historical life indications and retirement patterns of the technologically impacted accounts, witness Majoros asserts that the FCC's prescribed projection lives and future net salvage values represent forward-looking costs. (TR 1509-1513)

Regarding trends in the reserve, AT&T/MCI's witness Majoros points to the fact that BST's reserve level has grown from 35.3% in 1990 to 48.9% in 1996. (TR 1512; EXH 53, Attach. 5) Its depreciation rates have averaged 7.3% over the last seven years, while its retirement rates have averaged only 3.6%. (TR 1512) Witness Majoros explains that an increasing reserve is generally a sign that depreciation rates anticipate increasing retirement levels and the expected life of the plant is decreasing. Without indications of a decreasing life, witness Majoros asserts that an increasing reserve might be a sign that depreciation rates are too high. (TR 1511)

AT&T/MCI's witness Majoros provided a comparison of BST Florida's historical lives and retirement patterns of the technologically impacted accounts (digital switching, digital circuit, metallic cables) to the FCC's prescribed lives and retirement patterns. (EXH 53, Attach. 6) This comparison shows that recent life indications for these accounts are longer than the projection lives prescribed by the FCC. Additionally, the comparison shows that the FCC's expected retirement pattens for

these accounts reflect higher retirements than indicated by history. Witness Majoros therefore concludes that the FCC's 1995 prescribed lives and retirement patterns are forward-looking. (TR 1514)

As further support for AT&T/MCI's position, witness Majoros points out that the FCC directed its staff over a decade ago to put less emphasis on historic data in estimating depreciation lives and more emphasis on company plans, technological developments, and other future-oriented analyses. (TR 1508) Additionally, he explains that the FCC reaffirmed its forward-looking position in establishing ranges of projection lives to simplify the depreciation prescription process. (TR 1508) The ranges were based on a review of recent retirement patterns, company planning, and the current technological developments and trends. (Majoros TR 1508)

BST's witness Cunningham asserts that the FCC prescribed projection lives and future net salvage values are not forward-looking because they do not properly assess the impact of technological evolution and increasing competition. (TR 846, 850) BST recommends that the appropriate lives and salvage values to use in this proceeding are the results of the 1995 and 1996 nine-state regional BST Depreciation Studies. (Cunningham TR 848) These recommended values reflect a simple average of the proposed lives for the nine states. (Cunningham TR 848) In support of its recommendations, BST provided the 1995 and 1996 Depreciation Studies for the nine state region. (EXH 23, GDC-2) According to witness Cunningham, these studies contain a summary of most of the planning material and forecasting assumptions used in the development of BST's proposed economic lives for each of the nine states and was augmented by additional information gathered through the discovery process in this case. (TR 873) In its brief, BST asserts that these depreciation studies contain thousands of pages of data and analysis supporting its assessment of appropriate lives. (BST BR p.18) Further, no party to this docket made a similar analysis of plant lives or derived an independent and current assessment of appropriate lives. (BST BR p.18)

As further support for the reasonableness of BST's recommended lives and salvage values, witness Cunningham asserts that these values are generally consistent with the depreciation lives and salvage values BST uses for public reporting purposes. (TR 853) Additionally, witness Cunningham claims that BST's recommended lives are comparable to the lives the FCC last prescribed for AT&T in 1994. (TR 851; EXH 23, GDC-3) Lastly, witness Cunningham states that BST's proposed lives are similar to the projection lives used to determine the intrastate depreciation rates that BST is currently booking in Florida. (TR 851)

In contrast to AT&T/MCI's witness Majoros's testimony, BST's witness Cunningham believes that emphasis on historical retirement patterns is an indication that one expects the future not to vary significantly from the past. (TR 854) He asserts that retirements, particularly for the technology-sensitive accounts, lag well behind the decline in economic value of the assets. (TR 854) As an example, witness Cunningham refers to technologies of the past, such as Step-by-Step and Crossbar Switching, as evidence that the bulk of retirements are most often concentrated at the end of the life span of a technology and would not be captured simply by focusing on history. (TR 854-855) Further, witness Cunningham argues that the fact BST's reserve has grown over time is not an indication that the reserve is at the appropriate level. (TR 855) He opines that the issue is whether the reserve has increased enough to handle retirements caused by the shift that has occurred in the telecommunications industry. (TR 856)

Witness Cunningham testified that the lives BST recommends for use in its cost studies are based on the economics of providing traditional telecommunications services, and would be appropriate even if the only services BST ever provided in the future were narrowband, traditional telephone services. (TR 860) In response to deposition questions regarding concerns raised in other jurisdictions as to the appropriateness of the lives used in BST's cost studies for a narrowband network, witness Cunningham responded that the recommended lives do not consider broadband, entertainment, or some shift in existing competition. (EXH 24, pp.66-67; TR 861) BST's witness Cunningham submits that replacement of today's network will occur due to normal mortality and technological obsolescence, that is, when the current technology is not the most efficient means of providing narrow band service in the future. (TR 860)

AT&T/MCI witness Majoros asserts that lives specific to Florida should be used for UNE calculations since that data is available. (TR 1518) He further asserts that lives BST uses for financial accounting purposes are inappropriate for UNE calculations because those lives assume the replacement of telecommunications plant to provide non-regulated video services. (TR 1521) However, in response to AT&T discovery, BST indicated that it does not have plans to deploy the video network in Florida. (Majoros TR 1521) Additionally, witness Majoros states that the FCC has ordered that the accelerated replacement of older facilities for the benefit of unregulated service offerings should be excluded from the regulated accounts. (TR 1520)

Conclusion

Because the purpose of this proceeding is to establish prices for UNEs specific to Florida, staff agrees with AT&T/MCI's witness Majoros that where Florida-specific information is available, it should be used. BST's position regarding depreciation, however, is to use projection lives and future net salvage values that reflect the simple average of its depreciation studies for the nine state region. When witness Cunningham was asked why he believed average regional lives should be used in the UNE calculations rather than Florida-specific lives, he stated that he was asked for regional lives by the cost organization. (TR 21) Staff's recommendation (Attachment A) is based, to the extent there is available information in the record, on Florida-specific data and planning. The most controversial accounts, of course, are the technology driven accounts (digital switching and circuit, metallic and fiber cables).

The FCC is fully aware of the increasingly competitive telecommunications marketplace, as evidenced by the FCC's First Report and Order in the interconnection docket (CC Docket 96-98) dated August 8, 1996. Further, the FCC's prescribed projection lives and retirement patterns reflect shorter lives and higher retirements than indicated by historical statistics. (Majoros, TR 1514) Staff believes it is therefore reasonable to assume that the depreciation rates developed by the FCC for its 1995 proceedings included consideration of the increasingly competitive market.

The purpose of this docket is not to direct BST to use specific depreciation rates for pricing its retail business, but instead to establish the appropriate cost methodologies to be incorporated in the cost models for UNEs. Staff believes this proceeding does not involve BST obtaining regulatory approval of its depreciation rates, but involves determining the reasonableness of the assumptions regarding depreciation expenses to be included in the cost studies used for setting UNE rates.

Ideally, it would have been preferable for BST to conduct a study reflecting the lives and salvage values for the network it has included in its TSLRIC studies. However, BST submitted nine depreciation studies it conducted in 1995 and 1996 for the FCC. These studies reflect analyses of embedded plant with recognition of the future. (Cunningham TR 852-853; EXH 23, GDC-2, pp.13-18)

Lives

The projection life is a forecast projection of the future of the property. Historical indications may be useful in estimating a projection life. Trends in life or retirement can sometimes be expected to continue. The reason for making a

historical life analysis is to develop a sufficient understanding of history in order to evaluate whether it is a reasonable predictor of the future. (EXH 24, p.13) Technical and economic obsolescence are ongoing and an historical life analysis will reflect these factors to the extent that they were present in the past. (Cunningham TR 853; Majoros TR 1507-1514)

As discussed earlier, AT&T/MCI's depreciation proposals reflect what was prescribed by the FCC for BST of Florida in 1995. A comparison of these lives with those proposed by BST in its 1995 Florida-specific study indicates no difference in twelve accounts. (EXH 4, p.65) As a result of staff's review of these accounts, the Florida-specific projection lives appear forward-looking, reasonable, and appropriate for use in this proceeding.

AT&T/MCI did not address projection lives for ten accounts (Aircraft, Special Purpose Vehicles, Analog Switching, Radio, Circuit-DDS, Circuit-Analog, Large PBX, Other Terminal Equipment, and Submarine cable-Metallic and Fiber). A review of the data provided in BST's Florida-specific study and in response to discovery indicates that the resulting BST projection life proposals for seven of these accounts appear reasonable. (EXH 23, GDC-2) The aircraft account has no Florida investment and therefore no life is recommended. The two remaining accounts are the metallic and fiber submarine cable accounts.

BST's Florida-specific study states that submarine cable is flanked on either side of the splice by runs primarily of buried cable. (EXH 23, GDC-2, p.1785) The retirement of submarine cable is therefore expected to occur concurrent with the retirement of the flanking metallic cable. (EXH 23, GDC-2, p.1785) Staff believes it is reasonable for the projection life of submarine metallic cable to be the same as for metallic buried cable. Staff's recommendations regarding metallic buried cable are discussed below as one of the technology-sensitive accounts.

Staff agrees with BST that with a new technology, such as fiber cable, enhancements and refinements are still taking place due to such things as manufacturing defects and fiber clouding. (EXH 23, GDC-2, p.1488) While there is no reason to think future generations of fiber submarine cable will not live similarly to the copper cable, staff believes the earlier generations of this technology cannot be expected to experience that type of life characteristic. Staff's review finds BST's 20 year projection life from its Florida-specific study to be reasonable and appropriate to use in this proceeding.

Of the remaining ten accounts, five accounts (digital switching, digital circuit, and the three metallic cable accounts)

are technology-sensitive, represent the majority of the investment, and are the most controversial. BST's proposed projection lives for these accounts are the result of using the technology substitution model, the purpose of which is to determine how fast a new technology is displacing an older technology. (Cunningham TR 875; EXH 24, p.14) In this case, the model is forecasting the rate at which fiber technology is substituting for copper technology. According to witness Cunningham, the substitution model was used to determine the average remaining life for each account and then a projection life or economic life was made. (EXH 24, p.15) The projection life was simply backed into depending on the remaining life and curve shape (retirement pattern) of the given account. (EXH 24, p.18)

Regarding the technology substitution model BST used to determine its projection lives, AT&T/MCI witness Majoros agreed that certain technological changes like Asynchronous Digital Subscriber Line (ADSL) could extend rather than shorten copper plant lives. (EXH 24, p.17) While staff does not necessarily believe that ADSL will extend the life of copper plant, we do agree that the use of ADSL may permit the copper cable plant to fulfill its life expectancy rather than shorten or lengthen it. In response to deposition questions regarding the substitution model, witness Cunningham agreed that the model only recognizes new technologies substituting for old; it does not recognize such complementary or demand-enhancing technologies as ADSL. (EXH 24, pp.76-77) Staff believes this is a weakness of the substitution model.

Further, witness Cunningham agreed, during cross examination at the hearing, that the substitution model is based on several input assumptions that are under the control of the person performing the analysis. (TR 877) Different assumptions could therefore yield different results with the model. Staff believes this makes the outputs of the model very subjective in nature.

Staff believes that BST's studies are based on its desire to replace copper with fiber in the network. Regarding the deployment of fiber in the feeder portion of the network, its Florida-specific study states

> Fiber deployment in the Feeder loop has entered a rapid deployment phase with projected complete substitution (99%) by year-end 2005. (EXH 23, GDC-2, p.1395)

Additionally, BST's witness Cunningham stated in his deposition that the company will no longer tie a metallic cable to the main frame. (EXH 24, pp.38-39) BST is not replacing existing copper

feeder facilities with fiber. Fiber is simply the choice where no existing facilities exist. Certainly with virtually limitless transport capacity of fiber cables, as more fiber feeder facilities are installed, there will come a time when the circuits transported over copper facilities will be switched over to the installed fiber facilities. (EXH 23, GDC-2, p.1394) The ultimate question being debated is when that will be.

At the hearing, staff discussed with witness Cunningham, a publication by Mr. James R. Bright, Practical Technology Forecasts (Technology Futures, Inc., 1978, 1994, pp.89-90), regarding the accuracy of predictions resulting from the substitution model. (TR 884) Mr. Bright opines that the accuracy of predictions based on the first 5 to 10 percent of displacement data may be very poor while forecasts based on 20% to 25% displacement data seem to be quite accurate. (TR 884) Witness Cunningham did not agree or disagree with Mr. Bright's assessment of predictions based on the first 5 to 10% displacement data but stated that accuracy would depend upon other information, such as company planning, being factored into the analyses. (TR 883-886) Witness Cunningham was asked to provide the annual rate of displacement of copper with fiber in the feeder network for every year since BST began installing fiber feeder. (TR 879) Staff believed this information would serve as another check for the reasonableness of the substitution model's predictions of the demise of copper facilities. Unfortunately, the late-filed exhibit witness Cunningham submitted did not relate to the annual rate of displacement of copper, but rather to the average substitution rate of copper. (EXH 27)

Regarding BST's plans for installing fiber in the distribution portion of the network, the company has actively pursued the development of Fiber in the Loop architectures, and anticipates 99% fiber deployment by 2015. (EXH 23, GDC-2, pp.1398) Further, BST's depreciation study asserts that residential broadband will have a significant impact on the future distribution network. (EXH 23, GDC-2, p.1397) The study narrative goes on to say that services supported by a broadband network range from very low bit rate telemetry to conventional voice and high-fidelity audio, and will include various video formats. (EXH 23, GDC-2, p.1397)

BST's cost model assumes an efficient cross-over point for fiber in the feeder loop. BST has used a 12,000 foot cross-over point for when fiber will be deployed, indicating that this is the most efficient least-cost technology for telephone service. Consequently, all copper in the loop is presumed to be the most efficient least-cost technology for providing telephone service. Staff believes these cost model assumptions are contrary to BST's

depreciation study assumptions of replacing copper with fiber discussed above. Additionally, BST's cost model assumes all copper distribution facilities which also appears contrary to the depreciation studies which are based on BST's desire to replace copper with fiber in the distribution network. "By the later 1990's fiber deployment in the local loop may be necessary to allow BST to provide broadband services economically." (EXH 23, GDC-2, p.1397)

Not to rely totally on history but to use history as a starting point, staff compared BST's past forecasts of retirements and additions with its actual achievement as presented in the studies.

Table 1-1
1989 and 1992 BST Retirement Forecast for Metallic Cable Accounts
($000)

	1989 Forecast	1992 Forecast	Actual 1992-1994 Retirements
Aerial	$ 63,700	$ 60,735	$ 59,845
Underground	52,100	160,341	44,651
Buried	161,900	231,855	68,931

Table 1-2
1989 and 1992 BST Forecast for Metallic Cable Account Additions
($000)

	1989 Forecast	1992 Forecast	Actual 1992-1994 Additions
Aerial	$ 84,300	$ 97,162	$125,901
Underground	69,600	33,552	38,189
Buried	214,800	282,951	314,412

(EXH 23, GDC-2, pp.1410-1415)

The above serves to illustrate that BST's retirement forecasts have tended to be much more aggressive than actual results, whereas forecasts of additions have tended to be understated. In the studies BST has presented in this proceeding, its proposed lives are the result of a forecast of how fast fiber technology will displace copper facililities. If history serves as

a guide, it would seem probable that BST's forecasts for this displacement would be rather overstated from what will actually take place. Additionally, AT&T/MCI witness Majoros testified that the utilization of copper circuits has increased since BST's last intrastate depreciation prescription indicating that the technology displacement isn't taking place. (EXH 54, p.22)

Based on the above discussions, staff recommends use of the life projections proposed by AT&T/MCI witness Majoros and prescribed by the FCC for BST of Florida for the five technology-sensitive accounts. Staff believes there is sufficient conflict between the assumptions used in BST's depreciation study and the assumptions used in its cost studies to question the appropriateness of using the results of the depreciation study in this proceeding. Further, staff has raised several concerns regarding the technology substitution model that BST employed to determine the projection lives for these accounts. Additionally, staff's review of BST's previously submitted forecasts indicates that BST's current forecasts may not be reasonable.

For the three fiber cable accounts, staff recommends use of BST's projection lives of 20 years from its Florida-specific study. (EXH 23, GDC-2, p.164) As discussed earlier for submarine fiber cable, staff believes that earlier generations of this technology cannot be expected to experience the same type of life characteristic expected for future generations. Staff finds that BST's Florida specific lives recognize that fiber technology is continuing to be enhanced and refined.

The two remaining accounts to be addressed are motor vehicles and computers. BST studied the computer account by its three major categories of investment: mainframe, minicomputers, and personal computers. (EXH 23, GDC-2, p.580) The study narrative states that the rapid advance of computer hardware has made it economical to retire computers at an increasing rate. (EXH 23, GDC-2, p.586) Staff agrees with BST that the life span of personal computers is heavily influenced by technological advances and competition. (EXH 23, GDC-2, p.586) BST has projected a life of 5 years for the mainframe and minicomputer categories and a life of 3.5 years for the personal computer category. The 5 year projection life for the mainframe category is certainly in line with the historical life span of 5.8 years. (EXH 23, GDC-2, p.587) Life indications have continued to decrease over the 1991-1996 period. (EXH 23, GDC-2, p.594-600) Staff therefore recommends the use of BST's Florida-specific projection life of 4.4 years for the computers account.

For motor vehicles, BST's Florida-specific projection life of 8 years represents a composite of 7.5 years for light motor

vehicles and 10 years for other motor vehicles. These lives are in line with the account's experience and future plans of the company. Staff therefore recommends the use of BST's proposed Florida-specific projection life of 8.0 years for motor vehicles. (EXH 23, GDC-2, p.164)

Salvage Values

The salvage values BST is recommending reflect a simple average of the salvage values BST proposed in its 1995 and 1996 regional (9 states) depreciation studies. (Cunningham, TR 848; EXH 4, p.65) The salvage values AT&T/MCI are recommending reflect those approved by the FCC in BST's 1995 depreciation prescription for Florida. (Majoros TR 4; EXH 53, Attach. 7) A review of BST's proposed salvage values specifically for Florida interestingly indicates an agreement with those the FCC prescribed, and therefore with those recommended by AT&T/MCI, for all accounts except eleven (special purpose vehicles, analog switching, radio, circuit DDS, circuit digital, circuit analog, large PBX, other terminal equipment, aerial cable-fiber, and submarine cable-metallic and fiber).

AT&T/MCI did not address nine accounts (special purpose vehicles, analog switching, radio, circuit DDS, analog circuit, large PBX, other terminal equipment, and submarine cable-metallic and fiber). For these accounts, staff recommends use of the future net salvage proposals found in the BST Florida-specific study. (EXH 23, GDC-2, p.164) Staff finds these proposals reasonable estimates of future expectations for these plant types as supported by the study.

The remaining two accounts are Digital Circuit and Aerial Cable Fiber. While there is no difference in the parties' positions for digital circuit, BST's Florida-specific study shows a future net salvage proposal of 2%. BST points out that a major portion of the salvage currently being realized is due to reuse of channel banks and panel equipment. (EXH 23, GDC-2, p.943) With the increase of digital technology, staff believes the reuse potential for this equipment will be minimal. Any removal costs should offset the attendant salvage. Staff therefore believes a 0% future net salvage proposal to be reasonable.

There is a minor difference in the parties' positions regarding aerial cable-fiber. Witness Cunningham recommends use of a negative 15% net salvage based on BST's regional studies. (TR 848) Witness Cunningham's Exhibit 23 shows a Florida-specific BST proposal for this account of negative 12%. Witness Majoros recommends use of a negative 11% net salvage value, which the FCC prescribed for BST Florida in 1995. (EXH 53, Attach. 7) The BST

depreciation studies provide no insight regarding BST's Florida-specific future net salvage proposal of negative 12%. (EXH 23, GDC-2, pp.1489-1503) The data presented in the studies, however, show limited history with recent net salvage averaging negative 4%. Regardless, staff finds no reason to think that future costs to remove aerial fiber cable should be any less than the costs to remove aerial copper cable. For this reason, staff recommends acceptance of AT&T/MCI's recommended negative 11% net salvage.

III. TAX FACTORS

In Docket Nos. 960833-TP, 960846-TP, and 960916-TP, Order No. PSC-96-1579-FOF-TP, issued December 31, 1996, the Commission said:

> In conformance with this section of the Act, we find that the appropriate cost methodology to determine the prices for unbundled elements is an approximation of Total Service Long Run Incremental Cost (TSLRIC). We note that we adopted TSLRIC as the appropriate cost methodology for unbundled elements in our state proceeding in Docket No. 950984-TP, by Order No. PSC-96-0811-FOF-TP, issued June 24, 1996.
>
> We also find that the Act can be interpreted to allow geographic deaveraging of unbundled elements, but we do not believe that it can be interpreted to require geographic deaveraging. We further find that the record in this proceeding does not support a decision to geographically deaverage the price for unbundled elements, because the record does not contain sufficient cost evidence.

The order further notes that BellSouth found fault with the Hatfield model because it did not use BellSouth or Florida-specific input data.

In this proceeding, the Hatfield model used by AT&T and MCI did not contain Florida-specific tax factors although many of the factors used were said to be Florida-specific. AT&T/MCI witness Wood indicated during his deposition that the Hatfield model was run with BellSouth Florida-specific factors, that "99% or so" of the other input values in the Hatfield model are not default values and are already specific to Florida, BellSouth's operating territory, or to smaller areas within BellSouth's operating territory. (EXH 61, pp.36-37) However, AT&T/MCI witness Klick indicated during his deposition that the tax factors used were the default factors, meaning that they are the average factors for the nine state region containing Florida. (EXH 61, p.153) Furthermore, staff would point out that neither the Hatfield model nor documentation supporting the Hatfield model's inputs was filed in this proceeding.

BellSouth witness Caldwell stated that BellSouth used the regional income tax factor of 38.71% in the models. (EXH 14, pp.188-189) Witness Caldwell also indicated that the ad valorem and other factor used was Florida-specific. (EXH 14, p.201) She

provided the information and instructions required to replace any of the default tax factors in the model with the Florida-specific tax factors. (EXH 14, pp.189-196, 202-204) The Florida-specific factors are contained in BellSouth's filing in Exhibit 13 at pages 20 and 1404.

In describing the generic process of developing the non-recurring costs for UNEs, witness Caldwell mentions the addition of gross receipts taxes. (TR 338-339) In its brief, BellSouth references page 339 of the transcript and says that proper recognition of shared and common cost and tax factors was made. (BR 19) No other party mentions tax factors in its post hearing brief.

Because the rates or prices set in this docket will be for UNEs offered in Florida and for physical and virtual collocation in Florida, staff believes that the Florida-specific tax factors are most appropriate when they are available. Since the evidence in this record does contain the Florida-specific tax factors, staff recommends use of the following Florida-specific tax factors: a combined state and federal income tax factor of 38.57%, a gross receipts factor of 1.53%, and an ad valorem and other factor of 1.20%.

IV. SHARED AND COMMON COST

BellSouth's Proposal

BellSouth asserts that its TSLRIC methodology used in this proceeding is consistent with the guidelines established by this Commission in Order No. PSC-96-1579-FOF-TP, issued December 31, 1996. The Commission stated:

> We find TSLRIC should be defined as the costs to the firm, both volume sensitive and volume insensitive, that will be avoided by discontinuing, or incurred by offering, an entire product or service, holding all other products or services offered by the firm constant. (Order at 25)

The order further states:

> Upon consideration of the evidence in the record and based on the Act, we find it appropriate to set permanent rates based on BellSouth's TSLRIC cost studies. The rates are for the unbundled network elements we consider to be technically feasible. The rates cover BellSouth's TSLRIC cost and provide some contribution toward joint and common costs. (Order at 33)

While shared and common costs are not incremental to any one service that BST provides, witness Varner contends that they are valid costs of doing business and must be recovered. Furthermore, BST asserts that total revenues from all services must cover total incremental costs, in addition to providing sufficient contribution to cover all other costs, if the firm is to remain in business. (Varner TR 77)

BellSouth's witness Reid provided testimony that discussed the appropriate methodology for including a reasonable amount of forward-looking shared and common costs in BST's unbundled network element rate calculations. BellSouth's basic approach was to compute two types of factors: shared cost factors, and a common cost factor. Shared costs were split between wholesale and retail shared costs, with the retail shared costs being excluded from the wholesale factors which ultimately are applied to the UNEs at issue in this proceeding. The labor portion of the shared wholesale costs was used to derive shared labor factors, which BST used in its non-recurring cost studies; the remaining shared wholesale costs were attributed to various investment accounts and subsequently applied in the recurring cost studies. The common cost factor, computed as

the ratio of wholesale common costs to total wholesale direct costs, was applied both in the Company's recurring and non-recurring cost analyses. (TR 553-554)

The following narrative describes in greater detail the procedures followed by BST to derive these factors. BellSouth's starting point was the use of its regional regulated 1995 expenses and regulated mid-year 1995 investment. (Reid TR 551) Witness Reid contends that the 1995 data provided the greatest amount of detail that was available -- by cost pool and cost sub-pool, which are disaggregations of higher-level account data. BST asserts that this data was not available for 1996. (EXH 18, p.10) BellSouth stated that the only use of the 1995 data in the study was to determine a breakdown of expenses by individual account and subcategories within that account. (EXH 18, p.10)

The next step in BST's methodology uses historical data consisting of 10 months of actual cost data from 1996 to develop a projection of average costs and investments for the period 1997 to 1999. (Reid TR 568) Once the ten months of 1996 data is annualized, the annual data is normalized to account for any unusual events. (Reid TR 552) Witness Reid states that forecasted growth factors and productivity factors are then applied to the 1996 normalized costs to determine BST's forward-looking costs. In addition, factors that reflect the relationship of current cost to original book cost are applied to the investment accounts. BST claims that the use of these factors yields cost data that are representative of the forward-looking average costs for the period 1997 to 1999. (TR 552)

BellSouth developed shared and common cost factors that reflect a distribution of shared costs to distinct attributable network elements or facilities, and common costs which span the activities of the business. (EXH 13) Witness Reid stated that the objective of BST's shared and common cost methodology is to split the company's total forward-looking cost of business between its wholesale and retail functions and to identify three categories of wholesale costs. (TR 549)

First, there are "direct wholesale costs." These are costs that are clearly and directly assignable to the wholesale function. For example, the costs of switches would fit into this category. The direct wholesale costs are then divided between those costs related to recurring functions, and those that are related to other wholesale transactions such as non-recurring or special transactions. (Reid TR 553) Second, there is the portion of shared costs attributed to wholesale. (Reid TR 553) Shared costs are incurred in the production of two or more products or services by the same production process that does not span all activities of

the business. Typical shared costs include costs for items of general support equipment, procurement, engineering expenses, human resources, etc. (Reid TR 553) Third, there is a reasonable portion of common costs applicable to wholesale operations. Common costs are costs that usually span all of the activities of the business, and the products and services it produces. These costs are not directly assignable or attributable to one product or service, but are necessary for the operation of the business as a whole. Typical common costs are items such as accounting and finance costs, executive costs, etc. (Reid TR 554)

While witness Reid contends that all of the costs applicable to the wholesale function must be recovered by UNE rates, he asserts that all costs applicable to the retail function should be excluded. (TR 554) Staff agrees that the costs associated with the retail function should be excluded from the calculation of UNE costs. However, as stated by BST, the difficulty with this approach is separating the "shared costs" and the "common costs" between the "wholesale" and "retail" functions, and attributing the wholesale shared costs to each network investment category. (TR 554)

BST witness Reid asserts that since the Uniform System of Accounts (USOA) does not identify categories by separating the shared costs and common costs between wholesale and resale, a study was necessary to determine the appropriate amounts to include in each category. (TR 549-550) BST contends that its Cost Allocation Manual (CAM) and the reporting procedures that the Company follows to separate its costs on a cost causative basis between regulated and non-regulated provided an appropriate model on which to base this study. (Reid TR 550) Witness Reid asserts that BST used the basic cost attribution principles of its CAM and the underlying cost pools and sub-pools that it maintains for CAM cost attribution purposes as the methodology for determining a breakdown of wholesale costs by categories. (TR 551-552) BST contends that the wholesale costs identified as a result of this process are the appropriate costs to apply to a cost methodology that defines the cost for UNEs. (Reid TR 550)

After proper categorization of these costs, BST developed three types of factors. The first factor is the wholesale common cost factor. It represents the relationship between wholesale common costs and the sum of wholesale direct and wholesale shared costs. (Reid TR 556) BST's proposed wholesale common cost factor in this proceeding is 5.30%. A second set of factors are the shared cost factors. The shared cost factors proposed by all parties in this proceeding are shown on Attachment B. The shared cost factors are derived by dividing the shared cost assigned to a particular category of investment by the projected average

investment in that category. (Reid TR 550, 556) The third set of factors are the shared labor factors, which reflect the relationship between shared costs and labor costs. The shared labor factors are derived for each work force group by dividing the attributed shared costs by the related salaries and wages. The purpose of these factors is to allow the inclusion of shared costs in labor rates. BST asserts that they are primarily used to compute non-recurring charges that have labor components. (Reid TR 551) Staff would note that each factor will be discussed in further detail later in staff's recommendation.

AT&T/MCI's Proposal

AT&T/MCI propose a uniform 10.4% markup, as used in the Hatfield Model, to estimate common overhead costs in its collocation model and non-recurring cost model. (EXH 36, p.19) AT&TMCI assert that its proposed 10.4% markup captures all of the relevant overhead costs, including any element-specific costs and a reasonable share of any common overhead costs. (Klick TR 1001) AT&T/MCI also propose that the labor rates reflected in the AT&T/MCI Non-recurring Cost model are the labor rates that the Commission should approve. (TR 1564)

BST witness Reid asserts that AT&T/MCI's proposed 10.4% markup is the value used in the Hatfield model, and this value is based more directly on historical data than BST's model. (EXH 18, p.61) In fact, witness Reid asserts that the 10.4% factor is developed from AT&T/MCI's 1994 expense and revenue data as reported to the FCC in its ARMIS reports. Further, some of the expense accounts that BST treated as shared costs are treated as common costs in the Hatfield model's input value. (Reid TR 561) Therefore, witness Reid compared the level of the forward-looking factors that BST proposed in this proceeding to factors which would have been produced if BST had used historical data to calculate its factors. (TR 562) In addition, witness Reid compared AT&T/MCI's proposed 10.4% common cost factor to BST's proposed common cost factor. (EXH 17)

Using first BST's historic 1994 data and then BST's projected data, witness Reid calculated common overhead factors in the same manner as AT&T/MCI did. Using BST historical data for 1994, a 9.7% factor was obtained, which indicates that it is comparable to AT&T/MCI's proposed 10.4% for that same time period. (EXH 17) However, using BST's projected data in the same formula, BST's analysis yielded a common cost factor of 6.4%, which is considerably lower than AT&T/MCI's 10.4% and higher than the 5.30% factor proposed by BST. (EXH 17)

Staff would point out that while the comparisons provided by witness Reid are insightful, neither the Hatfield model nor the documentation supporting the Hatfield model's numerous inputs was filed in this proceeding. Thus, we believe there is insufficient official evidence in this record to evaluate the propriety of AT&T/MCI's proposed 10.4% factor. In addition, this Commission declined to rely upon the Hatfield Model in the earlier arbitration proceeding. See Order No. PSC-96-1579-TP, issued December 31, 1996. Therefore, staff recommends that the Commission should not use AT&T/MCI's proposed 10.4% variable overhead in this proceeding.

While AT&T/MCI believe that the Commission should accept its proposed overhead costs and labor rates based on its concerns with BST's model, AT&T/MCI also proposed various adjustments to BST's shared and common cost model. AT&T/MCI proposed an adjustment to BST's expense development factors that included the removal of growth rates, a 50% reduction in network operating expenses, and a 27% reduction in general and administrative expenses. (EXH 55; EXH 56, pp.16-17) AT&T/MCI also proposed an adjustment to BST's shared labor factors which has the effect of reducing the shared labor factors to zero and shifting recovery of those costs to the shared cost factors. Last, AT&T/MCI proposed excluding BST's Local Carrier Service Center (LCSC) cost from the shared cost analysis, and revising the carrying costs that result when the cost of money and depreciation rates are adjusted. In addition, AT&T/MCI assert that due to lack of available data, their revisions to BST's shared and common cost model reflect only those adjustments that could be quantified. (Lerma TR 1560) A discussion of AT&T/MCI's proposed adjustments to BST's shared and common cost model follows.

Discussion of Shared and Common Costs

AT&T/MCI contend that this Commission should not rely on BST's shared and common cost model to calculate shared costs, common costs, or shared labor rates for use in developing UNE prices. AT&T/MCI assert that BST's shared and common cost model is unreliable and unacceptable for calculating these costs for the following reasons: the model is not forward-looking; outputs of the model cannot be confirmed; and the model contains many methodological errors. (Lerma TR 1532)

AT&T/MCI assert that BST's shared and common cost model is deficient in determining the long-run shared and common costs of an efficient, forward-looking, least cost network. Witness Lerma contends that BST's model does not derive the appropriate costs that would be incurred by BST in a competitive environment since it does not reflect long-run productivity improvements. AT&T/MCI contend that the pressures to reduce costs in a competitive

environment are greater than in a monopoly environment. (Lerma TR 1569) Instead, witness Lerma asserts that BST's shared and common cost model is based on embedded historical costs, and largely projects costs that would be incurred if BST simply did "business as usual" in 1997, 1998, and 1999. (TR 1532-1533)

AT&T/MCI witness Lerma does acknowledge that the use of historical data may be appropriate to estimate forward-looking shared and common costs. (EXH 56, p.14) For example, witness Lerma asserted that the use of historical data may be appropriate if a trend analysis is utilized to compare what is happening with various companies within the industry. In fact, witness Lerma stated that he performed a trend analysis using the information provided in BST's cost studies. (EXH 56, p.15)

Based on his analysis, witness Lerma proposed revisions to BST's expense and investment development factors, which convert the historical data to forward-looking data. AT&T/MCI proposed that BST's projected inflation/growth rates for the years 1997-1999 be removed. (EXH 56, p.16) AT&T/MCI also proposed a 27% reduction in BST's general and administrative costs (Accounts 6710 and 6720), and a 50% reduction in BST's network operating expenses (Accounts 6512 and 6530-6535). (Lerma TR 1538-1539; EXH 56, pp.16-17)

Use of Forward-looking Costs and Productivity Improvements

Witness Lerma offered two arguments as to why BST's shared and common cost model is not forward-looking. First, witness Lerma explains that BST's estimate of expenses for the years 1997-1999 in Account Nos. 6110 (Network Support), 6120 (General Support), 6510 (Other Property, Plant and Equipment), 6540 (Access), 6610 (Marketing), 6620 (Services), and 67xx (General and Administrative, excluding 6727) do not account for any productivity improvements. (Lerma TR 1534)

AT&T/MCI contend that BST estimated expenses in these accounts by taking the expenses incurred by BST during the first ten months of 1996, and extrapolating the 1996 expenses from the 10 months of historical expenses. (Lerma TR 1535) AT&T/MCI assert that BST supplied no data to justify its extrapolation of the full year 1996 costs from the ten months of data or to support the normalizing adjustments made to its annualized 1996 data. (Lerma TR 1546) However, BST asserts that actual 1996 data has subsequently been obtained and are not significantly different from the ten months data that were analyzed. Witness Reid testified that the 1996 annualized total expenses excluding depreciation were approximately 6.473 billion, whereas the actual 1996 ARMIS data were approximately 6.507 billion. (EXH 18, pp.12-13)

AT&T/MCI further contend that BST's assumption that its normalized and annualized 1996 expense levels will increase with inflation is wrong. (Lerma TR 1536) Witness Lerma asserts that other than the effects of Hurricane Fran, the impact of the Olympics, the effects of a projected 11,300 employee workforce reduction, and the effects of a compensated absences issue, BST's model assumes it will incur the same expenses in 1997-1999 as it did in the first ten months of 1996, and that those expenses will increase with inflation at a rate of approximately 3.5% per year. (TR 1535-1536) Although BST utilized inflation and normalization adjustments for these accounts, AT&T/MCI contend that BST's study is not forward-looking since it is not representative of an efficient least-cost network based on current technology. (TR 1535-1536) AT&T/MCI assert that BST must consider all expense levels and productivity improvements related to an industry subject to competition, that would result from workforce reductions, outsourcing and re-engineering initiatives that BST will undertake as it enters a competitive environment. (TR 1536)

Second, witness Lerma explains that while BST claims it considered certain productivity improvements in its model, AT&T/MCI contend that cost reductions that should be expected in a competitive environment were not considered. This second argument relates to BST's estimate of expenses for the years 1997-1999 for accounts 62xx (central office), 6310 (Information Origination/Termination), 6410 (Cable and Wire Facilities), 6530 (Network Operations), and 6727 (Research and Development). (Lerma TR 1534)

AT&T/MCI contend that BST did not account for all of the cost reduction initiatives in these accounts that BST itself identified. (Lerma TR 1537) BellSouth's model estimated expenses for 1997-1999 for these accounts as described in witness Lerma's first example, except that the growth rate used for each year considered the impact of changes in demand, service enhancements, and productivity changes, as well as the effects of inflation. (TR 1537) For these accounts, BST's shared and common cost model used growth rates of 5.1% in 1997, 4.5% in 1998, and 4.2% in 1999. AT&T/MCI assert that BST's own supporting documentation indicates that cost reductions related to additional re-engineering initiatives, organizational alignment initiatives, and productivity changes were not considered in the development of BST's growth rates. AT&T/MCI contend that if these cost reductions were considered, BST's growth rates would be .7% in 1997, .2% in 1998, and 1.4% in 1999. (Lerma TR 1538)

BST's witness Reid contends that it has taken various competitive effects into consideration in determining its shared and common costs. (EXH 18, p.64) Witness Reid points out several

ways that BST has reflected productivity improvements in its cost study. Witness Reid states that in the development of its inflation/growth factors, BST included a network operations productivity offset of 2.9% per year. (TR 595) In addition, witness Reid states that BST has had considerable downsizing in its workforce, and has outsourced some of its activities. (EXH 18) Witness Reid asserts that BST used its telephone plant index (TPI) as the growth factor in various accounts which has the effect of adjusting expenses for the impact of its force reductions. (EXH 18, pp.69-71) For example, witness Reid contends that in BST's general support account (6120) alone, BST has reduced its expense projection by approximately $23 million. (EXH 18, p.71) In addition, based on BST's 10-K report, witness Reid asserts that BST has reduced its employees per 10,000 access lines from approximately 40 in 1992 to approximately 28 in 1996. (EXH 18, p.64) Witness Reid contends that BST's adjustments to its projected data reflect a continuation on BST's part to complete its proposed 11,300 force downsizing. (EXH 18, p.65)

Witness Reid also testified that the reductions related to additional re-engineering initiatives, organizational alignment initiatives, and productivity changes-unspecified, referred to by AT&T/MCI, were provided by BST's network organization for budget purposes, and were not used in its study. (TR 583-584) Instead, BST specifically applied the expense savings for the 11,300 work force reductions that was a known item, and that has an impact on these other factors. (EXH 18, p.78) BST substituted a specific known reduction in workforce for these other factors that were unspecified and budget driven. (Reid TR 585)

Witness Reid also asserts that BST's shared and common cost study projects what its investment would be on a going forward basis and develops a ratio of these types of costs to that future investment. (EXH 18, p.69) In other words, BST believes that its methodology creates a level of productivity by applying its factors to the forward-looking least-cost investment based on projections of its current investment.

Staff Analysis

As discussed above, staff would point out that BST's actual 1996 data is merely .5% higher than the annualized total expenses (excluding depreciation) reflected in the study. Since BST's actual 1996 data is not significantly different than its annualized 1996 data, staff believes that BST's use of 1996 annualized data is appropriate. Staff believes that the annualized 1996 data utilized by BST is representative of the actual 1996 costs incurred by the Company.

Staff also believes that BST's use of inflation/growth factors that range from 3.4% to 5.1% is reasonable. Staff believes that BST has incorporated reasonable productivity offsets in developing its inflation/growth factors. As stated by AT&T/MCI, in addition to normalizing for unusual events such as Hurricane Fran and the Olympics, BST has taken into consideration a workforce downsizing of 11,300 employees. Staff believes that BST's workforce reduction is appropriate in lieu of the additional factors referred to by AT&T/MCI (i.e., re-engineering initiatives, organizational alignment initiatives, and productivity changes-unspecified). Staff believes that the expense savings related to the specific workforce reduction of 11,300 employees is reasonable and has an impact on these other factors. Given the fact that BST has taken into account various unusual events, such as the Olympics, measurable downsizing, etc., staff believes that BST's normalization of its 1996 data is also appropriate.

In addition, since BST's shared and common factors are based on the relationship between projected expenses to projected investments and applied against forward looking investments, staff believes that BST's factors inherently have some productivity built into them. While staff believes that the incorporation of productivity in a forward-looking model is essential, staff also believes that it is reasonable to assume that some growth will occur over the period 1997-1999. Thus, based on our analysis, staff believes that BST's projections of expected growth and expected productivity for the period 1997-1999 are appropriate.

Specific Reductions in General and Administrative (G&A) and Network Operating expenses

While the discussion above dealt with BST's model in the broader sense as it relates to the use of forward-looking costs and productivity improvements, the following discussion deals with specific adjustments to certain expense accounts. Where there is a direct relationship between certain expense and investment accounts, BST combined the expenses with the capital carrying costs of the related investment accounts. (EXH 13) For example, Account 6112 Motor Vehicle maintenance expense was combined with the capital-related costs of Account 2112 Motor Vehicle. (EXH 13) Subsequently, the shared cost factor was determined by dividing the shared cost assigned to a particular type of investment by the projected average investment.

AT&T/MCI witness Lerma asserts that ARMIS data for 1989 through 1996 for all of the Bell Operating Companies (BOCs) indicate that General & Administrative (G&A) expenses per line have been trending downward, with the decline ranging from 22% to a high of 54%. (TR 1538) BellSouth's G&A expenses per line had a downward

trend for that time period of 22.4%. Witness Lerma asserts that AT&T/MCI's proposed G&A reductions are also based on the testimony of Dr. Richard Cabe regarding the railroad industry after it was deregulated, which experienced a 27% reduction in G&A expenses. (EXH 56, pp.18-19)

BST's witness Reid contends that BST accounted for substantial reductions in its G&A expenses, which demonstrates that a considerable amount of productivity is expected to occur in these accounts. (EXH 18, p.80) Specifically, BST has proposed approximately $84 million in reductions in expenses for the 67xx accounts related to its 11,300 workforce reductions. (EXH 18, p.80; EXH 3, p.91) BST also proposed approximately $1.145 billion as a reduction for the 67xx accounts related to its normal operations on a going-forward basis. (EXH 18, p.80; EXH 3, p.91)

AT&T/MCI contend that BST's network operating expenses will also be reduced by the deployment of current least cost technology throughout BST's network. (Lerma TR 1539) AT&T/MCI assert that the outdated equipment reflected in BST's historical costs is more costly to operate. Witness Lerma contends that with modern equipment, network surveillance can be executed from a central facility which will provide substantial savings. In addition, AT&T/MCI argue that some of the customer interface portion of repair activities that result from customer trouble reports and related plant administration work will be performed by competitors. (TR 1539) Based on a data request from other states (excluding Florida), witness Lerma contends BST will experience a decrease in its network operating expenses of approximately 10% due to competing companies performing the customer interface function. (EXH 56, p.87)

Witness Lerma also bases his proposed reduction in network operating expenses on a trend analysis of BST's expenses per access line for accounts 6530 and 6512 for the period 1989 to 1996. (EXH 55) Witness Lerma contends that over this time period, BST's expenses in these accounts decreased by approximately 47%. (EXH 55; EXH 56, p.87) Thus, based on a combination of these indicators, witness Lerma proposes that BST's network operating expenses be reduced by 50%. (TR 1539)

While BST witness Reid agreed that network operating expenses will be reduced in a competitive forward-looking environment, he stated that BST has already accounted for such reductions in its study. (EXH 18, p.102)

Staff Analysis

Staff agrees with both AT&T/MCI and BST that the use of forward-looking least cost technology will have the effect of reducing network expenses. However, staff does not agree with either BST's or AT&T/MCI's treatment of G&A expenses and network operational expenses. Witness Lerma contends that the use of network surveillance equipment will reduce BST's network operating expenses. However, witness Lerma admits that he does not know whether or not BST even has the appropriate equipment available to perform network surveillance from a central facility in Florida. (EXH 56, p.112) In fact, witness Lerma admits that he relies on other witnesses' conclusions that reductions in expense levels will result from the introduction of new technologies in the future. However, witness Lerma concedes that these witnesses provided no specific information regarding why new technologies would be introduced or to what degree expense levels would be reduced as a result of the new technologies. Furthermore, witness Lerma admits that he does not know what equipment exists today in BST's network or of the capabilities of BST's existing network. (EXH 56, pp.112-113)

AT&T/MCI also argue that some of the customer interface activities will be performed by competitors. (TR 1539) Since AT&T/MCI had not received Florida specific information regarding customer interface costs, witness Lerma used an average of data from South Carolina, Alabama, Louisiana, and Tennessee to derive an approximate decrease in network operating expense of 10%. (EXH 56, p.87) Staff agrees that a portion of the customer interface activities may be handled by competitors in the future.

Witness Lerma also bases his proposed reduction in network operating expenses on a trend analysis of BST's expenses per access line for accounts 6530 and 6512 for the period 1989 to 1996. (EXH 55) Witness Lerma contends that over this time period, BST's expenses in these accounts decreased by approximately 47%. (EXH 55; EXH 56, p.87) Witness Lerma contends that approximately 40% of his proposed 50% reductions in these accounts are based on this analysis. He asserts that the other 10% are associated with the reduction of customer interface costs discussed above.

AT&T/MCI also based their proposed reductions of BST's G&A expenses on a trend analysis of BST's expenses per access line for accounts 6710 and 6720. Witness Lerma asserts that ARMIS data for 1989 through 1996 for the Bell Operating Companies (BOCs) indicate that decreases in G&A expenses per line ranged from 22% to approximately 54%. (TR 1538) During this same period, BST's G&A expenses per line declined by 22.4%. (EXH 55) Staff believes that a decrease in expenses per access line over this time period for these accounts indicates that BST will most likely continue to

reduce its network operational expenses and G&A expenses on a going forward basis.

In addition, AT&T/MCI witness Lerma asserts that its proposed 27% reduction in BST's G&A expenses is supported by Dr. Richard Cabe's report regarding the post-deregulated railroad industry, which experienced a 27% reduction in G&A expenses. While Dr. Cabe's report shows data from the period 1983 to 1995, witness Lerma admitted that deregulation and competition in the railroad industry was not allowed until the 1987-1988 time frame. (EXH 56) Prior to that time, the railroad industry experienced no competition. While the Telecommunications Act of 1996 has introduced a great deal of competition, staff believes that BST was exposed to competition, to some degree, prior to the inception of the Act. Thus, staff does not believe that the deregulation of the railroad industry and telecommunications industry is an apples to apples comparison. Therefore, staff does not believe that witness Lerma's assertion that BST will experience a 27% reduction in G&A expenses as did the railroad industry is appropriate.

The evidence in the record shows that BST has experienced some reductions in both its network operations and G&A expenses, which will be carried forward. BST has accounted for some productivity based on the fact that it has decreased its number of employees per 10,000 access lines from 1992 through 1996 from 40 to 28, which reflects in part its efforts to accomplish its proposed 11,300 force downsizing. As noted above, BST has proposed approximately $84 million as a reduction in expenses for the 67xx accounts related to its workforce reductions. (EXH 3, p.91; EXH 18, p.80) While BST has made efforts to reduce its expense levels, staff believes that additional reductions in its network operations expenses and general and administration expenses should be incorporated.

Staff believes that AT&T/MCI'S and BST's assumptions as they relate to shared and common costs likely represent extreme views of what is achievable by an efficient forward-looking, least cost network. AT&T/MCI's model of an efficient forward-looking least cost network is represented by the Hatfield Model, which uses a "bottoms up," "scorched node" approach. Witness Lerma described a "bottoms up" approach as one in which you build long-run incremental costs from the ground up. (EXH 56, p.9) In other words, one determines what one's costs are going to be in the future and builds them, as opposed to taking the costs as they exist today and adjusting them. On the other hand, BST takes the network it has in place and modifies it to appropriately reflect least cost technology on a going forward basis.

BST and AT&T/MCI do agree that some shared and common cost is appropriate based on forward-looking, least cost principles. However, staff does not believe that the level of overhead costs attributed to the UNEs in this proceeding is reasonable. In fact, the level of shared cost associated with the recurring UNE charges in this proceeding ranges from approximately 5% to 25%. Moreover, the level of shared cost associated with the non-recurring UNE charges ranges from approximately 30% to 40%. In light of such cost-saving measures as BST's ongoing force downsizing of 11,300, and its reductions in network operating expenses and G&A expenses discussed above, staff believes that BST overhead costs ranging from 5% to 40% appear to be excessive, especially in a prospective environment where new entrants are competing vigorously for BST's customers. Further, staff would note that the majority of UNEs at issue in this proceeding are monopoly elements that do not currently face significant competition; an ALEC has no choice other than the ILEC in obtaining such UNEs. Therefore, staff does not believe that the level of overhead proposed by BST is appropriate for setting UNE rates in a competitive environment.

Staff realizes that the purpose of this docket is to establish the appropriate cost methodologies to be incorporated in the cost models to set UNE rates, not to set rates for its retail business. While what is an appropriate level of overhead costs for BST is not within the Commission's purview, staff believes that it is important that only a reasonable amount of overhead costs are reflected in the cost studies used to set UNE rates in this proceeding. Staff agrees that the derivation of shared and common costs should be based on an efficient forward- looking network. However, while staff also believes that competition in the local market will force BST to become more efficient, staff is not persuaded that AT&T/MCI's "scorched node" view of the network is appropriate. On the other hand, staff is not convinced that BST's expense levels in its shared and common cost study fully reflect the efficiencies that are attainable prospectively. Based on BST's and AT&T/MCI's differing views of an efficient forward-looking, least-cost network, staff believes that some middle ground is appropriate. Thus, based on the reasons stated above and the evidence in the record, staff recommends that in its shared and common cost model BST should reduce its network operating expenses in accounts 6531-6535 and 6512 by an additional 30%, and its G&A expenses in accounts 6711-6712 and 6721-6728 by an additional 15%.

Recovery of Local Carrier Service Center (LCSC)

BST included the recovery of the cost associated with its Local Carrier Service Center (LCSC) in the development of its proposed shared and common cost factors. The LCSC was designed

specifically for the CLECs' use to process the local service order for BST's provisioning. Since the LCSC work group is dedicated to performing the ordering and provisioning processes for the CLECs, BST asserts that it should not have to absorb the costs for this center. (Lynott TR 1236) AT&T/MCI contend that BST included $15,536,528 in new expenses, and arbitrarily assumed that 25% are recurring and 75% are non-recurring in nature. (TR 1559) AT&T/MCI assert that none of the expenses of this new center should be reflected in the UNE prices that are being established in this proceeding. (TR 1559) Staff agrees. As discussed in the OSS portion of this recommendation, this Commission granted the Joint Motion to Strike with respect to all testimony and exhibits pertaining to the costs of OSS functions, both manual and electronic. (Order No. PSC-98-0123-PCO-TP) While we make no recommendation at this time as to the propriety or reasonableness of these costs, staff believes that BST's LCSC costs are related to its operational support system and thus must be excluded from recovery at this time.

Shared Labor Factors

As mentioned earlier, BST's proposed shared labor factors reflect the relationship between shared costs and labor costs. Witness Reid explained that BellSouth developed these factors to calculate its loaded labor rates. (TR 556; EXH 18) BST first calculated its direct labor rates by dividing total 1995 salaries, wages and benefits by total hours worked for each work force group that it analyzed. This results in a 1995 direct labor rate. BST then inflated its direct labor rate by approximately 3% to obtain the 1996 direct labor rate. To determine its 1997-1999 direct labor rates, BST multiplied the 1996 direct labor rate by an inflation factor that ranges between 3.5% and 4.1% a year. (EXH 13, pp.1458-1519)

Next, according to witness Reid, shared costs attributed to salaries and wages were accumulated for each of the work force groups. BST then developed a shared labor factor for each work force group by dividing the attributed shared costs (human resources, office equipment, land and building space, motor vehicles, etc.) by the direct salaries and wages. (Reid TR 557) The shared labor factor is then multiplied by the direct salary and wage portion of the incremental labor rate for each work force group. To determine the TELRIC labor rate, the result is then added to the incremental labor rate. (Reid TR 557) BST's TELRIC labor rates were then utilized to determine the non-recurring costs related to UNEs.

AT&T/MCI witness Lerma argues that BST's shared labor rates should be rejected since they treat recurring costs as non-recurring costs. Witness Lerma also states that BST was incorrect

in assuming that recurring wholesale expenses in accounts/cost pools that are attributed based on salary and wages should be recovered through the shared labor rate factors, and the resulting labor rates subsequently used to determine the non-recurring rates. (Lerma TR 1555, 1570) Witness Lerma asserts that these "TELRIC" labor rates are key in the development of BST's non-recurring rates, and in some cases increase the labor rate by approximately 50%. Furthermore, AT&T/MCI contend that the recovery of recurring costs in non-recurring rates creates barriers to entry for competing local exchange providers. While AT&T/MCI acknowledge that some of the costs in certain cost pools may include some increment of non-recurring costs, witness Lerma contends that BST has not provided the appropriate information to determine this increment. (Lerma TR 1556, 1570-1571)

For instance, witness Lerma states that in BST's model, the wholesale expenses for all cost pools in Account 2112 (motor vehicles) are attributed based on salary and wages. This signifies that the amounts in Account 2112 are to be recovered in the shared labor rate factors that produce the shared labor cost portion of BST's TELRIC labor rates. Subsequently, these labor rates are used to determine non-recurring costs. AT&T/MCI contend that if the amounts in Account 2112 are recurring costs, then they should be recovered in recurring rates. Thus, each of the cost pools in Account 2112 should be attributed on some cost causative basis other than salary and wages. While AT&T/MCI provided Account 2112 (motor vehicles) as an example, AT&T/MCI believe there are numerous cost pools that include recurring costs similar to the motor vehicle example above. (Lerman TR 1556-1557)

BST witness Reid contends that AT&T/MCI's concern regarding their attribution approach is merely a difference of opinion between AT&T/MCI and BellSouth as to what are recurring costs versus non-recurring costs. Again using motor vehicles as an example, witness Reid explains that if a non-recurring task is performed and a motor vehicle is utilized in performing that task, then a portion of the motor vehicle cost should be attributed to that non-recurring task. (EXH 18, p.99-100)

As a result of AT&T/MCI's concern with BST's attribution process in its shared and common cost model, AT&T/MCI's witness Lerma provided an adjustment to BST's shared labor factors. (TR 1558; EXH 55) AT&T/MCI's recommended adjustment provides alternative attribution bases for those cost pools that BST attributed using salary and wages. The recommended adjustment has the effect of reducing the shared labor factors to zero and shifts recovery of those costs to the shared cost factors. (TR 1558) AT&TMCI contends that its adjustment does not prevent BST from recovering any of the costs for these cost pools. Staff would note

that while AT&T/MCI propose adjustments to BST's proposed shared labor rates, witness Lerma instead asserts that the labor rates reflected in the AT&T/MCI Non-recurring Cost model are the labor rates that the Commission should approve. (TR 1564)

As discussed above, BST treated as shared labor costs all expenses that it attributed on the basis of salaries and wages. By using this assumption, BST has assigned the costs in the associated accounts to the labor rates used to develop non-recurring costs. While staff believes that some portion of these costs likely should be attributed to labor based on salaries and wages, we were unable to verify what portion of non-recurring cost should be included and if in fact all of the recurring expenses had been excluded.

For instance, costs associated with account 6711 (executive - plant operations and corporate operations) have been attributed based on salaries and wages. These costs are in turn recovered in the shared labor factor utilized by BST to determine its non-recurring costs (and thus rates). While a small portion of the costs related to executive plant operations may be related to non-recurring functions, staff does not believe that all of the costs are so related. Further, staff does not believe that executive corporate operations expenses necessarily have any relationship to non-recurring activities. Staff does not believe that BST has provided sufficient information to determine the amount in these various accounts that could be attributed to non-recurring functions.

On balance, staff believes that BST should be indifferent as to where these costs are recovered (i.e., though non-recurring rates versus recurring rates). Staff believes that it is appropriate for the non-recurring costs that are directly associated with an UNE (e.g., labor rates, travel times, etc.) to be recovered in the non-recurring charges. However, while some portion of the shared expenses that BST attributed on the basis of salaries and wages costs may be attributed to the labor associated with non-recurring events, we were unable to verify what portion of non-recurring cost should be included and if in fact all of the recurring expenses had been excluded. For purposes of this proceeding, staff does not believe that the overhead costs related to non-recurring activities should be recovered in non-recurring charges. These costs could just as well be recovered through recurring charges. While we do not believe there is anything inherently improper in recovering some overhead costs in non-recurring charges, in the present situation staff believes that the recovery of overhead charges in non-recurring charges would create barriers to entry due to the high non-recurring rates that would result. ALECs who face high non-recurring charges that must be

paid to attract each new customer may be reluctant to enter the telecommunications market in Florida.

For these reasons, staff recommends that there be no shared costs associated with labor rates; instead, the shared costs should be reflected in the shared cost factors. This adjustment does not prohibit BST from recovering these costs; it merely shifts the recovery of these costs from non-recurring to recurring rates. Staff also recommends the use of AT&T/MCI's proposed attribution adjustments for those cost pools attributed using salary and wages. The changed attribution basis shifts recovery from the shared labor rate factors to the shared cost factors.

Conclusion

Based on staff's review of BST's common and shared cost model, and weighing the evidence in the record, staff recommends that BST reduce its network operation expenses (Accounts 6531-6535 and 6512) and general and administrative expenses (Accounts 6711-12 and 6721-6728) by 30% and 15%, respectively. As discussed in detail earlier, staff believes that BST has accounted for some expense reductions in its model. However, staff believes that additional reductions in BST'ss network operations expenses and general and administration expenses should be incorporated. Based on staff's adjustments, staff recommends that BST utilize a common cost factor of 5.12%. (Attachment B) Staff's recommended shared cost factors are also shown on Attachment B.

Staff also recommends that there be no shared costs included in labor rates; instead, the shared costs should be reflected in the shared cost factors. Staff further recommends that BST's direct labor rates are appropriate to use to develop non-recurring costs for this proceeding. Although AT&T/MCI contended that these labor rates should be adjusted downward to remove BST's inflation factors, no argument was provided as to why this elimination was appropriate. Staff notes that eliminating shared labor costs from the labor rates does not prohibit BST from recovering these costs; it shifts the recovery of these costs from non-recurring to recurring rates. Staff recommends the use of AT&T's proposed attribution adjustments for those cost pools attributed using salary and wages. In addition, staff believes that the recovery of recurring costs in non-recurring rates creates barriers to entry due to high non-recurring rates.

V. RESIDUAL REVENUE REQUIREMENT

BellSouth's Position

In its rate proposal, BellSouth identifies three components of its rates: TSLRIC, shared and common costs, and historical costs. BellSouth refers to the historical component as its Residual Recovery Requirement (RRR). (EXH 11, p.1)

BellSouth defines RRR as the difference between TSLRIC plus shared and common costs, or the "theoretical costs," and the "actual cost" of providing the network element. (EXH 13, P-1, p.689)

BellSouth bases its claim to include RRR in its rates on its interpretation of the Telecommunications Act of 1996 (TA 96 or The Act): "The Act states that BellSouth may include a reasonable profit in setting its rates." (Varner TR 78) BellSouth asserts that it cannot make a "reasonable profit" unless its rates recover historical costs. (Varner TR 78) Therefore, BellSouth concludes that TA 96 "anticipates that rates will recover, at a minimum, the actual costs of the firm." (Varner TR 78)

BellSouth is only applying its RRR to some of the elements at issue in this proceeding: loops and ports. (Varner TR 79) Its explanation is that plant investment constitutes the "greatest discrepancy" between actual and forward-looking costs, and that approximately 70 percent of this investment is in loops and ports. (Varner TR 80) Although BellSouth states that it could calculate the RRR for elements other than loops and ports, it has not done so in order to "simplify the process." (Varner TR 80)

BellSouth witness Varner insists that this treatment is not discriminatory because "all ALECs ordering unbundled loops and ports will pay the same rate. They will also be incurring the same costs that BellSouth incurs, therefore, I fail to see how this pricing structure is discriminatory." (Varner TR 109)

Witness Varner testified that it too would be less likely to invest in new facilities since it would not be recovering the full amount of the cost. (Varner TR 82)

In its brief, BellSouth argues that if it is unable to price loops and ports to recover the cost of its investment, then its property is, in effect, being confiscated. BellSouth explains:

> Utilities, like individuals and other businesses, enjoy constitutional protections against the taking of their property without due process and the payment of just compensation. The fifth and fourteenth amendments to the United States Constitution and Article I, Section 9 and Article 10, Section 6 of the Florida Constitution afford these constitutional protections. Compelling BellSouth to provide UNEs and interconnection to ALECs constitutes a taking of BellSouth's property. Accordingly, BellSouth is constitutionally guaranteed the right to fair compensation for this taking. [emphasis in original] [citations omitted] At the very least, justice requires that BellSouth be afforded the reasonable opportunity to recover its actual costs. [footnote omitted] (BellSouth BR, p.26)

AT&T/MCI's Position

AT&T/MCI witness Selwyn testified that recovery of historical cost is prohibited under the Act because the RRR represents the costs that have been determined in a rate-of-return or other rate-based proceeding, the use of which in pricing UNEs is prohibited by Section §252(d)(1)(A)(i) of the Act. (TR 1372)

AT&T/MCI witness Wood asserts that by including RRR as part of its cost recovery, "BellSouth is telling this Commission that it has an inefficient network, excessive overhead costs, or both." [emphasis omitted] BellSouth is also "arguing that new competitors, even if they are more efficient, should nevertheless be saddled with BellSouth's excessive cost structure." (Wood TR 1682)

Witness Wood further testified that, in effect, BellSouth wants to be "made whole," as if it were still a rate of return regulated carrier, while still maintaining the freedom of price regulation. (Wood TR 1681)

Witness Wood also argues that BellSouth's application of the RRR only to loops and ports is discriminatory and in violation of Section §252(d)(1) of the Act. (TR 1695-1696)

WorldCom's Position

WorldCom witness Porter testfied that BellSouth's RRR "is a blatant attempt to recover its embedded costs." (TR 959) WorldCom also cites two Commission orders that it argues "do not

permit" the RRR to be recovered. The first order WorldCom cites is Order No. PSC-96-1531-FOF-TP, which "states that under the forward-looking TSLRIC method, BST's studies are to consider the current architecture of the network and future replacement technology." WorldCom states that the ruling in Order No. PSC-96-811-FOF-TP [sic] in Docket No. 950984-TP is similar. (Porter TR 959)

Staff Analysis

This is not the first time that BellSouth has argued that it must recover historical costs. In Docket No. 950696-TP, In Re: Determination of Funding for Universal Service and Carrier of Last Resort responsibilities, BellSouth argued that:

> [I]n the past, recovery of investment was deferred and, through residual pricing, basic local rates were the beneficiaries of this deferral. With the advent of local competition, its recovery of that investment in rates for service is no longer assured. SBT argues that ALECs, as well as other providers, will benefit from this investment and should contribute to its recovery. (Order No. PSC-95-1592-FOF-TP, p.19)

In that docket, the Commission found that:

> It also appears that SBT's attempt to recover its "past COLR investment" may be anticompetitive. By including this "past COLR" component in its proposed mechanisms, SBT has essentially requested that it be made whole in the face of impending competition. If SBT wishes to be assured of the opportunity to recover its "past COLR investment," it could have remained under rate of return regulation. [footnote omitted] (Order No. PSC-95-1592-FOF-TP, pp.26-27)

On the federal level, recovery of historical cost has not yet been addressed, although the issue has surfaced in the Universal Service and Access Charge Reform proceedings. The May 8, 1997 FCC Order on Universal Service (FCC 97-157) addresses historical cost:

> Several commenters assert that the use of forward-looking economic cost necessitates the establishment of a separate mechanism to reimburse ILECs for their "legacy cost," [footnote omitted] which they define to include the under-depreciated portion of the plant and equipment. [footnote omitted] PacTel

> contends that moving to support mechanisms based on forward-looking economic cost would renege on a long-standing agreement between regulators and carriers regarding the recovery of the latter's costs. [footnote omitted] Several ILECs further contend that unless we explicitly provide a mechanism for them to recover their under-depreciated costs, the use of forward-looking economic cost to determine universal service support would constitute a taking under the Fifth Amendment. [footnote omitted] No carrier, however, has presented any specific evidence that the use of forward-looking economic cost to determine support amounts will deprive it of property without just compensation. Indeed, the mechanisms we are creating today provide support to carriers in addition to other revenues associated with the provision of service. (FCC 97-157, ¶ 230)

In the FCC's order on Access Charge Reform, FCC 97-158, a resolution of the historical cost issue was postponed:

> A separate order in this docket will also address "historical cost" recovery: whether and to what extent carriers should receive compensation for the recovery of the allocated costs of past investments if competitive market conditions prevent them from recovering such costs in their charges for interstate access services. (FCC 97-158, ¶ 14)

As of this writing, the FCC has not addressed historical cost recovery.

Staff believes that BellSouth's RRR is inappropriate because recovery of embedded costs is inappropriate in a forward-looking cost model. Staff agrees with AT&T/MCI Wood that by including the residual recovery requirement in some of its proposed rates, BellSouth desires to be made whole as if it were a rate of return regulated company, while it enjoys the benefits of price regulation.

Furthermore, this Commission has already concluded that past COLR investment should not be recovered in a universal service mechanism, stating that if BellSouth wished to ensure that it could recover past COLR investment, it could have remained under rate of return regulation, rather than electing price regulation. In addition, RRR has yet to be addressed on the federal level, although staff believes that it will be in the near future.

Therefore, staff recommends that the record supports that the residual recovery requirement should be eliminated from BellSouth's proposed recurring rates for loops and ports.

Takings Argument

Staff notes that this constitutional issue was raised by Bellsouth for the first time in its brief. Thus no other parties have addressed it. Staff addresses it here only for informational purposes. In advancing its RRR proposal, BellSouth argues that it will amount to confiscation of its property if the Commission fails to provide it with a reasonable opportunity to recover its loop and port investment. (BellSouth BR, p.26) As noted, BellSouth argues that it enjoys the protections of the Fifth and Fourteenth Amendments of the U.S. Constitution and Article I, Section 9 and Article 10, Section 6 of the Florida Constitution against the taking of its property. (Id.) BellSouth cites FCC v. Florida Power Corp., 480 U.S. 245, 107 S.Ct. 1107, 94 L.Ed. 2d 282,[1] and concludes that it has a constitutional right to fair compensation for providing UNEs and interconnection to ALECs. (Id.) BellSouth contends that it should have, at the very least, a reasonable opportunity to recover its actual costs.[2] (Id.)

The U.S. Supreme Court has addressed utility claims of unconstitutional takings in the rate of return regulation environment on several occasions. See, e.g., Chicago, Minneapolis & St. Paul R.R. v. Minnesota, 134 U.S. 418, 10 S.Ct. 462, 33 L.Ed. 970; Willcox v. Consolidated Gas Co., 212 U.S. 19, 29 S.Ct. 192, 53 L.Ed. 382; Bluefield Co. v. Public Service Commission, 262 U.S. 679, 43 S.Ct. 675, 67 L.Ed. 1176; Board of Public Utility Commissioners v. New York Telephone Co., 271 U.S. 23, 46 S.Ct. 363, 70 L.Ed. 808. The Court has consistently held in each of these cases that rates set so low as to deny an adequate rate of return are confiscatory.

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[1]The holding in this case was based on the court's holding in Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982). There, the court held that a permanent physical occupation authorized by government is a taking without regard to the public interests that it may serve. Id. at 426. If that is the case, as it is here, what remains to be decided is the Fifth Amendment issue whether compensation is just.

[2]BellSouth notes that when these same constitutional concerns were raised in the appeal of the FCC's First Report and Order, CC Docket No. 96-98, the U.S. Court of Appeals for the Eighth Circuit held that the claims were not ripe for review. (BellSouth BR at 27.) The court reasoned that, since it had vacated the FCC's pricing rules, it could not yet determine whether the incumbent LECs were receiving or would receive just compensation for providing competing carriers with access to their networks. 120 F.3d 753, 818.

In the present competitive era established by the Act, rate of return regulation has, of course, been supplanted by market dynamics. New entrants are required to reach interconnection agreements with incumbent local exchange companies either through negotiation or arbitration that include only nondiscriminatory rates based on forward-looking costs. In this proceeding, staff recommends that permanent rates be approved for a number of network elements for which the Commission earlier approved only interim rates. The permanent rates recommended are derived using a TSLRIC methodology. This methodology reflects efficient, forward-looking costs, including a reasonable amount of shared and common costs. It was sanctioned by this Commission in Order No. PSC-96-1579-FOF-TP as the appropriate methodology for establishing rates for network elements. It is a methodology fully consistent with the pricing standard for network elements defined in Section 252(d)(1) of the Act. Section 252(d)(1) requires that rates be based on cost without reference to a rate of return or other rate-based proceeding.

In Iowa Utilities Bd., 120 F.3d 753, the court responded to the challenge of the ILECs that the FCC's unbundling rules provided ALECs with such extensive access to and use of the ILECs' networks as to effect unconstitutional takings of the ILECs' property. The court stated that it was skeptical that the unbundling rules that it had not vacated would effect a taking. Since it had also vacated many of the FCC's pricing rules, the court held that it could not presently determine whether the ILECs are receiving or will receive just compensation for providing competing carriers with access to their networks. Id. at 818. The court ruled that an ILEC could raise a ripe takings claim only if it has submitted the issue of rates for unbundled access to a state commission in an arbitration proceeding. Id. Thus, it can be anticipated that BellSouth may present such a claim if this Commission approves staff's recommendation concerning the propriety of its proposed RRR.

Staff believes, however, that, under the present state of the law, the rates it recommends in this proceeding, which exclude BellSouth's RRR, permit BellSouth all the recovery to which it is entitled under the Act and are in no way confiscatory.

VI. OPERATIONAL SUPPORT SYSTEMS

In Order PSC-98-0123-PCO-TP, this Commission granted in part and denied in part, the Joint Motion to Strike Testimony and Exhibits regarding OSSs filed by AT&T of the Southern States, Inc., MCI Telecommunications Corporation, and WorldCom, Inc., on behalf of itself and its subsidiary MFS.

The Motion to Strike was granted with respect to all testimony and exhibits pertaining to the costs of OSS functions developed specifically for the ALECs, both manual and electronic. Although the FCC and the Eighth Circuit have indicated that OSSs are considered unbundled network elements, OSSs were not identified in Order No. PSC-97-1303-PCO-TP, Order No. PSC-96-1579-FOF-TP, or Order No. PSC-96-1531-FOF-TP as network elements for which permanent rates would be set in this proceeding. However, as noted by this Commission, the fact that rates will not be set for OSSs or access to OSSs in this proceeding, does not alter any BST obligation to negotiate or arbitrate this issue when requested to do so by an ALEC.

The Motion to Strike was denied with respect to testimony and exhibits addressing BST's proposal to recover shared and common costs associated with its Legacy Systems through the UNE rates proposed in this proceeding. Therefore, as it pertains to OSSs, only testimony regarding BST's proposal to recover costs associated with its Legacy Systems, i.e., those OSSs in place prior to competition, were retained. The Commission ordered each party to compile a list to be presented at the hearing identifying its respective testimony and exhibits pertinent to establishing rates for OSSs (i.e., manual and electronic) to be stricken.

Operational support systems are the electronic, software driven computer programs and databases that BST uses to manage its pre-ordering, ordering, provisioning, repair, maintenance and billing processes for both their retail and wholesale operations. Two types of OSS systems were presented in this proceeding. First, there are BST's legacy systems such as TIRKS, COSMOS, LFACS, AFIG, and CPG. The majority of the costs associated with BST's legacy systems are related to electronic, software driven computer programs and databases. Thus, these costs are presumably capitalized in BST's investment accounts and recovered in its shared and common costs. Second, there are OSS's that were developed specifically for the ALECs use such as LENS, EDI, LCSC, and ACAC. In addition to a charge per electronic order, BST proposed to recover the costs associated with these systems through its non-recurring (manual and electronic) charges.

At hearing, MFS argued that BST had not removed all of its costs related to the establishment of manual and electronic OSS rates. (TR 246) Specifically, MFS argued that BST should exclude the LCSC costs. The LCSC was designed specifically for the ALECs' use to process the local service order for BST's provisioning. While the LCSC work group in the ordering and provisioning processes is dedicated to the ALEC, BST asserts that it should not have to incur the additional costs for this center, thus, the LCSC costs were not removed by BST. (TR 239) Instead, BST asserts that it removed the $10.99 rate associated with the systems that an ALEC would use if it were to place an order electronically. In fact, witness Varner stated that all of the electronic interface costs such as LENS and EDI, were excluded from the non-recurring costs. (TR 237) BST believes that this is consistent with Order PSC-98-0123-PCO-TP, as well as Order PSC-96-1579-FOF-TP, which states that "each party shall bear its own cost of developing and implementing electronic interface systems because those systems will benefit all carriers." (TR 247)

As mentioned earlier, Commission Order PSC-96-1579-FOF-TP states that all testimony and exhibits relating to the costs of ALEC specific OSS functions, manual and electronic, should be excluded from this proceeding. However, at hearing it was apparent that the parties to the proceeding had differing views as to what costs should be excluded and what was considered an OSS function. After much discussion at hearing regarding what costs were related to manual ordering, the Commission, by suggestion of MCI counsel, agreed to allow BST's exhibit that included costs for manual ordering to remain in the record. (TR 270) The Commission stated that by allowing BST's exhibit to stand, it would allow the parties the ability to cross examine subsequent witnesses, and then the parties could brief the issue as to what costs should be included and what should not be included as it relates to manual ordering. (TR 272)

In its brief, MFS asserts that despite the Commission order stating that all testimony and exhibits relating to the costs of ALEC specific OSS functions, manual and electronic, be excluded from this proceeding, BST included costs associated with the LCSC order taking function. (BR p.14) MFS argues that the LCSC is a manual OSS function that is set up as an alternative to the electronic system. (TR 261) Staff agrees. As stated by BST witness Varner, the LCSC is utilized by the ALECs for the purpose of order taking. The costs associated with the LCSC include the time spent on the phone with the ALEC taking down the information that the ALEC has requested and preparing an order and sending it through for processing. (TR 249) MFS states that the specific OSS costs to

be removed were identified by BST witness Caldwell during cross examination. (BR p.14)

MCI argues that the LCSC activities are inappropriate in light of the FCC's requirement that electronic interfaces be available by January 1, 1997. (BR p.23) As a result, MCI asserts that BST should be required to exclude all unnecessary manual costs associated with service ordering, including the LCSC. (BR p.23)

AT&T and BST did not include arguments relating to what costs are associated with manual ordering in their briefs. However, BST did assert at the hearing that BST proposed a non-recurring price that includes the cost of the LCSC if an ALEC places an order manually, and a separate price if a ALEC places an order electronically. (Varner TR 258) Other than the cost associated with fallout, LCSC costs are not included in BST's proposed electronic ordering charge. (Caldwell TR 448) While BST's proposed prices for electronic ordering are lower than those for manual ordering, BST asserts that there is an additional element that is needed if an order is placed electronically. (TR 258) It is BST's position that this additional element ($10.99 rate) is what was excluded from this proceeding, not the non-recurring electronic and manual ordering charges. Furthermore, witness Varner states that the LCSC is not an OSS function, "it's a center with people in it who answer the telephone and take orders." (TR 255) Moreover, BST argues that the non-recurring charges associated with an element include ordering the elements, and, therefore, should be included in the one-time non-recurring charge. (TR 268)

While this Commission has not made an official statement as to whether it considers OSS an unbundled element, staff would point out that the Eighth Circuit has upheld the FCC's determination that OSS is an unbundled element. Staff realizes that the OSS costs (manual and electronic) may be legitimate costs incurred by BST; however, staff does not believe that BST was required by Commission Order PSC-96-1579-TP to file cost studies, and therefore prices, to recover its OSS costs in this proceeding. Specifically, Commission Order PSC-98-0123-PCO-TP states

> As it pertains to OSSs, only testimony regarding BellSouth's proposal to recover costs associated with its Legacy Systems shall be retained.

Thus, staff is not making a determination in this proceeding as to whether OSS is an unbundled network element; we believe that that determination should be made in a separate proceeding. However, staff believes that BST's LCSC costs are a component of its

operational support systems and thus must be excluded from recovery at this time. Staff believes that all ordering charges, manual or electronic, should be excluded from the non-recurring rates in this proceeding.

Moreover, staff realizes that if ordering costs are excluded from the UNE rates set in this proceeding, an ALEC may be unable to place an order for an element. Thus, staff recommends that the Commission should strongly encourage the parties to negotiate in good faith to determine a rate for the OSS functions. If, however, the companies are unable to reach an agreement, the parties may seek the Commission's guidance.

VII. Non-recurring CHARGES - DISCONNECT COSTS

BST has proposed to include the costs of disconnect in its non-recurring charges for installing UNEs. These costs thus would be recovered "up-front" at the time of installation of service, so that the customer is billed now for work to be done in the future. (EXH 13, Section 4, p.73) Disconnect costs are discounted to recognize the time value of money and are based on the estimated location life of the element installed. In the TELRIC Calculator sponsored by BST witness Caldwell, the disconnect work time is multiplied by the applicable labor rate, and a discount factor is applied to account for the fact that the work is performed in the future. This disconnect cost is then added to the calculated costs for installation, and the sum is the non-recurring charge for the element. (Caldwell TR 443)

According to BST, disconnect factors are translators used to determine the costs associated with disconnecting a service. The calculation of discount factors is based on the expected life of the service and the highest interest rate that BST is required to pay its customers for customer deposits, in this case, eight percent. The disconnect factor inflates the labor cost to the period of the future disconnect and then discounts this cost to the present. BST states that it used 1996 forecasted labor inflation rates in its calculations of discount factors. (EXH 13, Section 4, p.73) BST witness Caldwell states that BST determines the time period for discounting, or location life of the element, based on historical data for inward and outward movement. (TR 471) She states that she did not believe that the introduction of competition would affect the frequency of in and out movement. (TR 471-472)

AT&T/MCI oppose recovery of disconnect costs "up-front," arguing that this can lead to overrecovery of costs. For example, in a loop migration scenario, AT&T/MCI note that disconnect costs were already recovered from the ILEC end users at the time of installation. (EXH 6, p.39) Moreover, they disagree with BST's estimate of location lives.

AT&T/MCI propose instead that disconnects be modeled separately, and that the ALEC would pay for them only at the time such activity is physically performed. For example, if an ALEC end-user customer moved out, the ALEC may elect to leave the circuit in place as a DIP (dedicated inside plant) and DOP (dedicated outside plant), retaining soft dial tone for the next customer. In such situations, the ALEC would not have to pay to have the cross-connect in the central office disconnected or removed until the work is actually done. (EXH 6, pp.39,41)

In cross examination, BST witness Landry stated that in its cost studies, BST recognizes the practice of DOP. For example, when a disconnect order comes through for a two-wire loop to a customer premises, the loop is not actually disconnected. Thus there would be no travel time or work time to dismantle the circuit. Witness Landry did state that more complex circuits would require such work activity to recover equipment located at the customer premises. (TR 488) He also stated that, after twelve months, if the facility has not been placed in service, it would be reprocessed for reuse. (TR 488)

Staff Analysis & Recommendation

Recovery of disconnect costs at the time of installation is standard practice in LEC end user local service tariffs. (EXH 5, pp.150-333; 352-394) This is because it is thought that end users understand and accept installation charges more readily than they do disconnect charges. Staff believes this practice is not necessary for ALECs. Disconnection of certain elements does not necessarily mean the end of a contractual relationship with the ILEC. Moreover, when an ALEC requests disconnection of a loop, BST may not actually physically disconnect the line. Yet BST has modeled the NRCs to include physical disconnect for every installation.

Staff recommends that disconnect costs not be included in the non-recurring installation charges approved in this proceeding. Eliminating disconnect costs from up-front NRCs is a logical way to relieve some of the burden associated with high start-up costs. ALECs understand and accept that disconnect costs exist, and we believe it is more appropriate to assess those charges at the time the costs are incurred. According to AT&T/MCI, this would also solve the problem of the dispute over location lives. Parties should be given the opportunity to negotiate the method by which disconnect costs are calculated and recovered.

Therefore, staff recommends that work times, labor rates, and discount factors that make up the calculations of disconnect costs should be excluded from the calculation of installation costs that determine the non-recurring charges.

ARGUMENTS SPECIFIC TO UNBUNDLED ELEMENTS

a. Network interface device (NID);

ISSUE 1(a): What are the appropriate recurring and non-recurring rates and charges for the Network Interface Device?

STAFF ANALYSIS:

I. Definition of element

The FCC Rules define the network interface device (NID) as a cross-connect device used to connect loop facilities to inside wiring. (§51.319(b)(1)) Incumbent LECs are required to permit requesting telecommunications carriers to connect their own loops to the inside wiring of premises through the incumbent LEC's NID. If spare capacity exists, an ALEC can connect its own loop directly to BST's NID. Where spare capacity does not exist, BST can replace that NID with another NID with additional capacity or a second NID can be installed with a cross-connect wire tying the two together. The second NID would belong to the ALEC and could be installed by the ALEC itself, or the ALEC could request BST to install the NID. Therefore, rates need to be set for the following elements or functions:

a. NID
b. NID to NID Cross connect
c. BST installation of an ALEC NID

II. Recurring Charge Analysis

AT&T and MCI used BST's Loop Model and the TELRIC calculator for their recurring and non-recurring cost development. Of the three elements or functions in this sub-issue, the NID is the only element that requires a recurring charge. Therefore, the following analysis under this section applies only to the costs that are the foundation to determining the recurring charge for the BST NID. Non-recurring charges are the only charges that apply to the NID to NID cross connect and to the installation (by BST) of an ALEC NID.

AT&T and MCI propose several corrections to BST's cost inputs for the BST NID recurring charge. First, AT&T/MCI claim that BST has excessive Bridge and Station Protector investment amounts. AT&T witness Wells states that a station protector has capacity for two voltage protection devices, and the 2-wire NID has capacity for two station protectors. (EXH 42, P.48) Witness Wells

states that BST modeled two station protectors for each customer, because of BST's assumption that it serves more than one line (but less than two lines - the number is confidential) per customer. AT&T Witness Wells asserts that BST should have factored out the difference in station protector investment between the average number of lines that BST modeled per customer (2 lines) and the average number of lines BST claims it serves per customer (1+ lines). (TR 1151; EXH 42, pp.48-49)

BST witness Caldwell disagrees with witness Wells' logic. Witness Caldwell states that if there is an average of one and a quarter lines per customer, then two protectors would have to be modeled. (EXH 14, pp.43-44) Staff would note that BST witness Caldwell did not review the calculation provided by AT&T witness Wells as a late-filed deposition exhibit. However, witness Caldwell did have an opportunity to read and comment on witness Wells' testimony explaining his proposed adjustment. (EXH 14, pp.42-43) Witness Wells' calculation considers the protector investment necessary to serve the total number of lines that BST claims it provides. (EXH 41) Witness Wells' calculation uses BST's number of lines, customers and investment amounts. Only the application of these numbers in the calculation is different. Staff was able to follow the logic in witness Wells' calculation of the protector investment and find it to be appropriate. Staff believes the calculation is reasonable and better reflects the actual station protection per customer location than BST's calculation.

The second area addressed by AT&T witness Wells is estimated work and travel times associated with the BST NID. (TR 1152-1153) It appears to staff that BST has capitalized the costs of travel and labor work to install the NID. Staff would note that costs for materials are generally capitalized and recouped in recurring rates, while one time costs to service an order are often recovered in a one time, up front charge. Staff would note that there have been instances where a company proposes a new service and the upfront costs for service installation are so great that the high cost becomes a deterrence. To make the service more appealing, the company will propose a lower non-recurring charge and attempt to recover those costs in the monthly recurring rate. When a company makes this type of rate proposal, the company will require a multi-year contract with a termination liability. Therefore, it is possible to recover charges for non-recurring functions in the recurring charge. Although staff believes the recovery of the NID labor and travel costs in the recurring charge to be unusual, neither AT&T nor MCI opposed it. As explained below, AT&T witness Wells only proposed reductions to the travel and work times, not

the removal of these costs from the recurring charge and subsequent placement into the non-recurring charge.

Staff believes the work and travel times proposed by BST are those that BST incurs when it originally installs its NID. Witness Wells asserts that the work and travel times for the NID are excessive. (TR 1153) Witness Wells states that the travel time associated with the BST NID is overstated. Witness Wells states that when BST installs the NID, it also terminates the loop at the NID. Therefore, the travel time should be shared by the two functions. (TR 1153) Staff agrees, because when an ALEC orders BST's NID, the ALEC is not using BST's loop. This is because the NID is already included as an element in the loop. It does not make sense for an ALEC to order a standalone NID if it is going to use a BST loop. Staff believes that the only instance where the full travel time should be included in the cost to install a NID, is when BST installs a new NID for an ALEC. Staff would note that the new NID would belong to the ALEC, not BST.

AT&T witness Wells states that if no BST NID existed at an end user's premises, then it is likely that the ALEC would install a new NID themselves rather than incur the cost to have BST do it. (TR 1153) Therefore, staff believes that the travel time should be split between the NID installation and drop wire connection functions. Witness Wells proposes allocating 15 minutes of travel time to the NID. (TR 1153) This is more than half of the time proposed by BST for travel. Staff believes that 15 minutes is appropriate for an existing BST NID that is ordered on a standalone basis.

Staff believes that AT&T's proposed work times reflect the best case scenario for minimal time expended to perform the travel, set-up, connect and test, and tear-down processes. Staff also believes that BST, on the other hand, proposes work times that it believes are appropriate to perform the same processes. In staff's opinion, these work times represent the boundaries for minimum and maximum work times. The work times from both sides were estimated by subject matter experts (SMEs). (EXH 42, pp.57-58) There are no studies or statistics in the record of this proceeding to support either proposal. Staff, therefore, believes that the appropriate work times should fall somewhere within this spectrum.

Staff believes that BST's proposed work times should be reduced by taking off 25% of the difference between BST's and AT&T's proposed work times. Staff is inclined to weight the work times slightly in favor of BST, because BST is the company which has its technicians performing these duties on a regular basis.

Staff believes that BST not only has the opinion of its SMEs, but it also has the time sheets from which to draw data.

III. Non-Recurring Charge analysis

Tables 1 and 2 show the proposed work times for the NID to NID Cross Connect and for installation of an ALEC NID. There is minimal evidence in the record to support the NRC proposed by either party. For consistency, staff is applying the same rationale for adjusting these work times proposed by the parties as discussed above in the Recurring Charge analysis. That is, staff believes that the proposed work times represent the outer bounds. Staff, therefore, proposes to take 25% of the difference between the work times and reduce BST's work times by that amount.

i. BST NID

It is staff's understanding that when BST's NID is ordered as an unbundled network element, the NID really isn't unbundled from anything. The NID is currently in place and there is no need to disconnect and re-connect anything of BST's. The NID element consists of essentially two connections. One is the connection between the NID itself and the inside wire of the end user premises. The other connection is between the NID and the drop wire, which is the last portion of the loop on the customer's end. An ALEC would only use BST's NID on a standalone basis when the ALEC provides its own loop to the end user premises. The 2-wire NID has the capacity to terminate two loops. (EXH 4, p.137)) Not only does the NID provide a point of connection between the inside wire and the loop, but it also provides the point where the loop can be grounded and protected from electrical shock.

The cost studies provided by both BST and AT&T/MCI contain the same job function to be performed: Service Order Processing. However, the Commission excluded all service order related charges from this proceeding. There is no other charge for any other function, because there are no other functions that are performed on a non-recurring basis. Therefore, there is no non-recurring charge for the BST NID.

ii. NID to NID Cross Connect

Table 1a-1 compares the proposed work times and staff's recommended work times.

Table 1a-1: Comparison of work times for NID to NID Cross Connect

	BST proposed	AT&T/MCI proposed	Staff Recommended
Connect & Test	0.1667	.0333	.1334

iii. Installation of ALEC NID

Table 1a-2 compares the proposed work times and staff's recommended work times. Staff does not propose a change to BST's travel time. As shown in Table 1a-2, AT&T/MCI's proposed travel time is greater than BST's. Staff believes BST's estimated travel time is accurate, since BST is likely to have a better knowledge of travel times in its service territory than AT&T/MCI.

Table 1a-2: Comparison work times for Installation of ALEC NID

	BST proposed	AT&T/MCI proposed	Staff Recommended
Connect & Test	.7500	.4167	.6667
Travel	.3667	.5000	.3667

Staff found an inconsistency in AT&T's analysis of the costs associated with the installation of an ALEC NID. AT&T witness Wells did the analysis of the costs associated with the BST NID element, and AT&T witness Lynott performed the analysis of the costs associated with the cross connect element and the ALEC NID installation element. During staff's review of the BST NID and ALEC NID installation inputs, staff found different work times proposed by the AT&T witnesses for the same function. For the connect and test function, BST proposes .75 of an hour (45 minutes) to install and test the ALEC NID. AT&T witness Lynott proposes .0708 of an hour (4.25 minutes). (EXH 44) However, AT&T witness Wells proposed that BST should allocate no more than .4167 of an hour (25 minutes) in the recurring charge analysis for NID installation. (TR 1153; EXH 40) Staff believes that the time it takes to install a BST NID or an ALEC NID should be the same. Staff believes the work time proposed by witness Lynott is unreasonably low for the manual work required to install a NID. On the other hand, staff believes that 45 minutes to install the NID is excessive. Therefore, staff recommends reducing BST's proposed work time by 25% of the difference between BST's proposed work time and AT&T witness Well's proposed work time.

IV. Staff Recommended Rates

The following tables contains staff's recommended recurring and non-recurring rates and charges. Where two numbers are shown in a cell, the upper number represents the initial unit and the second represents each additional unit. Otherwise, the rate shown is for both the first and additional units.

Table 1a-3: Staff Recommended Recurring Rates

	BellSouth Proposed Recurring Rates	AT&T/MCI Proposed Recurring Rates	Staff Recommended Recurring Rates
NID	$1.44	$0.62	$1.08
NID to NID Cross connect	N/A	N/A	N/A
ALEC NID installation	N/A	N/A	N/A

Table 1a-4: Staff Recommended Non-Recurring Charges

	BellSouth Proposed NRC	AT&T/MCI Proposed NRC	Staff Recommended NRC
NID	$5.59	$5.72	N/A
NID to NID Cross connect	$10.19	$0.78	$6.15
ALEC NID installation	$116.68 $ 72.71	$50.42 $28.29	$70.32 $54.35

(b) 2-wire/4-wire Loop Distribution;

ISSUE 1(b): What are the appropriate permanent recurring and non-recurring rates for 2-wire and 4-wire Loop Distribution?

STAFF ANALYSIS:

Staff's analysis in Issue 1(b) for recurring and non-recurring rates also applies to Issue 1(h), 2-wire ADSL compatible loops, and Issue 1(i), 2 and 4-wire HDSL compatible loops. Anything specific to those loops will be discussed in those issues. The reason the analysis in Issue 1(b) applies to 1(h) and 1(i) is that 1(b) deals with loop distribution, which is a subpart of ADSL and HDSL compatible loops.

The analysis is organized into three sections. The definition of loop distribution is provided first. A detailed analysis of the recurring and non-recurring cost studies appears next. At the end of each section is a summary of the parties' proposed rates and staff's recommended rates.

Definition

BellSouth provides the definition:

> Unbundled 2-wire and unbundled 4-wire analog voice grade sub-loop distribution included all outside plant from the Serving Area Interface (SAI) to the end user customer's premises. [The SAI is also known as the Feeder Distribution Interface (FDI) and as the crossbox.] Two-thirds of the SAI, 26 gauge copper cable to the customer's premises and the cable, up to and including the NID, are included. (24 gauge cable may also be required to meet transmission standards.) [The remaining one-third of the SAI is allocated to feeder.] (EXH 13, P-2, p.1)

RECURRING COSTS

All of the items discussed under this heading also apply to 2-wire ADSL compatible loops (Issue 1(h))and 2 and 4-wire HDSL compatible loops (Issue 1(i)).

A. Construction of the Loop Sample

BellSouth states that it constructed a statistically valid sample (residence loops and business loops) drawn from a 1995

universe consisting of residence and business access lines. (EXH 13, P-1, p.24)

AT&T/MCI and WorldCom argue that BST's sample incorrectly excluded shorter length, and thus lower cost loops, such as ESSX and business trunks. (Ellison TR 1296-1297) AT&T/MCI assert that BellSouth's loop study is "fatally flawed" because the "design of the loop cost model is defective." (Ellison TR 1296) AT&T/MCI argue that BellSouth's study procedure served to increase BellSouth's loop costs because, among other things, the loop sample excluded the lowest cost loops, such as ESSX. (Ellison TR 1295) AT&T/MCI also argue that the sample itself is too small, and thus fails to capture the "wide range of values from loop to loop." (Ellison TR 1296)

WorldCom also objects to the exclusion of loops for ESSX and business trunks, "loops that would make their loop costs significantly lower than what they are proposing here, but we can live with that even though it's not right." (Porter TR 970)

BellSouth excluded these types of lines because "they are typically purchased in bulk to a single location. Therefore, BellSouth assumed that the ALEC would choose the more economical method of serving those types of lines via a DS1, DS3 or other high capacity service rather than via multiple unbundled analog voice grade loops." (EXH 4, p.160)

Staff agrees with AT&T/MCI that the inclusion of these types of lines might have resulted in a sample of business lines with shorter loop lengths. Staff would have preferred that the universe used to draw these samples would have included all loops. However, staff agrees with BellSouth that if an ALEC were to serve these types of lines, it would likely use DS1s or DS3s to serve these customers because they are more economical. Therefore, staff recommends that BST's loop sample construction is appropriate.

B. Recasting the Loop Sample

After BellSouth developed its loop sample, it then examined each loop to see if it met BellSouth's criteria for the "most forward-looking, most efficient technology." (Caldwell TR 322) If a loop did not meet those criteria, the loop was "recast" so that it did meet the criteria. (Caldwell TR 322) BellSouth witness Caldwell describes an example of recasting: "if a loop was 15,000 feet long, but was on copper, we recast the feeder part of the loop to put it on fiber, which is the medium of choice for a loop over 12,000 feet." (Caldwell TR 322)

AT&T/MCI argue that it is not possible to "transform embedded characteristics into forward-looking ones" because these attempts "ignore that fact that what BellSouth *has done* historically is simply not very useful as an indicator of what an efficient carrier *should do* going forward." [emphasis in original] (Wood TR 1717) AT&T/MCI then go on to assert that:

> In order to calculate forward-looking costs, therefore, it is necessary to use a true "bottoms up" approach to costing: identify the relevant cost drivers (demographic and geographic characteristics) of the area being studied, and by applying accepted engineering practices design the forward-looking network needed to provide the cost object (UNEs or retail services, for example) being studied. It is extremely difficult (and maybe impossible) to begin this process by studying the embedded network without inappropriately carrying forward embedded characteristics. (Wood TR 1717-1718)

AT&T/MCI's use of the phrase "bottoms up approach," coupled with its geographically deaveraged rate proposal, alert the reader that AT&T/MCI's foundation for a forward-looking, least cost network is the Hatfield Model that AT&T/MCI proposed in the earlier part of this proceeding. Under cross examination by BellSouth, AT&T/MCI witness Wells agreed that at least four of AT&T/MCI's outside plant assumptions parallel those of the Hatfield Model: fill factors for feeder and distribution, structure sharing, and bridged tap. (Wells TR 1180)

WorldCom accepts BellSouth's loop design, "although it's not the loop standard we would propose." (Porter TR 970)

In a prior order in this proceeding the Commission found that the Hatfield Model "does not produce estimated costs which are representative of the costs of BellSouth's network in Florida." (Order No. PSC-96-1579-FOF-TP, p.29) Staff would also note that the Hatfield Model is a "scorched node" model; that is, its network design assumes that only the central office location is a given; and all facilities would be designed and built as if all customers arrived on the network at the same time. (Order No. PSC-96-1579-FOF-TP, p.26)

Staff, however, considers AT&T/MCI's loop design criticisms, on their own merits in this recommendation. These criticisms, BellSouth's response, and staff's recommendation are provided below.

C. Digital Loop Carrier

In its network design for the loop model, BellSouth included the use of universal digital loop carrier, while AT&T argued that integrated digital loop carrier represents forward-looking technology. (Baeza TR 604; Gillan TR 1665)

Digital loop carrier is technology that permits a LEC to serve more customers than would otherwise be possible over the same number of copper pairs by multiplexing individual loops on to DS1s. In universal digital loop carrier systems, each loop is terminated individually at the main distributing frame. Integrated digital carrier systems, on the other hand, terminate each DS1 directly into the switch. (Baeza TR 604)

BellSouth witness Caldwell stated that BellSouth included digital loop carrier only to calculate the residual recovery requirement. (EXH 14, pp.72-73) Since staff recommends, in the Residual Recovery Requirement section, that BellSouth's proposed residual recovery requirement is not appropriate for inclusion in any rate, staff does not address the use of universal digital loop carrier versus integrated digital loop carrier.

D. Use of 26 Gauge Cable

BellSouth's loop study models a network design that includes the use of 26 gauge cable. (Baeza TR 603) AT&T/MCI's assumption of 26 gauge cable is consistent with BellSouth's. (Wells TR 1180)

E. Structure Sharing

Structure sharing occurs when an ILEC shares outside plant structures, such as poles, conduit, and trenches, with other utilities, such as electric companies, cable television companies, or ALECs. Structure sharing means cost sharing, therefore, the more structures an ILEC shares, the lower its overall structure cost is likely to be.

AT&T/MCI argue that "BellSouth's Cost Study does not incorporate a forward-looking view of structure sharing in a competitive environment where there will be greater opportunities and incentive for telecommunications companies to share pole lines, trenches and conduit runs." (Wells TR 1158)

BellSouth states that because of the requirements of TA 96, the cost causer must pay for any rearrangement. (Baeza TR 620)

BellSouth asserts that even though joint pole use is the most common arrangement, it is not always possible. High voltage lines on electric company poles cause interference with telecommunications and, therefore, make sharing impossible. Further, BellSouth asserts that with trenching, timing is the critical issue. Many times, according to BellSouth, power is needed first in a development, therefore "it would be a poor economic decision to place investment that will not be used just to joint trench." BellSouth, then, will not joint trench unless it can place investment that it will use. In terms of joint use of conduit, BellSouth states that it has owned the "vast majority" of conduit it uses in its operations. (Baeza TR 620-621)

Staff is not persuaded by AT&T/MCI's argument that a competitive environment will encourage more structure sharing, at least in the foreseeable future. Staff believes that there is insufficient evidence in the record to establish a sharing percentage for BellSouth; therefore, staff recommends that BellSouth's structure sharing assumptions be left in place.

F. Utilization/Fill Factor

A utilization or fill factor describes the percentage of the plant that is in use. BellSouth uses the terms "utilization factor" and "fill factor" interchangeably. BellSouth defines the utilization factor as the number of assigned cable pairs divided by the number of available cable pairs (EXH 4, p.154)

AT&T/MCI witness Wells defines utilization and fill factors separately. Witness Wells uses a fill factor definition from "bottoms up cost models." (Wells TR 1133) In his definition the fill factor is the "percentage [sic] of the lines served divided by the number of pairs required to serve those lines, allowing for a reasonable amount of spare capacity." (Wells TR 1133) Witness Wells stated that the fill factor used in bottoms up cost models is used to "divide into the number of customer lines to determine the number of cable pairs required, which is then increased to the next larger available cable size, which becomes the number of pairs available." (Wells TR 1133)

As indicated previously, witness Wells' definition of fill factor is derived from bottoms up cost models, such as the Hatfield Model, that build a network as if all the customers were in place at the same time. Staff believes an efficient new provider of service will be faced with the same situation that the incumbent is faced: namely, that customers arrive on the network at different times. Therefore, staff does not believe that witness Wells'

definition of fill factor is appropriate for this proceeding.

Witness Wells defines utilization factor as the "number of lines served, divided by the number of pairs available." (Wells TR 1133). This definition of utilization factor appears to be almost identical to BellSouth's definition of utilization (the number of pairs in use divided by the number of available pairs). The difference is that there is not necessarily a one-to-one relationship between a pair and a line. There may be more than one line provided over a copper pair. A copper pair is a physical piece of equipment, but there is technology in use, such as the Digital Additional Main Line described below, that provides more than one line over one copper pair. Therefore, staff believes, according to witness Wells' definition, the number of lines served is likely to be greater than the number of pairs in use, thus providing an increase to the utilization factor although the same number of pairs are in use. Staff believes that with increasing use of digital technology witness Wells' definition of utilization factor may more accurately represent the network in use. Staff, however, is not persuaded that any accuracy that might be gained by using witness Wells' definition of utilization factor is compensated for by the problems in changing definitions, at this time. Therefore, staff recommends that BellSouth's definition of utilization or fill factor be used in this proceeding.

AT&T/MCI witness Wood discusses utilization or fill factors at great length in his testimony. He argues that a correct fill factor would include some spare capacity for administrative functions (e.g., maintenance and defective pairs). He also argues that a correct fill factor would include some spare capacity for "lumpy" investments, for example meeting a need for 550 pairs with a 600 pair cable. He does not believe that spare capacity placed for future growth should be included in a forward-looking economic cost study. (Wood TR 1725-1726)

Another argument used against including future growth capacity in the calculation of the fill factor is that since current customers pay for future capacity, future customers will be paying for facilities whose costs have already been recovered. This constitutes "double recovery." (Wood TR 1730- 1731)

BellSouth witness Caldwell disagrees that spare capacity for future growth should be excluded from the fill factor. She states that "we're looking at costs that will be used to establish rates, and, therefore, we identify all of the costs." (Caldwell TR 461) She states that BellSouth uses "average fill" which equates to "projected actual fill of the entire usage of the network." (Caldwell TR 461) She supports BellSouth's use of projected actual

fill with FCC 96-325, the order on Interconnection. The order states:

> "[P]er unit costs shall be derived from total costs using reasonably accurate 'fill factors' (estimates of the proportion of a facility that will be 'filled' with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element." (FCC 96-325,¶ 682)

Staff disagrees with AT&T/MCI's contention that all spare capacity for future growth should be excluded from the calculation of fill factors. Staff believes, each customer of BellSouth, whether that customer is a retail customer or an ALEC, benefits from there being sufficient capacity in place so that service may be provided without the construction of new facilities.

Staff believes the phrase "reasonable projection of the actual total usage" is somewhat ambiguous because it is unclear for what time period the "reasonable projection" takes place. Since the closer the time period for which a projection is made, the more likely it will be accurate and thus more "reasonable," staff recommends that the utilization factor be based on actual usage that has been adjusted for any "projected" impacts or, as BellSouth defines it, projected actual usage. (EXH 13, P-1, p.22)

Staff believes that it is important to ensure that the appropriate fill factor be used because it bears directly on the cost of a loop. A fill factor of 40% means, for example, that the cost of a one hundred pair cable is spread over 40 pairs of that cable. If the fill factor were increased to 70%, then the cost of the one hundred pair cable would be spread over 70 pairs. Therefore, a lower fill factor results in a higher cost per loop, while a higher fill factor results in a lower cost per loop.

BellSouth calculated its actual fill factor for distribution by dividing 5,760,416 assigned pairs by 14,856,450 available pairs, for a rate of 38.8%. (EXH 4, p.154) BellSouth states that its projected fill factor is identical to its actual fill factor because "BellSouth expects utilization in the future to be at or near current utilization." (EXH 4, p.154)

AT&T/MCI's proposed distribution utilization factor is based on an average of initial and planned maximum utilization, or 62.5%. (Wells TR 1134)

There are many factors that can impact the fill factor, and they represent areas of substantial disagreement between BellSouth and the parties. They will be discussed separately below.

1. Defective pairs - are included in the fill factor equation as available, but cannot be used without some corrective action by BellSouth. In the fill factor equation, defective pairs are included in the denominator. (Baeza TR 634)

AT&T/MCI argue that BellSouth's defective pair rate is too high, that is, higher than what an efficient provider would have. BellSouth estimates that its distribution defective pair rate is "roughly between 9.5 and 11%." (Baeza TR 634) The feeder defective pair rate has been increasing since 1992. In 1992, it was 9.4%; in 1996, it was 10.5%. (EXH 4, p.155)

AT&T/MCI's argument is based primarily on assumptions that new cables should have zero defective pairs, newly-installed cables' defective pair rate should be less than 1%, as well as BellSouth's filings in other (unnamed) dockets, and BellSouth's cost to clear a defective pair. (Wells TR 1136) AT&T/MCI also argue that a lower utilization rate "encourages high defective pair rates because it is often expedient to simply 'cut a change' and transfer the customer having trouble to a spare pair, thus leaving the initial pair defective." (Wells TR 1136)

Staff agrees with AT&T/MCI that BellSouth's defective pair rates are higher than what an efficient provider might encounter, and that a low utilization rate provides a disincentive to a company to clear its pairs. Staff also believes, however, that defective pairs are a normal cost of doing business, and that some portion of that cost should be borne by all customers.

2. Minimum 25 Pair Cable Size - BellSouth's modeled network design includes cable sizes no smaller than 25 pair. BellSouth considers 25 pair cable to the "most economically efficient cable size to use in our network." (Baeza TR 613) BellSouth sees the savings as providing "BellSouth with the ability to gain economies of scale when negotiating with cable vendors. Additionally, savings are accrued from reduced inventory and warehousing needs and reduced training and administrative costs." (Baeza TR 613) BellSouth has not installed 12 pair cable since 1995, nor does it plan to install it through 1999. (EXH 4, p.159)

AT&T/MCI argue that "BellSouth's operating practice of 25 pair minimum size cable and 25 pair distribution cable administration are major contributors to BellSouth's rather low copper distribution cable utilization factor. . . ." (Wells TR

1123) In addition, AT&T/MCI disagree that there is any cost savings from reduced training. (Wells TR 1123) AT&T/MCI propose that 12 pair cables should be "deployed on the side streets," which would substantially increase utilization. (Wells TR 1123)

Staff agrees that use of 12 pair cable in network design may increase the fill factor; however, staff finds BellSouth's arguments to model a minimum of 25 pair cable reasonable because of its description of economies of scale. Therefore, staff recommends that a modeled network design including a minimum cable size of 25 pair be retained.

3. Standard Cable Sizes - AT&T witness Wells argues that BellSouth, through fiber cable sizing, is "over sizing" its network. (Wells TR 1127) Since fiber is not used for any of the loops under consideration, in this proceeding, witness Wells' concern does not apply.

4. Digital Additional Main Line (DAML) - DAML uses electronics at the central office and the customer's premise to provision two lines over one copper pair. AT&T/MCI believe that DAML should be used to reduce spare network capacity. (Wells TR 1128) BellSouth asserts that DAML is "less expensive if demand is only temporary. If demand is permanent and ongoing, the correct solution is to size the distribution cable to provide for the projected demand." (Baeza TR 614) DAML could be used as a way to increase the fill factor, since DAML is only placed when needed. Staff agrees with BellSouth that DAML is a temporary solution and thus should not be included in a forward-looking network design.

5. Bridged Tap - Bridged tap occurs when a pair of wires exists in two locations, but can only be used in one location. (Baeza TR 641) There are two types of bridged tap. "Pure" bridged tap is bridged to the cable pair "between the customer and the central office." (Wells TR 1124) End section tap is cable that extends "past the customer." (Wells TR 1124)

BellSouth's forward-looking design assumes that bridged tap is a maximum of 2,500 feet in feeder and distribution. (Baeza TR 603) AT&T/MCI argue that "excessive" bridged tap causes an unnecessary increase in BellSouth's loop investment. (Wells TR 1126) AT&T proposes that BellSouth's loop model should contain no pure bridged tap and minimal end section bridged tap. (Wells TR 1126)

BellSouth witness Baeza testified that there are two reasons for bridged tap. The first is so the pair could be reused by another customer. The second reason is that if a pair becomes

defective, it is faster to restore service using a vacant pair, which may be a bridged tap pair. (Baeza TR 641)

AT&T/MCI admit that their bridged tap assumptions are based on the Hatfield Model, a bottoms up model that assumes that only the central office location is a given. (Wells TR 1176)

Staff is not persuaded by AT&T/MCI's arguments on bridged tap, since AT&T/MCI's arguments seem to presume a hypothetical network that is constructed all at once rather than one constructed over time, as customers request service. Therefore, staff recommends that the existence of bridged tap in BellSouth's loop model be accepted for the purposes of this proceeding.

6. Second Line Growth Rate - When asked whether growth in second lines might increase fill factors, BellSouth witness Baeza responded that fill factors would not change. (EXH 20, p.10) When asked why not, witness Baeza responded:

> Well, the way your plant is built, you build for anticipated growth. In this case, in the neighborhood, and where the first house, for example, used one line, the second house could use two, the third could use none, the fourth house could use three; so all of these things are built into attempting to have capacity there when it's required. (EXH 20, p.11)

AT&T/MCI witness Wells quotes from BellSouth's publicity on its growth in second lines:

> BellSouth is driving revenue and profit growth by aggressively marketing additional telephone lines to our customers. Additional lines are key to satisfying the expanding consumer demand for connections to the Internet, Home fax machines, children's phones, telecommuting tools and home office phones. With 1.3 million additional lines, BellSouth has the most of any telephone company in the U.S. Our additional lines increased by 21 percent in 1995, and accounted for nearly half of all new residential connections. (Wells TR 1138-1139)

AT&T/MCI witness Wells believes that second line growth will increase the fill:

> And my argument here is that BellSouth is experiencing a lot of second line growth, more than historical; and therefore it is entirely logical that the utilization

> rate in the future will rise because . . . all that spare capacity is already out there. (EXH 41, pp.37-38)

Staff finds AT&T/MCI's argument that second line growth will positively impact the fill factor to be persuasive. BellSouth's own publicity on high second line growth serves to support the premise that second line growth will have some effect on utilization factors. Therefore, staff's recommendation on the fill factor will include some impact of BellSouth's second line growth.

7. Impact of Competition - In response to cross examination, BellSouth witness Baeza asserted that competition would have "minimal effect to the utilization rates." (Baeza TR 638) Staff agrees that with regard to the purchase of unbundled subloop distribution, competition alone is unlikely to affect utilization rates.

In summary, staff believes that BellSouth's distribution fill factor should be increased to reflect a lower defective pair rate and increased second line growth. Staff is not persuaded by AT&T/MCI's arguments that spare capacity for future growth should be excluded from the utilization factor. Staff believes that all customers benefit from spare capacity in the network. Therefore, staff believes an appropriate increase to BellSouth's distribution fill factor is 10%, and that BellSouth's proposed distribution fill factor be increased from 38.8% to 42.7%.

G. 1.5 Pair per House Default

BellSouth's default is to place 1.5 pairs per housing unit. (Baeza TR 610) AT&T/MCI do not object to this default, other than with a concern about how it might impact the fill factor. (Wells TR 1137-1138) Staff believes this is a reasonable default and recommends leaving it in place.

H. 5 pair Drop

BellSouth assumes a drop size of 5 pairs in its model, and is deploying that size across its region. (Caldwell TR 393) BellSouth asserts that a 5 pair drop is "an economic minimal size that allows us some flexibility if a pair, or even a couple of pairs, get damaged, or if a customer requests a separate telephone number, separate line in the house." (Baeza TR 658) AT&T/MCI argue that an ALEC should not have to "support the resulting . . . average spare capacity." (Wells TR 1151) Under cross examination, BellSouth witness Baeza stated that although he did not know the incremental cost between a 2 pair and a 5 pair drop, "offhand but we're talking pennies per foot." (Baeza TR 657) AT&T/MCI recommend a 2 pair drop

for residence. Staff agrees with BellSouth that the advantage of having a 5 pair drop in place likely outweighs any incremental cost. Therefore, staff recommends that BellSouth's proposed 5 pair drop be accepted.

I. Drop Lengths

BellSouth assumes drop lengths of 250 feet for aerial and 200 feet for buried cables.

> The method used to acquire this information consisted of contacting the Installation and Maintenance Managers in the state for information based on their knowledge of the areas they serve. These managers are responsible for the installation of drop wire and would have the best working knowledge of average lengths without actually measuring individual drops. The Subject Matter Expert averaged their responses and provided a state total. Additionally, for buried service wire, the BellSouth group that administers master contracts for burying the drop was consulted and provided footage information from those contracts as a cross check. (Baeza TR 617)

AT&T/MCI witness Wells argues that the Bellcore Survey of BOC Loops reported an average drop length of 73 feet. (Wells TR 1148) BellSouth witness Baeza discounts the use of a national survey of drop wire because of the potential for wide variation in the inputs. (Baeza TR 618) Staff agrees with BellSouth that this potential for wide variation in inputs makes this survey inappropriate for use in this proceeding.

Witness Wells states that in comparison to the former Bell companies, BellSouth-Florida has approximately 237 access lines per square mile, or more than twice the national average of 119 for the former Bell operating companies. (Wells TR 1148-1149) This number includes BellSouth's more densely populated metropolitan areas, such as Miami, where drop wire is likely not to be used as extensively as it would be in more rural areas, since "apartment buildings, strip shopping centers, malls and office buildings don't have drop wire." (Baeza TR 618) Therefore, staff does not find witness Wells' use of the average number of access lines per square mile to be persuasive in support of his assertion to reduce the length of BellSouth's drop wire.

AT&T/MCI propose that aerial and buried drops be the same length, 100 feet. (Wells TR 1149) AT&T/MCI witness Wells provides his rationale:

> My observation from having worked in OSP [outside plant] for BellSouth in Alabama for seven years, from having field surveyed OSP in ten CBGs [census block groups] all around the state of Georgia in preparing a response to a data request from the Georgia PSC Staff, from living in BellSouth's service areas in four states for most of my life, and from traveling extensively throughout BellSouth's nine state region, is that more than 80% of BellSouth's residential and small business customers have either no drop or drops that are less than 150 feet in length. I therefore recommend adjusting BellSouth's average drop length for both aerial and buried drops to 100 feet. (Wells TR 1149)

Staff is not persuaded that personal knowledge of other BellSouth states and perhaps some travel throughout Florida provides sufficient evidence on the length of BellSouth's drop wire.

Under cross examination, witness Baeza stated that he did not know if the drop wire average was weighted, nor did he know how many drop wires were surveyed. (Baeza TR 653-654) When requested by staff to provide documentation of the survey, BellSouth provided a handwritten page with drop wire averages for all of BellSouth's states. (EXH 5, p.84-9)

Staff does not find persuasive AT&T/MCI's arguments on drop wire length, such as the use of a national average, the inclusion of metropolitan areas in a state-wide average of access lines per square mile, and personal observation. However, staff is also troubled by the inability of BellSouth's witness to answer important questions about the drop wire survey, such as weighting and how many or what percentage of drop wires were surveyed. AT&T/MCI propose 100 feet drops for both aerial and buried wire. BellSouth proposes that the aerial drop wire be 250 feet and the buried drop wire be 200 feet. Given the range of values in the record, and persuasiveness of the parties' arguments, staff recommends that average aerial drop wire be 200 feet and the average buried drop 150 feet.

AT&T/MCI disagree with BellSouth's relative percentages of buried v. aerial drops. (Wells TR 1150) Although AT&T/MCI witness Wells admitted he had no physical data to indicate BellSouth's relative percentage was incorrect, he did provide a recommendation "based on extensive personal observation in other BellSouth states." (Wells TR 1150) Staff is unpersuaded by witness Wells' arguments concerning relative percentages of buried vs. aerial

drops because of the lack of evidence, and thus recommends retaining BellSouth's percentages.

J. Deaveraged Loop Rates

AT&T/MCI propose geographically deaveraged loop rates:

> State average loop prices advantage BellSouth in the competitive marketplace by providing the Company an artificial cost advantage in the more densely populated areas of the state. Averaged rates will thereby prevent the type of widespread competition envisioned by the Commission and the Act, which is antithetical to the Commission's goal of encouraging the type of widespread competition that benefits all consumers. (Ellison TR 1301)

BellSouth believes that geographic deaveraging of unbundled loop prices cannot occur without a "dramatic rebalancing of retail prices as well." (Varner TR 136) If geographic deaveraging of unbundled loop prices were to occur without retail rebalancing, BellSouth asserts that this would permit competitors to "unfairly siphon the support that allows residence rates to be as low as they are." (Varner TR 136)

AT&T/MCI base their recommended geographically deaveraged loop rates on the Hatfield Model, although they have not sponsored the Hatfield Model in this proceeding. In Order No. PSC-96-1579-FOF-TP, the Commission found that the federal Telecommunications Act of 1996 "can be interpreted to allow geographic deaveraging of unbundled elements, but we do not believe it can be interpreted to require geographic deaveraging." (Order No. PSC-96-1579-FOF-TP, p.23) Furthermore, in Order No. PSC-97-1303-PCO-TP, WorldCom's proposal to include geographically deaveraged loops in this proceeding was denied. (p.7)

Staff believes that the denial of WorldCom's proposal to include geographically deaveraged loops as an issue in this proceeding extends to AT&T/MCI's proposal of geographically deaveraged loops. Therefore, staff did not consider geographically deaveraged loop prices.

K. Material Costs

AT&T/MCI assert that a problem with BellSouth's model is that it has two incorrect cable costs in its cable material table. (Wells TR 1158) Since AT&T/MCI's assertion is unsupported by any

evidence, staff recommends that BellSouth's cable costs remain as is.

AT&T/MCI also assert that costs for certain building entrance and intrabuilding cables incorrectly include a cable code that includes the cost of strand, which is not required in these cables. (Well TR 1158-1159). Since AT&T/MCI's assertion is unsupported by any evidence, staff recommends that these cable costs remain as is.

L. Loading Factors

BellSouth develops loadings "based on accounting relationships between the investment or expenses needed to install or support material to the total installed investment." (Caldwell TR 333) BellSouth acknowledges that these historical relationships are used to determine forward-looking costs. (Caldwell TR 333) BellSouth argues that:

> These loadings reflect fundamental aspects of installation and supporting structures which will not be affected by technological or process innovation. For example, the cost of installing poles and conduit will be similar in the future as it is today. By applying the loadings, BellSouth has identified all of the capitalized cost associated with the UNE being examined. (Caldwell TR 333)

AT&T/MCI allege that BellSouth's outside plant loadings "are not forward-looking and, instead, are utilized to recover the costs of BellSouth's past methods of operation." (Wells TR 1159) According to AT&T/MCI, BellSouth develops its loading factors by calculating a ratio of certain expenses (e.g., engineering, labor, vendor engineering and installation, minor material and sales tax) to its major material investments. This ratio is then multiplied by the direct material of the hypothetical loop. (Wells TR 1160) AT&T/MCI argue that this method of calculating cost is not "least cost, most efficient, or forward-looking based on currently available technology." (Wells TR 1161) Yet, AT&T/MCI witness Wells admits, "[L]acking the accounting details or expertise to challenge the specific expenses and investments underlying these material factor ratios, my recommendation is that they be reduced significantly." (Wells TR 1162)

Staff disagrees with AT&T/MCI that loading factors are used to recover past costs of operations. Staff does recognize, however, the difficulty in defending a forward-looking cost based on data and relationships that are, by their very nature, historical. However, staff believes that using a historical relationship to

determine loadings is far more likely to produce a reasonable result than the use of opinion, especially when the witness proffering the opinion admits that he cannot challenge the numbers underlying the ratios. Therefore, staff recommends that the loading relationships developed by BellSouth be used in the cost models.

M. Subscriber Line Testing

BellSouth's proposed rates include a charge for Subscriber Line Testing. There is no mention of this specific cost by AT&T/MCI or WorldCom in the evidence; therefore, staff recommends that the charge remain.

N. Computer Systems Cost

BellSouth's proposed TSLRIC rate includes a computer system cost. In BellSouth's proposed rates (TSLRIC plus shared and common), the computer system cost is included in shared costs. There is no mention of this specific cost by AT&T/MCI or WorldCom in the evidence; therefore, staff recommends that this charge remain, subject to staff's recommendation in the shared and common cost section.

RECURRING RATE SUMMARY

Chart 1(b)-1 provides a summary of the proposed recurring rates.

Chart 1(b)-1: Summary of Proposed Rates

	BST TSLRIC Proposed Rates	BST TSLRIC + Shared & Common Proposed Rates	BST TSLRIC + Shared & Common + RRR Proposed Rates	AT&T/MCI's (State-Averaged, Excluding the NID) Proposed Rates	Staff's Recommended Rates
2-Wire Loop Distribution	$8.12	$10.24	$12.57	$6.36	$7.95
4-Wire Loop Distribution	$11.05	$13.76	$16.90	$12.98	$10.68

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.1.

Non-recurring RATES

Based on staff's recommendation for OSS, all non-recurring functions that are related to the ordering process will be eliminated from this analysis. In addition, any use of an OSS created specifically for ALECs that occurs outside the ordering process will also be eliminated from this analysis.

BellSouth has included costs for service disconnect in its non-recurring rate proposal. Staff's analysis and recommendation on the inclusion of disconnect costs in the connection rates is provided separately, beginning in the section on Disconnect. Therefore, analysis of service disconnect is not part of this analysis.

A. Methodology

BellSouth's non-recurring rates are based on a non-recurring process that is divided into five functions: Service Inquiry, Service Order, Engineering, Connect & Turn-Up Test, and Travel. (EXH 13, P-1, pp.496, 508, 526, 532, 538) Based on staff's recommendation for OSS, two categories, Service Inquiry and Service Order, are excluded from the rate proposal. Of the remaining three categories, Connect & Turn-Up Test includes time for ACAC, or the Access Customer Advocacy Center, a work group explicitly formed to deal with ALECs. (Landry TR 539) In keeping with staff's recommendation on OSS, therefore, any time associated with the ACAC is eliminated from Connect & Turn-Up Test.

In order to determine the direct non-recurring costs, BellSouth:

1. Defined the work functions
2. Established the work flows
3. Determined the work times for each work flow
4. Developed directly assigned labor costs for each work function (labor rate multiplied by work times)

BellSouth then summed the costs, added the gross receipts tax (TSLRIC), and then applied the shared and common cost factor. (Caldwell TR 339)

The overall work functions and flows were determined by BellSouth witness Landry, and the work times were developed by BellSouth Subject Matter Experts (SMEs). BellSouth witness Landry briefly described, at the hearing, the process he used to determine the necessary work flows:

> My job was to try to develop an overall process, sort of looking at, based on my background and what I knew about the different processes, to try to start with an order flow from the front end, which groups would need to be involved, and to pull this group of network people together and to develop the methods to support the product, to develop the cost for the cost filing, and also to work with the area people in deploying those specific products so they could be provisioned locally. (Landry TR 515)

Under cross examination, witness Landry testified that the work times developed by the SMEs are "reasonable":

> Based on the things that I know about the different processes, and based on the level of knowledge that the subject matter experts brought to the meeting, these are the people that have actually done that. These are the people that sat in meetings and talked to and fro about how one document or a service order comes from one person to the other, what do I have to do to be able to respond to that? How much of this falls out? What do I do with it when it falls out? I have been on the phone with a lot of the resolutions, particularly the AFIG, for the first several months of the process in trying to have some of these orders flow through, have been on the line with the network SMEs, with the center in the field in trying to make these orders flow and watching what had to be done to be administered. So, no, I cannot validate down to the minute each of the times that are in there, but I can attest to their reasonableness. (Landry TR 515-516)

AT&T/MCI are sponsoring the AT&T/MCI Non-recurring Cost Model in this proceeding. AT&T/MCI witness Lynott describes how AT&T/MCI developed its non-recurring costs:

> The non-recurring cost model develops one-time non-recurring cost estimates for the tasks and activities that may be performed by an ILEC, such as BellSouth, when the CLEC, such as AT&T or MCI, requests wholesale services, or as the subject of this proceeding, interconnection or unbundled network elements.
>
> Utilizing a forward-looking cost methodology, the non-recurring cost model develops a bottoms-up estimate of non-recurring costs. To accomplish this, the non-recurring cost model reflects the individual tasks and

activities that may be required to respond to a CLEC's request. (Lynott TR 1249)

AT&T/MCI use inputs from the Hatfield Model, as well as SME judgements in developing its model. (Lynott TR 1254, 1256)

AT&T/MCI assert that the entire non-recurring process has changed, thus reducing non-recurring costs. (Lynott TR 1211)

> Not so long ago, functions such as processing a service order were very labor intensive, requiring constant human intervention to update manual inventories and to physically complete each and every order. Today, however, the databases existing within an incumbent's OSS architecture (often referred to as 'Legacy' systems) have been automated and re-engineered to virtually eliminate the need for human intervention. . . . OSS evolution has had, and will continue to have, a very significant impact on non-recurring costs. Given that the major driver of high non-recurring costs had been incremental labor times and labor rates, the reduced reliance on human intervention due to advanced OSSs has significantly reduced the incremental non-recurring cost associated with functions such as pre-ordering, ordering, provisioning and maintenance. Significant cost savings can be achieved with existing OSS, if their capabilities are not undermined by polluted databases or inefficient configurations. (Lynott TR 1211-1212)

BellSouth found that the "structure and approach of the [AT&T/MCI] model appear to be reasonable." (Caldwell TR 354) BellSouth, however, takes exception to AT&T/MCI's assumption of a non-recurring process that occurs with almost no human intervention, calling it "unrealistic." (Caldwell TR 355) BellSouth asserts that non-recurring costs, which are forward-looking, "must be based on technologies that exist today which BellSouth expects to deploy, not some hypothetical technology." (Caldwell TR 356)

BellSouth then continues,

> Work order activities such as engineering requests for manual assistance and connect and test are required in order for BellSouth to provide a reliable product, on time, that meets the customer's needs regardless of whether the customer is an individual or an ALEC or whether the order was received manually or electronically. (Caldwell TR 356)

In BellSouth's view of non-recurring costs, there are provisioning activities that require technicians to perform physical tasks. (Caldwell TR 358) AT&T/MCI's view of the non-recurring process is of a highly automated process with almost no human intervention. For example, MCI asserts that AT&T/MCI's "NRCM assumes that pre-ordering, ordering, provisioning, repairs, maintenance, and billing processes are handled electronically through OSS in a highly automated, accurate and rapid manner with little to no human intervention."(MCI BR p.20).

B. Migration

An integral assumption in AT&T/MCI's NRCM is migration. AT&T/MCI define migration as occurring "when a customer with existing service requests changes in its local service provider. . . . This contrasts with an installation, which is defined as the establishment of any new (or additional) service for a CLEC customer." (Lynott TR 1221) AT&T/MCI's NRCM assumes that the only cost for a migration order is processing time because the NRCM assumes that the activities used to migrate a customer from an ILEC to an ALEC "can be accomplished electronically through the electronic gateway that exists between a CLEC and BellSouth and BellSouth's OSSs that the CLEC is accessing." (Lynott TR 1221)

BellSouth disagrees with AT&T/MCI's assumption of migration:

> Let me emphasize the migration of a customer from BellSouth to a new entrant is not just a record change. In an unbundled environment, the loop must be physically removed from our switch and then re-terminated on the ALEC's switch or recombined in the ALEC's space. This does not happen by magic, nor does improved OSS capabilities allow this to happen automatically. (Caldwell TR 358)

In the loops at issue in this proceeding, 2 and 4-wire loop distribution, 2-wire ADSL compatible loops, and 2 and 4-wire HDSL compatible loops, staff agrees with BellSouth that there are tasks to be performed that are different from a simple customer change from BellSouth to an ALEC. With loop distribution, a connection must be made at the serving area interface to the ALEC's equipment. This requires a physical action at a location in the field. (See, for example, EXH 13, p.496) The xDSL (ADSL and HDSL) loops, on the other hand, run from the NID to BellSouth's central office where they then must be connected to an ALEC's equipment. (Caldwell TR 358) The xDSL loops must also meet certain design standards (EXH 13, P-2, p.2) Staff is persuaded by BellSouth's argument that

simple migration of a customer is not possible with unbundled network elements.

C. Fallout

When BellSouth discusses "fallout," it is referring to errors on an initial service request from an ALEC that require that the service request be processed manually. (Landry TR 479) In contrast, when AT&T/MCI discuss fallout, they are referring to what happens when a service request does not "flow through an OSS automatically." (Lynott TR 1214) Any fallout during the pre-ordering and ordering processes is the "responsibility" of the ILEC, according to AT&T/MCI. (Lynott TR 1214) Since staff's recommendation in this proceeding excludes costs for pre-ordering and ordering, where BellSouth's fallout would occur, staff will not discuss the ramifications of fallout in the pre-ordering or ordering process.

AT&T/MCI's "conservative" fallout assumption of 2% is based "on the judgment of our experts of a competitive industry, as well as fallout levels reported by ILECs." (Lynott TR 1215) The ILECs that AT&T/MCI refer to are Southwestern Bell Telephone and US West. (Lynott TR 1215-1216). The US West example that witness Lynott refers to involves Primary Interexchange Carrier (PIC) changes. PIC changes occur when an ILEC customer changes long distance carriers. According to BellSouth witness Landry, however, PIC changes "are a simple electronic translation change and are not reflective of the complexity of separating a loop facility from the switch and providing it as an unbundled element." (Landry TR 481)

Staff agrees with BellSouth that PIC changes and the provision of UNEs are not similar functions. Staff also is not persuaded by the brief mention of low fallout rates for other ILECs. Staff does believe that the responsibility for low fallout starts with the service request submitted by an ALEC and continues through the ILEC's provisioning process. Therefore, staff recommends that fallout be considered in evaluating the work times for the provisioning process.

D. Use of Forward-Looking Technologies

MCI alleges in its brief, that BellSouth's non-recurring costs do not assume forward-looking technologies, specifically citing integrated digital loop carrier. (MCI BR p.23) MCI asserts that "[I]f BellSouth were to assume forward-looking technologies, such as integrated DLC with a GR-303 interface in its cost studies, the software based stored program technology would allow for flow-through provision and maintenance from upstream OSS systems right

down to the network elements in a matter of seconds with little or no human intervention." (MCI BR p.23) Loop distribution, by its very definition, is provisioned over copper. WorldCom witness Porter agreed that ADSL loops cannot be served over integrated digital loop carrier. (Porter TR 981) Although witness Porter did not specifically refer to HDSL loops, presumably the same statement holds true for HDSL loops. Therefore, staff recommends that MCI's assertion be disregarded.

E. Direct Labor Rates

As discussed in the shared and common cost section of this recommendation, staff recommends that BellSouth's direct labor rates be used to calculate direct costs.

F. Work Time Recommendations

Staff believes that BellSouth's and AT&T/MCI's assumptions, as translated into work functions and work times, represent the outside limits of the tasks and times involved in provisioning these loops.

Staff believes that AT&T/MCI's view represents the "best case" scenario of the most automated, least cost provisioning. Staff also believes that AT&T/MCI's optimistic view does not capture all of the manual intervention that is actually required to provision UNES. For example, AT&T/MCI assume that the time required to make a cross connect at the crossbox, test the circuit with the central office at the premise and FDI, tag the circuit, and complete the order takes just over 30 minutes for 2-wire loop distribution and about 25 minutes for 4-wire HDSL compatible loops. (EXH 44, JPL-3, p.3; EXH 44, JPL-3, p.13)

On the other hand, staff believes that BellSouth's view represents a "worst case" scenario. For example, BellSouth assumes that the time required to make a cross connect at the crossbox, test the circuit with the central office at the premise and FDI, tag the circuit, and complete the order takes about one hour and 35 minutes for 2-wire loop distribution and about 2 hours and 40 minutes for 4-wire HDSL compatible loops. (EXH 13, P-1, pp.496, 538) In another example, BellSouth assumes 100% dispatch to connect for all loops and for the xDSL loops it assumes that the loops are new. (EXH 13, P-1, pp.496, 508, 526, 532, 538)

In balancing these two ends of the spectrum, staff is inclined to give more weight to BellSouth's estimates of work times. BellSouth is the company with the experience in provisioning local loops. Since staff believes BellSouth has the technicians out in

the field every day installing, repairing and maintaining service, splitting the differences in the work times 50-50 would not reflect the weight staff believes should be given to BellSouth's experience. Although staff found the disproportionate weighting beyond 50-50 difficult to calculate, staff does believe that since BellSouth's work times represent a "worst case" scenario, splitting the work time differences 25-75 (i.e., BellSouth's work times are reduced by 25% of the difference between its work times and AT&T/MCI's work times) more closely reflects the work times likely to be encountered by BellSouth. Staff recommends, then, that the work time differences be split 25-75, except for incidental travel. With regard to incidental travel, staff recommends that the times remain as proposed by BellSouth, because BellSouth is likely to have better knowledge of travel times in its territory than either AT&T/MCI, WorldCom or staff.

G. Work Time Comparisons

In Charts 1(b)-2 and 1(b)-3 staff compares BellSouth's proposed work times with AT&T/MCI's adjusted BellSouth work times for first and additional installation for 2-wire loop distribution. Staff also provides its recommended work times. Staff's recommended work times reflect staff's recommendations concerning methodology, migration, fallout, and the use of forward-looking technologies.

Chart 1(b)-2: 2-Wire Loop Distribution Installation - First

Function	Description	BellSouth Work Times for First (Hour)	AT&T Work Times for First (Hour)	Staff's Recommended Work Times for First (Hour)
Engineering	AFIG assigns cable pairs according to FRN and rules	.2000	.0040	.1510
Engineering	CPG design	n/a	0	n/a
Connect & Turn-Up Test	I&M makes cross-connect @ box, tests circuit with CO @ premise & cross box, tags circuit & completes order	1.5877	.6042	1.3418
Travel	I&M incidental time not captured in NID/drop investment	.3333	0	.3333
Summary		2.121	.6082	1.8261

Source: BellSouth: EXH 13, P-1, pp.496, 1637. AT&T/MCI: EXH 44, JPL-3, p.3.

Chart 1(b)-3: 2-Wire Loop Distribution Installation - Additional

Function	Description	BellSouth Work Times for Add'l (Hour)	AT&T Work Times for Add'l (Hour)	Staff's Recommended Work Times for Add'l (Hour)
Engineering	AFIG assigns cable pairs according to FRN and rules	.2000	.0040	.1510
Engineering	CPG design	n/a	0	n/a
Connect & Turn-Up Test	I&M makes cross-connect @ box, tests circuit with CO @ premise & cross box, tags circuit & completes order	1.5877	.1042	1.2168
Travel	I&M incidental time not captured in NID/drop investment	0	0	0
Summary		1.7877	.1082	1.3678

Source: BellSouth: EXH 13, P-1, pp.496, 1637. AT&T/MCI: EXH 44, JPL-3, p.3.

In Charts 1(b)-4 and 1(b)-5 staff compares BellSouth's proposed work times with AT&T/MCI's adjusted BellSouth work times for first and additional installation for 4-wire loop distribution.

Staff also provides its recommended work times. Staff's recommended work times reflect staff's recommendations concerning methodology, migration, fallout, and the use of forward-looking technologies.

Chart 1(b)-4: 4-Wire Loop Distribution Installation - First

Function	Description	BellSouth Work Times for First (Hour)	AT&T Work Times for First (Hour)	Staff's Recommended Work Times for First (Hour)
Engineering	AFIG assigns cable pairs according to FRN and rules	.2000	.0040	.1510
Engineering	CPG design	n/a	0	n/a
Connect & Turn-Up Test	I&M makes cross-connect @ box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.5917	.6958	2.1177
Travel	I&M incidental time not captured in NID/drop investment	.3333	.2500	.3333
Summary		3.1250	.9498	2.602

Source: BellSouth: EXH 13, P-1, pp.508, 1648. AT&T/MCI: EXH 44, JPL-3, p.4.

Chart 1(b)-5: 4-Wire Loop Distribution Installation - Additional

Function	Description	BellSouth Work Times for Add'l (Hour)	AT&T Work Times for Add'l (Hour)	Staff's Recommended Work Times for Add'l (Hour)
Engineering	AFIG assigns cable pairs according to FRN and rules	.2000	.0040	.1510
Engineering	CPG design	n/a	0	n/a
Connect & Turn-Up Test	I&M makes cross-connect @ box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.5917	.1958	1.9927
Travel	I&M incidental time not captured in NID/drop investment	0	0	0
Summary		2.7917	.1998	2.1437

Source: BellSouth: EXH 13, P-1, pp.508, 1648. AT&T/MCI: EXH 44, JPL-3, p.4.

Charts 1(b)-6 and 1(b)-7 summarize BellSouth's and AT&T/MCI's total proposed work times and staff's recommended work times for 2 and 4-wire loop distribution. In addition, the direct costs resulting from each proposal are calculated using BellSouth's direct labor rates.

Chart 1(b)-6: Summary of Proposed Times and Direct Cost - 2-Wire Loop Distribution

	BellSouth's Proposal	AT&T/MCI's Proposal	Staff Recommendation
First Installation - Proposed Work Times	2.1210	.6082	1.8261
First Installation - Proposed Direct Costs	$85.01	$24.78	$73.35
Additional Installation - Proposed Work Times	1.7877	.1082	1.3678
Additional Installation - Proposed Direct Costs	$71.41	$4.38	$54.65

Source: Direct Labor Rates: BellSouth's EXH 13, P-1, p.1637.

Chart 1(b)-7: Summary of Proposed Times and Direct Cost - 4-Wire Loop Distribution

	BellSouth's Proposal	AT&T/MCI's Proposal	Staff Recommendation
First Installation - Proposed Work Times	3.1250	.9498	2.602
First Installation - Proposed Direct Costs	$125.97	$38.72	$105.01
Additional Installation - Proposed Work Times	2.7917	.1998	2.1437
Additional Installation - Proposed Direct Costs	$112.37	$8.12	$86.31

Source: Direct Labor Rates: BellSouth's EXH 13, P-1, p.1648.

Non-recurring RATE SUMMARY

In Chart 1(b)-8, staff provides a summary of BellSouth's and AT&T/MCI's proposed non-recurring rates (electronic orders), along with staff's recommended non-recurring rates. A direct comparison between BellSouth's and AT&T/MCI's proposed rates and staff's recommended rates is not possible because staff's recommended rates exclude certain functions, as discussed above.

Chart 1(b)-8: Comparison of Non-recurring Rate Proposals

	2-Wire Loop Distribution First Order	2-Wire Loop Distribution Additional Order	4-Wire Loop Distribution First Order	4-Wire Loop Distribution Additional Order
BellSouth's Proposal (Electronic)	$396.69	$295.17	$454.93	$354.06
AT&T/MCI - Installation - Proposal (Electronic)	$16.04	$16.04	$43.87	$43.87
AT&T/MCI - Migration - Proposal (Electronic)	$16.22	$16.22	$53.51	$53.51
AT&T/MCI - Disconnect - Proposal (Electronic)	$15.29	$15.29	$31.60	$31.60
Staff's Recommendation	$78.29	$58.33	$112.07	$92.11

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.1.

(h) 2-wire ADSL-compatible loop; and

ISSUE 1(h): What are the appropriate permanent recurring and non-recurring rates for 2-wire ADSL?

STAFF ANALYSIS:

All of staff's analysis from Issue 1(b)(excluding the work times and direct rates) also applies to the 2-wire ADSL compatible loop. Staff's analysis specific to 2-wire ADSL compatible loops is provided below. This analysis begins with the definition of 2-wire ADSL compatible loops. Following the definition, items at dispute for recurring and non-recurring rates are analyzed. In addition, work times and direct rates specific to ADSL compatible loops are also provided at the conclusion of staff's analysis.

Definition

BellSouth provides the definition for ADSL compatible loops, which is identical to HDSL compatible loops:

> The 2-wire ADSL [Asymmetrical Digital Subscriber Line] Compatible Loop, 2-wire HDSL [High Bit Rate Digital Subscriber Line] Compatible Loop, and 4-Wire HDSL Compatible Loop are physical transmission facilities (or channel or group of channels on such facilities) which extend from the main distributing frame connection in the end office to a demarcation point at the customer premises (i.e., the network interface device or NID). The transmission facility does not enter the BellSouth switch as it is terminated on the main distributing frame. HDSL compatible loops are non-loaded 26 gauge copper facilities with specific length limitations. (EXH 13, P-2, p.2)

RECURRING RATES

Items A through N of Issue 1(b) apply equally to 2-wire ADSL compatible loops. Discussed below are those items that apply specifically to 2-wire ADSL compatible loops.

A. Utilization/Fill Factor - Feeder

Since ADSL loops must be provisioned over copper, only the copper feeder utilization rate will be considered.

BellSouth calculated its actual fill factor by dividing 4,169,515 assigned pairs by 6,349,457 available pairs, for a rate of 65.7%. (EXH 4, p.154) BellSouth states that its projected fill

factor is identical to its actual fill factor because "BellSouth expects utilization in the future to be at or near current utilization." (EXH 4, p.154)

In support of its fill factor, BellSouth provided an exhibit that compared BellSouth's feeder fill to that of the other regional Bell holding companies. With one exception (Pacific Telesis at 92.16%), BellSouth's feeder fill factor was highest. The lowest was Bell Atlantic with a feeder fill of 41.54%. (EXH 19, DMB-1)

AT&T/MCI argue that the 65.7% fill factor is understated because it includes the effect of a high defective pair rate. (Wells TR 1142) BellSouth's feeder defective pair rate increased from 9.4% in 1992 to 10.5% in 1996. (EXH 4, p.155) Staff agrees with AT&T/MCI that BellSouth's defective pair rates are higher than what an efficient provider might encounter. Staff also believes, however, that defective pairs are a normal cost of doing business, and that some portion of that cost should be borne by customers.

AT&T/MCI criticize where BellSouth measures its feeder fill, which is at the main distributing frame (MDF). AT&T/MCI argue that measurement at the MDF understates the fill because "some engineers automatically oversize the feeder cable that enters the central office." (Wells TR 1144) When asked where it would be appropriate to measure feeder fill, AT&T/MCI witness Wells asserted that the fill should be measured at various cable segments, with a weighted average of those segments equating to the fill. (EXH 41, p.40) Staff believes that although measuring feeder fill at the MDF may somewhat understate the fill, it would not be cost-effective to measure fill for each feeder cable at several points along the cable, because of the time and probable cost involved. Therefore, staff recommends that no adjustment be made to the feeder fill factor for measurement at the MDF.

AT&T/MCI assert that BellSouth included "[O]ver-sizing of feeder cable based on optimistic forecasts of growth . . .." (Wells TR 1144) This occurs, according to AT&T/MCI, primarily in low growth central offices. (Wells TR 1144) Staff believes that with an actual fill measured at 65.7%, including a defective pair rate of 10.5% in the denominator, the alleged over-sizing of cable is not a significant factor. This is because BellSouth's fill factor is high relative to the vast majority of its peers, as noted above.

In summary, staff believes that BellSouth's feeder fill factor should be increased to reflect a lower defective pair rate and increased second line growth (as discussed in Issue 1(b)). However, rather than the 10% increase staff recommends for distribution fill in Issue 1(b), staff believes that a 5% increase

is sufficient to account for increased second line growth and a lower defective pair rate, given that BellSouth's feeder fill factor is already at 65.7%, which is high relative to its peers. Therefore, staff recommends that BellSouth's proposed feeder fill factor be increased from 65.7% to 69.0%.

B. Use of Single Feeder Distribution Interface (FDI, also known as Serving Area Interface or SAI, and crossbox)

AT&T/MCI recommend that there should be only one crossbox per loop in a forward-looking loop design, although BellSouth has "incorporated sample loops (e.g., FL #689) with multiple cross-connects into its single hypothetical loop." (Wells TR 1122) AT&T/MCI did not offer a way to calculate the effect that including multiple crossboxes might have on the cost of a loop.

Staff has recommended that BellSouth's recasting of its loops be accepted in this proceeding. Staff does not believe that AT&T/MCI have provided sufficient justification for their assertion concerning multiple crossboxes or an estimate of the impact. Staff, therefore, recommends that the loop design not be modified in this proceeding to prohibit the use of multiple crossboxes.

C. Main Distributing Frame (MDF) Cost

The MDF cost for this UNE is developed using Bellcore's SCIS model. Neither AT&T/MCI nor WorldCom mentioned this cost in the evidence. Therefore, staff recommends that it be left as is.

RECURRING RATE SUMMARY

Chart 1(h)-1 provides a summary of the proposed recurring rates.

Chart 1(h)-1: Summary of Proposed Rates

	BST TSLRIC Proposed Rates	BST TSLRIC + Shared & Common Proposed Rates	BST TSLRIC + Shared & Common + RRR Proposed Rates	AT&T/MCI's (State-Averaged, Excluding the NID) Proposed Rates	WorldCom's Proposed Rates	Staff's Rec'd Rates
2-Wire ADSL Compatible Loop	$15.69	$18.96	$23.28	$8.54	$15.69	$15.19

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.2. WorldCom: Porter TR 969.

Non-recurring RATES

Staff's analysis of BellSouth's and AT&T/MCI's non-recurring proposals are contained in Issue 1(b). Since WorldCom's proposal is only for xDSL (any kind of DSL, e.g., ADSL and HDSL) loops, its proposal is discussed below.

In his testimony, WorldCom witness Porter explained how WorldCom calculated its proposed non-recurring rates:

> Approximately 26 minutes of labor are associated with the average digital loop conversion for the first line, and 14.5 minutes for each additional line. BST's labor rate is proprietary. For the sake of argument, however, if the loaded labor rate is somewhere between $30-$60 per hour, or $45 on average, then the non-recurring charge for the first order should be approximately $19.50, and for additional orders approximately $10.87. (Porter TR 948)

In WorldCom's view, there would be almost no non-recurring cost because "BST would simply reassign a loop serving one of its former customers to WorldCom and that would be the end of the matter." (Porter TR 944)

WorldCom breaks non-recurring functions into four groups: Service Order, Engineering, Connection and Testing, and Field (cross connects). (Porter TR 945) Service order is eliminated from staff's discussion because of staff's recommendation on pre-ordering and ordering.

With regard to the category Engineering, WorldCom accepts that xDSL loops (any type of DSL loops, e.g., ADSL and HDSL) may require conditioning so that they meet the xDSL standards. (Porter TR 946) WorldCom estimates 10% of orders will require upgrades, and these upgrades will be done in groups of 25. (Porter TR 946) WorldCom calculates a time of five minutes to upgrade these loops. (Porter TR 947) WorldCom also estimates that 10% of orders will require an additional 30 minutes of engineering, translating into an average of 3 minutes per order. (Porter TR 947)

For the category Connection and Testing, WorldCom estimates an average of five minutes for installation and maintenance, and three minutes for special services coordination and testing. (Porter TR 947)

In the category Field, WorldCom estimates that travel time is possible for 10% of the orders. (Porter TR 947) This assumption

entails 15 minutes of travel time to a cross connect and 15 minutes of time to cross connect. This totals to 30 minutes for 10% of the orders, or an average of 3 minutes per order. (Porter TR 947-948)

WorldCom supports its proposed rate by referring to BellSouth's tariffed non-recurring rate of $40 for residence and $56 for a single business line.

> BST charges residence customers $40 for the first line and $12 for each additional line. BST charges business customers $56 for the first line and $12 for each additional line. For the sake of argument, if WorldCom's business customers desired high speed digital loops, WorldCom would pay *nearly* 10 times the non-recurring charges to connect the loop than BST's own retail customers would if the Commission adopted the Loop Study costs. (Porter TR 942)

> . . . the non-recurring connection charge for basic exchange service can serve as an appropriate benchmark for Commission consideration because little installation is involved in making BST loops ADSL and HDSL compatible, nor is much BST engineering, testing, or travel required to convert a BST customer to high speed digital service provided by WorldCom over BST unbundled loops. In most cases, BST's loops should be of sufficient quality that WorldCom can use them for high speed digital transmission without further conditioning. (Porter TR 944)

WorldCom also asserts that its proposed non-recurring rates are reasonable because in BellSouth's ADSL trial in Birmingham, Alabama, BellSouth has no non-recurring charges:

> I doubt that BST would charge its customers $20 per month in its initial ADSL trial and then charge new customers a $600 set-up fee to initiate service. As I have opined, the recurring charge is more on the order of $19.50. I doubt that BST is absorbing $600 per customer in its ADSL trial. This would be an extraordinary promotional offer even for BST. Rather, I believe they are only absorbing $19.50 per customer. (Porter TR 964)

WorldCom provided no evidence that its estimates of percentages of loops that require conditioning and additional engineering were based on actual conditions in the field.

Staff believes that WorldCom's use of BellSouth's tariffed non-recurring rates produces an interesting rate comparison. When

questioned during the hearing about the disparity between BellSouth's tariffed recurring rates, witness Landry's response was that "the services are two entirely different things." (Landry TR 490) Staff agrees that the services are different and that different work functions might be necessary. Staff does not believe that there is sufficient evidence to support WorldCom's claim that tariffed rates can be used to support WorldCom's rate proposal.

With regard to WorldCom's citation of BellSouth's Birmingham ADSL trial and the lack of non-recurring charges assessed in the trial, staff believes that actual rates may well be very different from the trial rates.

A. Testing

WorldCom objects to BellSouth's inclusion of testing as part of non-recurring functions.

> BST intends to provide testing for almost every loop that it provisions, even though it conducts no such testing on loops for its own customers. Indeed, for many loops WorldCom will perform the testing itself without the assistance of BST. BST thus discriminates against loop purchasers. (Porter TR 950-951)

In response, BellSouth witness Landry states that the xDSL loops have "specialized requirements [that] must be met as part of the design process and very specific testing must be done so that BellSouth can turn over the service to the ALEC with assurance that the service will function as ordered." (Landry TR 480)

Staff believes that good customer service requires an ILEC to test the loops it is selling to an ALEC before they are provided to the ALEC. If an ALEC is paying for a loop, it should receive a loop that does not need repair or further work. Staff also believes that any customer would be very unhappy if loops it purchased did not work, even if the customer had agreed that it would do the testing. Therefore, staff recommends that BellSouth's proposed testing is appropriate.

B. Work Time Comparisons

In Charts 1(h)-2 and 1(h)-3 staff compares BellSouth's proposed work times with AT&T/MCI's adjusted BellSouth work times for first and additional installation for 2-wire ADSL compatible loops. The proposed work times are identical to the those of 2-wire HDSL compatible loops. Staff also provides its recommended work

times. Although WorldCom's work functions do not exactly parallel BellSouth's, staff includes the work times in the overall category. Staff's recommended work times reflect staff's recommendations concerning methodology, migration, testing, fallout, and the use of forward-looking technologies, and are computed identically to the work times in Issue 1(b).

Chart 1(h)-2: 2-Wire ADSL/HDSL Compatible Loop Installation - First

Function	Description	BellSouth Work Times for First (Hour)	AT&T Work Times for First (Hour)	WorldCom's Work Times for First (Hour)	Staff's Rec'd. Work Times for First (Hour)
Engineering	AFIG assigns facilities	.0167	0		.0125
Engineering	CPG processes service request & generates DLR & word document to ALEC and field	.1300	.0108		.1002
Engineering				.1333	0
Connect & Turn-Up Test	CO I&M field work group connects facility at collocation point	.0583	0		.0437
Connect & Turn-Up Test	SSIM makes cross-connect @ cross-box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.678	.1500		2.046
Connection & Testing				.0833	0
Travel	I&M incidental time not captured in NID/drop investment	.3000	0		.3000
Field				.0500	0
Summary		3.183	2.883	.2667	2.5025

Source: BellSouth: EXH 13, P-1, pp.526,1658 (ADSL); pp.532,1664 (HDSL). AT&T/MCI: EXH 44, JPL-2, p.2 (ADSL); JPL-3, p.12 (HDSL). WorldCom: EXH 32, DNP-1.

Chart 1(h)-3: 2-Wire ADSL/HDSL Compatible Loop Installation - Add'l

Function	Description	BellSouth Work Times for Add'l (Hour)	AT&T Work Times for Add'l (Hour)	WorldCom's Work Times for Add'l (Hour	Staff's Rec'd Work Times for Add'l (Hour)
Engineering	AFIG assigns facilities	.0167	0		.0125
Engineering	CPG processes service request & generates DLR & word document to ALEC and field	.1300	.0100		.1000
Engineering				.1333	0
Connect & Turn-Up Test	CO I&M field work group connects facility at collocation point	.0583	0		.0437
Connect & Turn-Up Test	SSIM makes cross-connect @ cross-box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.678	.1083		2.0356
Connection & Testing				.0833	0
Travel	I&M incidental time not captured in NID/drop investment	0	0		0
Field				.0250	0
Summary		2.883	.1183	.2416	2.1918

Source: BellSouth: EXH 13, P-1, pp.526,1658 (ADSL); pp.532,1664 (HDSL). AT&T/MCI: EXH 44, JPL-2, p.2 (ADSL); JPL-3, p.12 (HDSL). WorldCom: EXH 32, DNP-1.

Chart 1(h)-4 summarizes BellSouth's, AT&T/MCI's, and WorldCom's total proposed work times and staff's recommended work times for 2-wire ADSL/HDSL compatible loops. In addition, the direct costs resulting from each proposal are calculated using BellSouth's direct labor rates.

Chart 1(h)-4: Summary of Proposed Times and Direct Cost - 2-Wire ADSL/HDSL Compatible Loops

	BellSouth's Proposal	AT&T/MCI's Proposal	WorldCom's Proposal	Staff Recommendation
First Installation - Proposed Work Times	3.1830	.1608	.2667	2.5025
First Installation - Proposed Direct Costs	$135.66	$6.84	$12.00	$106.67
Additional Installation - Proposed Work Times	2.883	.1183	.2417	2.1918
Additional Installation - Proposed Direct Costs	$122.77	$5.02	$10.87	$93.33

Source: Direct Labor Rates: BellSouth's EXH 13, P-1, p.1658 (ADSL); p.1664 (HDSL).

Non-recurring RATE SUMMARY

In Chart 1(h)-5, staff provides a summary of BellSouth's, AT&T/MCI's, and WorldCom's proposed non-recurring rates (electronic orders), along with staff's recommended non-recurring rates. A direct comparison between BellSouth's and AT&T/MCI's proposed rates and staff's recommended rates is not possible because staff's recommended rates exclude certain functions, as discussed in Issue 1 (b).

Chart 1(h)-5: Comparison of Non-recurring Rate Proposals

	2-Wire ADSL Compatible Loop - First Order	2-Wire ADSL Compatible Loop - Additional Order
BellSouth's Proposal (Electronic)	$619.76	$521.07
AT&T/MCI - Installation - Proposal (Electronic)	$13.00	$8.83
AT&T/MCI - Disconnect - Proposal (Electronic)	$0.00	$0.00
WorldCom's Proposal	$19.50	$10.87
Staff's Recommendation	$113.85	$99.61

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.2. WorldCom: EXH 32, DNP-1.

(I) 2-wire/4-wire HDSL-compatible loop

ISSUE 1(i): What are the appropriate permanent recurring and non-recurring rates for 2-wire and 4-wire HDSL compatible loops?

STAFF ANALYSIS:

All of staff's analysis from Issues 1(b) and 1(h)(excluding the work times and direct rates for all but 2-wire ADSL compatible loops) also applies to the 2 and 4-wire HDSL compatible loops. Staff's analysis specific to the HDSL compatible loops is provided below, after the definition. The only analysis specific to HDSL loops that is different from the analysis in Issues 1(b) and 1(h) is the non-recurring work times for 4-wire HDSL compatible loops.

Staff's analysis begins with the definition of HDSL compatible loops. The work times and direct rates specific to 4-wire HDSL compatible loops are provided at the conclusion of staff's analysis. Summary charts for proposed rates are provided for 2 and 4-wire HDSL compatible loops.

Definition

BellSouth provides the definition:

> The 2-wire HDSL [High Bit Rate Digital Subscriber Line] Compatible Loop, and 4-Wire HDSL Compatible Loop are physical transmission facilities (or channel or group of channels on such facilities) which extend from the main distributing frame connection in the end office to a demarcation point at the customer premises (i.e., the network interface device or NID). The transmission facility does not enter the BellSouth switch as it is terminated on the main distributing frame. HDSL compatible loops are non-loaded 26 gauge copper facilities with specific length limitations. (EXH 13, P-2, p.2)

RECURRING RATES

Items A through N, of Issue 1(b) apply to 2 and 4-wire HDSL compatible loops. Items A through C, of Issue 1(h) also apply to 2 and 4-wire HDSL compatible loops.

RECURRING RATE SUMMARY

Chart 1(i)-1 provides a summary of the proposed recurring rates.

Chart 1(i)-1: Summary of Proposed Rates

	BST TSLRIC Proposed Rates	BST TSLRIC + Shared & Common Proposed Rates	BST TSLRIC + Shared & Common + RRR Proposed Rates	AT&T/MCI's (State-Averaged, Excluding the NID) Proposed Rates	WorldCom's Proposed Rates	Staff's Rec'd Rates
2-Wire HDSL Compatible Loop	$11.77	$14.44	$17.73	$6.28	$11.77	$11.50
4-Wire HDSL Compatible Loop	$18.28	$22.04	$27.06	$12.83	$18.28	$17.63

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.2. WorldCom: Porter TR 969.

Non-recurring RATES

Staff's analysis of non-recurring rates for HDSL compatible loops is found in the Non-recurring Rates sections of Issues 1(b) and 1(h). Since BellSouth, AT&T/MCI, and WorldCom are proposing the same work times for 2-wire HDSL loops as they did for 2-wire ADSL loops, the charts comparing functions and work times for 2-wire HDSL charts will not be repeated here. They can be found in Issue 1(h).

AT&T/MCI, however, propose different work times for 4-wire HDSL compatible loops. Therefore, those charts are presented in the section below.

A. Work Time Comparisons

In Charts 1(i)-2 and 1(i)-3 staff compares BellSouth's proposed work times with AT&T/MCI's adjusted BellSouth work times for first and additional installation for 4-wire HDSL compatible loops. Staff also provides its recommended work times. Although WorldCom's work functions don't exactly parallel BellSouth's, staff includes the work times in the overall category. Staff's recommended work times, calculated the same way as in Issues 1(b) and 1(h), reflect staff's recommendations concerning methodology, migration, testing, fallout, and the use of forward looking technologies.

Chart 1(i)-2: 4-Wire HDSL Compatible Loop Installation - First

Function	Description	BellSouth Work Times for First (Hour)	AT&T Work Times for First (Hour)	WorldCom's Work Times for First (Hour)	Staff's Rec'd. Work Times for First (Hour)
Engineering	AFIG assigns facilities	.0167	0		.0125
Engineering	CPG processes service request & generates DLR & word document to ALEC and field	.1300	.0100		.1002
Engineering				.1333	0
Connect & Turn-Up Test	CO I&M field work group connects facility at collocation point	.0583	0		.0437
Connect & Turn-Up Test	SSIM makes cross-connect @ cross-box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.678	.2917		2.1127
Connection & Testing				.0833	0
Travel	I&M incidental time not captured in NID/drop investment	.3000	0		.3000
Field				.0500	0
Summary		3.183	.3017	.2667	2.5691

Source: BellSouth: EXH 13, P-1, pp.538,1670. AT&T/MCI: EXH 44, JPL-3, p.13. WorldCom: EXH 32, DNP-1.

Chart 1(i)-3: 4-Wire HDSL Compatible Loop Installation - Add'l

Function	Description	BellSouth Work Times for Add'l (Hour)	AT&T Work Times for Add'l (Hour)	WorldCom's Work Times for Add'l (Hour	Staff's Rec'd Work Times for Add'l (Hour)
Engineering	AFIG assigns facilities	.0167	0		.0125
Engineering	CPG processes service request & generates DLR & word document to ALEC and field	.1300	.0100		.1000
Engineering				.1333	0
Connect & Turn-Up Test	CO I&M field work group connects facility at collocation point	.0583	0		.0437
Connect & Turn-Up Test	SSIM makes cross-connect @ cross-box, tests circuit with CO @ premise & cross box, tags circuit & completes order	2.678	.2917		2.0814
Connection & Testing				.0833	0
Travel	I&M incidental time not captured in NID/drop investment	0	0		0
Field				.02500	0
Summary		3.883	.3017	.2417	2.277

Source: BellSouth: EXH 13, P-1, pp.538,1670. AT&T/MCI: EXH 44, JPL-3, p.13. WorldCom: EXH 32, DNP-1.

Chart 1(i)-4 summarizes BellSouth's, AT&T/MCI's, and WorldCom's total proposed work times and staff's recommended work times for 2-wire HDSL compatible loops. In addition, the direct costs resulting from each proposal are calculated using BellSouth's direct labor rates.

Chart 1(i)-4: Summary of Proposed Times and Direct Cost - 2-Wire HDSL Compatible Loops

	BellSouth's Proposal	AT&T/MCI's Proposal	WorldCom's Proposal	Staff Recommendation
First Installation - Proposed Work Times	3.1830	.1608	.2667	2.5025
First Installation - Proposed Direct Costs	$135.66	$6.84	$12.00	$106.68
Additional Installation - Proposed Work Times	2.8837	.1183	.2417	2.1918
Additional Installation - Proposed Direct Costs	$122.77	$5.02	$10.88	$93.33

Source: Direct Labor Rates: BellSouth's EXH 13, P-1, p.1664.

Chart 1(i)-5 summarizes BellSouth's, AT&T/MCI's, and WorldCom's total proposed work times and staff's recommended work times for 4-wire HDSL compatible loops. In addition, the direct costs resulting from each proposal are calculated using BellSouth's direct labor rates.

Chart 1(i)-5: Summary of Proposed Times and Direct Cost - 4-Wire HDSL Compatible Loops

	BellSouth's Proposal	AT&T/MCI's Proposal	WorldCom's Proposal	Staff Recommendation
First Installation - Proposed Work Times	3.1830	.4275	.2667	2.5691
First Installation - Proposed Direct Costs	$135.66	$18.29	$12.00	$109.54
Additional Installation - Proposed Work Times	2.8830	.3017	.2417	2.2377
Additional Installation - Proposed Direct Costs	$122.77	$12.89	$10.88	$95.30

Source: Direct Labor Rates: BellSouth's EXH 13, p.1670.

Non-recurring RATE SUMMARY

In Chart 1(i)-6, staff provides a summary of BellSouth's, AT&T/MCI's, and WorldCom's proposed non-recurring rates (electronic orders), along with staff's recommended non-recurring rates. A direct comparison between BellSouth's and AT&T/MCI's proposed rates and staff's recommended rates is not possible because staff's recommended rates exclude certain functions, as discussed in Issue 1 (b).

Chart 1(i)-6: Comparison of Non-recurring Rate Proposals

	2-Wire HDSL Compatible Loop - First Order	2-Wire HDSL Compatible Loop - Additional Order	4-Wire HDSL Compatible Loop - First Order	4-Wire HDSL Compatible Loop - Additional Order
BellSouth's Proposal (Electronic)	$619.76	$521.07	$645.90	$547.68
AT&T/MCI - Installation - Proposal (Electronic)	$13.00	$8.83	$27.21	$19.25
AT&T/MCI - Disconnect - Proposal (Electronic)	$0.00	$0.00	$0.00	$0.00
WorldCom's Proposal	$19.50	$10.87	$19.50	$10.87
Staff's Recommendation	$113.85	$99.61	$116.91	$101.71

Source: BellSouth: EXH 11, p.1. AT&T/MCI: EXH 47, WE-1, p.2. WorldCom: EXH 32, DNP-1.

(d) Physical Collocation;

ISSUE 1d - Physical Collocation

Physical collocation is an arrangement that allows an alternative local exchange company (ALEC) to locate its own telecommunications equipment in a segregated space within the incumbent local exchange carrier's (ILEC's) central office (CO). The ALEC pays the ILEC for use of that space and is provided with the ability to enter the CO to install, repair, and maintain its collocated equipment. (Bissell TR 1016; Varner TR 131) According to BST witness Caldwell, physical collocation involves the installation of collocator-owned equipment within leased floor space in BST central offices and the ALEC purchase of cross connects to access BST's network. The Point of Termination (POT) Bay is the official demarcation point. (EXH 13, p.4)

AT&T/MCI witness Bissell describes physical collocation in a similar fashion and notes that it also requires fiber connections between the manhole outside the CO and the ALEC equipment inside. (Bissell TR 1016) According to witness Bissell, collocation is a low technology aspect of a high technology industry in that it simply requires setting up metal cages to hold the ALEC equipment, installing the cable on the racks, and grounding the equipment. (TR 1017)

Specifically, physical collocation involves the following elements which AT&T/MCI, and BST have identified and addressed.

- Planning and Engineering
- Preparation of the general collocation area
- Cage Construction
- Land and Building or Floor Space
- Entrance Fiber
- Power (Delivery and Consumption)
- POT Bays
- Connectivity (Voice Grade, DS-1, DS-3, Optical)
- Security Access

Sections 251(c)(2) & (3) of The Telecommunications Act of 1996 (the Act) require that incumbent LECs provide interconnection and access to UNEs at any technically feasible point at a level of

quality equal to that which it provides itself, at rates, terms and conditions which are just, reasonable, and non-discriminatory.

Section 251(c)(6) states that incumbent LECs have:

> The duty to provide, on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, for physical collocation of equipment necessary for interconnection or access to unbundled network elements at the premises of the local exchange carrier, except that the carrier may provide for virtual collocation if the local exchange carrier demonstrates to the State commission that physical collocation is not practical for technical reasons or because of space limitations.

Section 252(d)(1) requires that the state commission determine just and reasonable rates for interconnection and access to UNEs which are non-discriminatory and based on costs determined without reference to a rate of return or other rate-based proceeding. Rates may include a reasonable profit.

BST witness Varner stated in his testimony that the pricing standards specified in Section 252(d)(1) of the Act relate only to Sections 251(c)(2) and 251(c)(3), i.e., interconnection and access to UNEs, and therefore no standard is specified for the pricing of collocation. (TR 116) Staff believes that collocation is a primary means of interconnection and access to UNEs. At deposition, witness Varner himself noted that collocation has been defined as a UNE; that it is really "access" to UNEs, and that the FCC rules have defined access to a UNE as a UNE itself. (EXH 10, p.26) Staff believes collocation is subject to Section 252(d)(1) requirements, and that this Commission should apply the same requirements to the pricing of collocation that it applies to other UNEs.

PARTIES' PROPOSALS & APPROACHES

The parties in this proceeding have advocated the use of differing methodologies or approaches in determining the rates for collocation. It appears that there is basic agreement as to what elements are needed such as enclosures, cables, and cross connects, but there is significant disagreement as to how the costs for the various elements should be computed and recovered. Outlined below is a summary of each approach.

BELLSOUTH'S COST DEVELOPMENT

In support of its Physical Collocation proposals, BST used its TELRIC Calculator and its Physical Collocation Cost Estimating

Spreadsheet. BST witnesses Caldwell and Zarakas sponsored the TELRIC Calculator, which was used to develop TSLRIC and TELRIC estimates for the UNEs at issue in this proceeding. Although BST developed specific models to cost out some of the UNEs, such as the loop, switching and transport, it used a simple spreadsheet approach for physical and virtual collocation. (Zarakas TR 316)

BST witness Redmond, who was the only BST collocation-specific witness, did not address costs beyond vendor prices, and sponsored testimony only on BST methods and procedures for the actual construction of the physical collocation space itself. (Redmond TR 776; EXH 22, pp.42, 78-79) Therefore, no BST witness addressed in any detail the costs of cabling or cross connects associated with physical collocation.

Collocation costs are divided into recurring and non-recurring components in the BST TELRIC Calculator. BST witness Caldwell stated that recurring costs reflect the capital costs and operating expenses associated with the investments required to provide an item of plant. Capital costs include depreciation, cost of money and income taxes. Operating expenses include plant specific expenses, ad valorem taxes, and gross receipts taxes. (Caldwell TR 310) Non-recurring costs include one-time expenses associated with provisioning, installing, and disconnecting the unbundled network element. The major non-recurring cost categories include service order processing, engineering, connect and test, and technician travel time. (TR 310) In her testimony, witness Caldwell did not address specific recurring and non-recurring costs associated with collocation except for the Application Fee and the Space Preparation charge, which were addressed in her rebuttal testimony. These are discussed more specifically later on.

In general, BST proposed a non-recurring charge for the Application Fee and cable installation. Recurring charges were proposed for space construction, floor space, cable support structures, power, and POT bays. Both recurring and non-recurring charges were proposed for cross connects. Charges for security escorts are proposed to be assessed per occasion by the half hour. Finally, BST proposed that space preparation costs be recovered via a non-recurring charge assessed on an Individual Case Basis (ICB). (EXH 11, p.4)

In response to discovery requests, BST also provided a draft of its Property Management Physical Collocation Guidelines (Guidelines) that are in the process of being developed by BST witness Redmond. (EXH 5, pp.495-573) These Guidelines address BST's Property Management Department's activities in the collocation application process. It should be noted that Property Management is one of several BST departments involved in

implementing collocation requests. Specifically, Property Management handles building modifications and contractor management. Other functions and departments include the BellSouth Collocation Center which provides the Account Team Collocation Coordinator; the Interexchange Network Access Coordinator (INAC); Outside Plant Engineering (OSPE); Circuit Capacity Management (CCM); Common Systems Capacity Management (CSCM); and Central Office Operations. (EXH. 5, p.500)

According to the Physical Collocation Guidelines prepared by BST witness Redmond, the common physical collocation space in a CO should be laid out for the first request. The area should be selected in such a way that direct access can be provided without the collocator entering BST space even if extra construction is required to achieve this. The entire collocation space should be separated from BST equipment by a barrier wall. The space should be designed to accommodate all prospective collocators, reserving, if possible, 3000-5000 square feet. According to the Guidelines, it is important to try to create a large common collocation space whenever possible rather than using existing small rooms. Even if the short term costs are greater, according to the Guidelines, greater long term advantages are achieved. (EXH 5, p.503)

BST's approach includes offering collocators the option of placing their equipment in either open lineups or within walls constructed within the dedicated collocation area. The BST design includes aisles to provide access to the equipment, and the Guidelines recommend that consideration be given for the possibility of "checker boarding." Leaving space between the facilities of individual collocators to allow for growth is referred to as "checker boarding". The Guidelines state that "checker boarding" is not required, however, and collocators are not guaranteed contiguous space within a CO. Each request for additional space would require a new application. (EXH 5, p.503)

BST witness Caldwell stated that costs should reflect forward-looking network architecture, engineering and materials, and equipment. (TR 309) However, BST witness Varner argued against the adoption of AT&T/MCI's concept of a "hypothetical central office building." (Varner TR 116) BST witness Redmond also stated that collocation, by definition, involves the rearrangement of existing central office facilities, and not new buildings, and therefore the Collocation Cost Model submitted by AT&T/MCI is inappropriate for estimating collocation costs. (Redmond TR 776)

AT&T/MCI's COLLOCATION COST MODEL

The Collocation Cost Model is being sponsored by AT&T and MCI to determine the appropriate costs of collocation in the State of

Florida.(Klick TR 997) According to witness Klick, MCI and AT&T retained technical subject matter experts (SMEs) to develop the efficient, forward-looking costs associated with physical and virtual collocation. Based upon a central office model layout and a collocation area model layout (described below), the SMEs identified the investments that an efficient ILEC would need to make to provide collocation space to potential ALEC collocators (including the engineered, furnished and installed costs). The investments were used as inputs into the Collocation Model to estimate recurring and non-recurring costs. (Klick TR 1004)

Investments that are incurred for the benefit of a single collocator and cannot be used by subsequent occupants of the collocation space are treated by the Model as a non-recurring cost. Investments that are shared by more than one ALEC or can be used by subsequent occupants of the same collocation space are treated as recurring costs that would be paid for on a monthly basis by the collocators. In converting the monthly investments to monthly costs, however, the Model incorporates a cost of capital that compensates the ILEC for both the time value of money and the business risk it incurs. In addition , the Model includes a user-adjustable "occupancy adjustment factor" to explicitly recognize that each physical collocation space provided in the collocation area model layout may not be fully occupied over its economic life. (Klick TR 1008-1009)

Calculations for both monthly capital costs and the monthly operating expenses that would be incurred by the ILEC in efficiently providing collocation space on a recurring basis are developed using standard financial techniques. Items such as taxes, general support investment, and common costs are reflected in the cost outputs of the Model. (Klick TR 1009)

The forward-looking CO model layout assumes a new urban CO designed for up to 150,000 lines, together with associated transport, power, multi-media, and miscellaneous equipment space. Such an office would need approximately 36,000 square feet (sq. ft.) of equipment space--or three equipment floors of about 12,000 sq. ft.--plus a below-ground cable vault. The CO model layout also assumes an additional 3000 sq. ft. on each floor and an entire basement (except for the cable vault area) to provide a generous allowance for building support services such as main corridors, elevators, washrooms, lunch rooms, conference facilities, administrative areas, electrical rooms, and mechanical rooms. This results in an overall footprint of 15,000 sq. ft. (Bissell TR 1019)

The Model area layout assumes a best practice planning strategy that permits more than one collocation area to be assigned in a CO based on available space in close proximity to ILEC cross-

connects. Each collocation area is 550 sq. ft. to take advantage of smaller areas that would be in relatively close proximity to ILEC cross-connects. This assumption reflects an expectation by the model layout developers that, in terms of placement, the ILEC would employ the same best planning process that it would use when planning efficient equipment space allocations for its own equipment. Within the 550 square foot collocation area, the collocation area model layout assumes the construction of four 100 sq. ft. equipment areas and a common space of 150 sq. ft. The Model anticipates that the cost of the entire common area would be shared by all ALECs (with no contribution from the ILEC) and that ALECs would request collocation space in increments of 100 sq. ft. (Bissell TR 1024-1026)

WORLDCOM'S APPROACH

WorldCom did not sponsor any cost support of its own in this proceeding. WorldCom has proposed that the Commission permanently adopt the interim rates and elements contained in its BST/MFS agreement. In its brief, WorldCom states that if this Commission does not approve its interim collocation rates as permanent, then it should adopt the rates proposed by AT&T/MCI. (WorldCom BR p.5)

PHYSICAL COLLOCATION ELEMENTS

1. Application Fee/Cage Construction-Planning

BST

BST proposed a substantial one-time application fee ($7,186) to recover 87.5 hours worth of labor involving seven different BST departments. BST proposes to assess this fee at the initiation of each application process each time an ALEC requests new or additional space in a CO. BST's proposed application fee would recover the costs of developing a firm estimate of the cost to build, provide, or add collocation space requested by a ALEC. (Caldwell TR 352) The potential collocator first submits its initial application to the BST Collocation Center. The Account Team Collocation Coordinator in that department acts as the customer interface and forwards the application to the local Interconnection Access Coordinator (INAC) in the specific state who will act as the area contact. The INAC distributes the application to the designated personnel in each BST department involved in the process. These departments are:

Outside Plant Engineering - handles cable entrance assessment;

Circuit Capacity Management - determines facility and equipment capacity and growth needs;

Common Systems Capacity Management - determines space planning equipment compatibility and handles cable support;

Central Office Operations - reviews facility, equipment, and space operations;

Property Management - handles building modifications and contractor management. (EXH 5, p.500)

Property Management receives the initial application from INAC, logs it in and faxes it to its Facility Planner and Strategic Planner. The Facility Planner contacts the personnel in Network Operations and Capacity Management to review the central office for available space. According to BST's Physical Collocation Guidelines, the Facility Planner is responsible for a high level cost estimate to respond to initial ALEC inquiries for collocation space. At that point in the inquiry process, a detailed design will not have been done, and therefore the estimate should be done using the planner's "best guess" at what the design will be. Property Management must respond to the INAC within 10 days, and INAC must respond to the applicant within 15 days. (EXH 5, p.501)

If the applicant then places a firm order, the routing process is essentially repeated. This time the Facility Planner contacts the various departments to prepare a space layout. At this point, a coordination meeting between the applicant and BST personnel is set up to negotiate layout, intervals, and other requirements. BST personnel are responsible for hiring any architects, engineers, consultants and contractors needed. (EXH 5, pp.501-502)

It should be noted that BST's proposed application fee appears to cover only the man-hours associated with the initial application process leading up to the placement of a firm order. BST witness Caldwell states in her testimony that the Application Fee covers the cost of a service inquiry function which is performed to determine if an ALEC's request for physical collocation can be met. (Caldwell TR 351) She breaks down the manpower requirements as follows:

INAC -	40.0 hours
Marketing (BST Collocation Center)-	27.5 hours
Property Management -	3.5 hours
Outside Plant Engineering -	0.5 hours
Common Systems Capacity Management -	8.0 hours
Circuit Capacity Management -	8.0 hours
	87.5 hours

Based on staff's review of the breakdown provided for these manpower estimates, 9 hours are spent by marketing reviewing the initial application and collocation agreement internally and with the applicant, processing the application fee, and performing other initial administrative functions such as identifying coordinators and updating data bases. 16.5 hours are spent by Common Systems Management, Circuit Capacity Management, and Outside Plant engineering to determine high level estimates of requirements and costs associated with their departments. 3.5 hours are spent by Property Management to develop a preliminary plan and develop the high level cost estimate. 40 hours are spent by INAC conducting coordination activities and providing the data and response to the Account Team coordinator. Finally, another 18.5 hours are spent by Marketing to coordinate, prepare and distribute the written response to the customer with the cost estimate. (EXH 14, p.465-468)

Under BST's plan, if the customer agrees and places a firm order, only then do actual engineering activities begin to design the collocation area and cage. BST has included separate labor charges for design and engineering in its space construction and cable installation fees.

AT&T/MCI

The AT&T/MCI Collocation Model (the Model) takes a different approach to the initial application and planning activities. The Model actually assumes that more total man-hours are spent developing the firm estimate of the costs of the project. However, AT&T/MCI have proposed a different cost recovery approach. Specifically, the Model includes 52 hours of planning and design engineering specific to the individual collocator. In addition, the Model also includes 66 hours of labor for planning and engineering that would apply not to just the first collocation request, but which would also facilitate processing of subsequent requests in that same CO. Thus AT&T/MCI have proposed a total of 118 manpower hours for initial planning. (EXH 34, Part 1, p.67) However, there are several important distinctions.

First, AT&T/MCI propose that only the initial 52 hours be billed to the ALEC in the form of a non-recurring charge ($3,325.43). According to AT&T/MCI witness Bissell, the costs that AT&T/MCI have identified as specific to an individual ALEC (the non-recurring portion of its planning fee), BST has incorporated in its Space Preparation to be assessed as an ICB. (EXH 36, p.109) As part of its proposed planning costs, AT&T/MCI has included a much smaller application fee to cover administrative costs such as those associated with setting up billing accounts.

Second, the next 66 hours of planning and design would be recovered via a recurring monthly charge to reflect the fact that not only the first collocator but subsequent collocators will benefit from the initial planning activities. (EXH 36, pp.77,79) It should be noted that AT&T/MCI have included more actual design and engineering to be included in their proposed manpower requirements.

Unlike BST, AT&T/MCI has not proposed an initial Application Fee to recover all these costs up-front. Instead they have proposed a three-element Cage Construction charge, one portion of which is identified as "Planning." This Planning portion consists of both the non-recurring and recurring charges described above.

AT&T/MCI witness Bissell expresses concern that BST's proposed Application Fee does not address the reduced manpower required for subsequent collocation requests in the same CO. He notes that with physical collocation, the manpower required for a second request would be much lower since the overall planning activities are completed with the first request. As an example, he states that once the first collocator is established, the overall collocation area is in place, cable routes providing connectivity are installed, the entrance fiber route is established, and ILEC processes are in place. (TR 1068) He proposed that, at a minimum, BST should establish a separate, reduced Application charge for subsequent collocation requests within the same CO. He states that, based on his experience, the subsequent charge should be reduced by 30%. (TR 1069)

WorldCom

In his testimony, WorldCom witness Porter notes the difference between the $3850 application fee in WorldCom's interim agreement and the substantially higher application fee now proposed by BST. He states that most of the difference can be attributed to "Business Marketing" which he says BST does not need to do to get WorldCom to collocate in BST's central offices. He concludes that this marketing charge is unnecessary and excessive. (TR 954)

In her rebuttal testimony, BST witness Caldwell notes that the "marketing" expenses are those associated with customer contact and administrative functions in connection with processing collocation requests, including meetings, clarifying terms and conditions, processing the application, preparing and distributing the response, and billing. (TR 353) Witness Porter did not dispute this description at hearing. He provided no further testimony or opinion on this element. (TR 985)

Staff believes that BST's manpower estimates for its initial Application Fee are excessive and do not adequately reflect either the one time effort associated with the first application for a given CO that will not have to be repeated with subsequent requests, or the shared nature of the costs among all collocators within that CO. Staff has recommended a two-part charge, one recurring and one non-recurring, for recovery of planning and initial administrative costs associated with collocation construction. We have also incorporated more actual design and engineering work to be included in this initial stage than BST has proposed. Staff is recommending here that AT&T/MCI's proposed "bifurcated" planning charges be adopted with certain modifications. As discussed in the next section on BST's proposed Space Preparation charges, AT&T, MCI, and WorldCom all object strongly to BST's proposal that ALECs must pay a high up-front charge before ALECs will even learn whether and how much they will be assessed to prepare a space for collocation prior to construction of the collocation cage itself. We believe that the lower non-recurring charge and subsequent recurring charge as described above should serve to alleviate some of that concern.

We do not agree with AT&T/MCI's alternative proposal to charge a reduced Application Fee for subsequent collocation requests at the same CO. To the extent there are one-time labor costs that benefit future collocators, those costs should be recovered on a recurring basis from all collocators.

2. Space Preparation

BST has proposed an ICB rate for space preparation. The space preparation fee is a one-time fee per arrangement per location which covers the survey, engineering design, and building/support system modifications for the shared physical collocation area within a CO plus additional "make ready work" specific to the collocator which is not included in the enclosure construction fee. (EXH 5, p.506)

According to BST witness Redmond the ICB is necessary because " . . . we have no clue what it's going to take from one central office to the next to build it." (EXH 22, p.126) This is echoed by witness Varner who states, "Space preparation is on an individual case basis because of the fact that each office, the requirements and the work that has to be done in each office has to be determined specifically for that office and for the collocator's needs." (TR 201) Furthermore, as stated by BST witness Baeza:

> Since there is such a variable range of what could be required to provide space for the ALECs, it must be determined on an individual case basis. There is no cookie cutter plan or template that would cover all. One set price for space preparation would have the potential to greatly undercharge one ALEC while greatly overcharging another. Therefore, space preparation must be considered on an Individual Case Basis. (EXH 20, p. 94)

WorldCom's witness Porter has advocated adopting the interim rates between BST/MFS; these interim rates include an ICB for the space preparation. (TR 955) This leads staff to believe that WorldCom does not object to ICB pricing for space preparation. However, WorldCom believes if the Commission does not adopt the interim rates it has proposed, they should adopt the AT&T/MCI rate proposal which does not include an ICB. (WorldCom BR, pp.4-5)

AT&T/MCI did not propose a "space preparation" fee. However, AT&T/MCI did include some of the elements that BST includes in its space preparation fee, such as architect, engineering, and building the physical collocation common area in its cage construction/planning fee. (EXH 34, p.67) In addition, the AT&T/MCI model assumes a 150 sq. ft. common area which would be shared by four ALECs. (EXH 34, Part 1, p.22) It appears that AT&T/MCI have three concerns with ICB pricing.

1) They believe that BST should not be allowed to recoup the cost for some of the elements they included in space preparation as an ICB. These items are asbestos removal, construction that is required to bring COs in compliance with Americans with Disabilities Act (ADA) standards, demolition costs, HVAC, and 48V power plant expansion. (Bissell TR 1049-50)

2) AT&T/MCI are also concerned that they would not know the price for space preparation until after they pay the application fee. (Varner TR 202; AT&T BR 18) BST's proposed application fee is $7,186.

3) In addition, AT&T/MCI believe that BST could manipulate the collocators' costs under an ICB by having complete discretion as to where the cage is placed. (Bissell TR 1045)

As noted above, AT&T/MCI believe that the costs for certain space preparation elements should not be recouped via an ICB, and other elements accounted for in BST's space preparation fee should

not be recouped at all. To begin with, the AT&T/MCI model assumes a completely new CO. Therefore, the new CO would not require asbestos removal, demolition, modification to comply with ADA etc. According to witness Klick, the AT&T/MCI Model included the cost of constructing a brand new building that is compliant with all these requirements, even though BST's COs in many cases are 20 or 30 years old. (EXH 36, p.41) According to witness Bissell the AT&T/MCI Model layouts generate all investments necessary for the provision of collocation, but not for building modifications an ILEC would have to undertake just to bring space in the CO up to the level needed to house equipment. (TR 1033) Witness Bissell also states that the ALEC should not be required to bear the burden of space preparation expenditures associated with restoring space to its intended use or for costs required to make CO equipment space suitable for the purpose for which it is being rented. (TR 1049) AT&T/MCI believe that the ILEC could include the cost of asbestos removal in their rent. (EXH 36, pp.40-41)

According to BST witness Redmond, the costs of asbestos removal and ADA modifications should only be included in the instance when they are incurred because of building out collocation space. Furthermore, if a large area required modification or asbestos removal, the ALEC pays for only its share of the space. (EXH 22, p.74) In addition, she states:

> All construction is subject to the Americans With Disabilities Act ("ADA"). BellSouth performs all new construction in compliance with ADA. All of BellSouth's "public access" facilities have been brought into compliance with the ADA. Compliance for all other facilities is done as a result of a handicapped employee reporting to that facility, or as rearrangements occur within a building. A percentage of all construction must go toward compliance.

With regard to asbestos BST only removes asbestos that is friable. That is to say, asbestos that is readily crumbling or brittle. Undisturbed asbestos is left in place and tagged. Abatement is triggered by any construction which will disturb this asbestos, making it break apart and enter the air that is breathed. (TR 792)

With regard to demolition, when asked if BST has faced demolition costs for each collocation request, witness Redmond responded ". . . it will be the rare incident". (EXH 22, p.44) Witness Redmond explained that BST does not demolish space as it is vacated because it is not known if the space will be reused for equipment or personnel. She believes it would be ludicrous to spend funds on this effort until the space is needed. Furthermore,

she advised that if rearrangements/renovations are required as the space is reused for BST entities, the department that is requesting the space provides the necessary funding. Witness Redmond believes "It should be no different in the case where a ALEC is the entity requesting space." (TR 793-794) Staff reviewed nineteen cost estimating spreadsheets for actual collocation projects; none have any asbestos removal or demolition costs included. (EXH 22, pp.146-174)

Finally, with regard to heating, ventilation and air conditioning (HVAC) modifications, according to AT&T/MCI witness Bissell,he believes that the Commission should instruct BST to develop a pre-determined cost for HVAC. (TR 1050) Witness Bissell goes on to state:

> The design options for CO mechanical systems can vary between large building systems that are typically used to cool multiple areas of the CO and smaller stand-alone units to cool a specific area. However, according to a mechanical systems design consultant used during the development of the MCI/AT&T collocation cost model, the average "installed" cost of providing HVAC in a telecommunications environment is $1,785.00 per ton of air conditioning, or $24.41 per DC ampere. (TR 1050)

When BST witness Redmond was asked if she believed AT&T/MCI's HVAC assumption was reasonable she responded "No, it is not". (TR 794) She goes on to state that she believes that there is no cut and dried method to meeting the HVAC needs of collocators. Furthermore, she states that BST will always evaluate existing systems for capacity and for possible use for collocation.

It is staff's belief that an ICB charge is appropriate for most physical collocation space preparation elements when building support system modification, upgrades, asbestos removal, or demolition must be done because of the ALEC's request for physical collocation. As stated by BST, it will pro-rate the common space preparation costs among all collocators based on the number of square feet requested. (EXH 5, p.506) While staff agrees that a forward-looking approach is appropriate, staff disagrees with AT&T/MCI's brand new CO approach. BST will not be constructing a new CO to house collocators; therefore, space preparation elements must be addressed.

Moreover, to provide specific rates for all conceivable space preparation elements is almost impossible. Staff believes if it were to try and set rates for physical collocation space preparation, it would need to know the floor plan and mechanical arrangement of every BST CO and know where in that CO the

collocator would locate and its specific needs. Furthermore, since AT&T/MCI believe the ALEC should not be required to bear the burden of space preparation expenditures, there was little record support for any specific rates for space preparation. The information provided regarding space preparation costs in BST's cost estimating spreadsheets, provides unit costs for asbestos removal, demolition, HVAC upgrades, common walls, and exterior doors. (EXH 14, p.470; EXH 22, pp.146-174) (There is no data on ADA modifications.) Staff believes these unit costs are based on contractor estimates. According to these estimates, upgrades for HVAC can cost as little as $800.00 for a relief air damper and as much as $40,000 for a new CW fan unit.

Since there is limited information regarding space preparation costs, and staff believes it would be almost impossible to anticipate each physical collocation scenario, staff recommends that the parties work together during this phase of the physical collocation process. Staff believes it would be appropriate in situations when the ALEC disagrees with BST's ICB space preparation charges, to request that BST obtain three additional independent estimates. Staff does not believe that this is a significant issue at this time based on its review of the nineteen cost estimating spreadsheets; however, as collocators continue to enter BST's COs and space becomes limited, additional modifications will become necessary. The parties may bring disputes before the Commission if they are unable to resolve them.

Staff believes the cost of the survey and engineering design for the shared physical collocation area within a CO are items that should not be an ICB. The AT&T/MCI model includes manpower requirements associated with these items in its Space Preparation/Planning fee as discussed in item 1 of the physical collocation elements. As discussed previously, staff has recommended adopting the AT&T/MCI proposed approach for planning requirements. Finally, witness Bissell's concerns regarding the ICB for 48V power plant expansion are addressed under the power element of this recommendation.

The second area of concern for AT&T/MCI and WorldCom is the fact that the ALEC would be required to pay an application fee in excess of $7,000 prior to knowing what it would cost for a complete collocation cage under BST's ICB proposal. According to WorldCom, "BellSouth's most offensive charge in its physical collocation model is its application fee." (WorldCom BR p.8) "Under BellSouth's plan, ALECs must pay an exorbitant fee just to find out how much BellSouth will charge ALECs to collocate in BellSouth's facilities." (AT&T BR p.18) AT&T/MCI witness Bissell states that since the space preparation charge is on a case by case basis, it is very difficult for an ALEC to forecast its collocation costs or

prepare a business case to enter BST local markets. (TR 1045) Furthermore, Bissell states, "Not only does this approach create a barrier to entry, it also discriminates against the first collocator in a BST CO for fear of having to pay huge space preparation fees." (TR 1045-46)

Although staff understands the ALEC's concerns, we believe they have been addressed by recommending that the Commission adopt AT&T/MCI's Cage Construction element which includes both a recurring and non-recurring rate. This approach reduces the up-front costs associated with the initial application.

The last area of concern for AT&T/MCI is that they seem to believe that BST could manipulate the collocators' costs under an ICB by having complete discretion as to where the cage is placed. The idea of BST having complete control over cage placement is a common theme throughout AT&T/MCI's testimony. AT&T/MCI believe that BST could require the ALEC to locate its cage at the furthest point from a cross connect thereby increasing costs for cabling. Also, AT&T/MCI seem to believe that if two spaces were available in a CO BST could choose the space that requires the most preparation as a barrier to entry.

According to BST's witness Redmond, BST and the collocators could work together to find the appropriate and agreeable placement in a CO. (TR 815) It appears that BST selects collocator locations, not only based on distance from cross-connects, but also looks at entry and exits, HVAC requirements and demolition requirements in order to keep costs down. (Redmond TR 814) Staff believes that BST is willing to work with the collocator in determining cage location. All facets of physical collocation cost should be evaluated prior to choosing the collocation area(s); it should not be determined based only on how close the ALEC is to the cross-connect.

3. Space Construction/Cage Preparation:

As discussed above, physical collocation requires the segregation of the ALEC's equipment from that of the ILEC; therefore, some type of enclosure or cage must be constructed. BST has proposed a space construction element. This element has recurring rates (first 100 sq. ft. and additional 50 sq. ft.). The recurring rate covers materials and installation of the equipment arrangement enclosure. The enclosure is constructed of gypsum board walls. (Redmond TR 801)

AT&T/MCI's proposal for cage preparation includes the cost of wire mesh and ancillary equipment (except racking and grounding shown separately) necessary for collocation within the cage area, including the cost of HVAC. AT&T/MCI have also proposed a recurring rate. (EXH 36, p.195)

WorldCom has advocated adopting the interim rates in the MFS/BellSouth agreement. The rate for space construction is a non-recurring rate. Staff believes this rate is for a wire enclosure based on WorldCom witness Porter's testimony. (TR 954)

While the parties agree that an enclosure is necessary, there is considerable disagreement as to what type of material should be used to construct the enclosure. (Redmond 801) Three types of enclosures were addressed in this proceeding: 1) wire mesh, 2) gypsum board, and 3) fire rated.

- Wire Mesh

  AT&T/MCI and WorldCom advocate the use of wire mesh cages. They believe that wire mesh is cleaner, easier to install, safe, and the most cost effective method of providing for collocation. (Bissell TR 1057) Witness Bissell believes a wire cage provides a secure environment because you can see through it. (EXH 36, p.121) In addition, he believes it allows for better lighting and air circulation. (TR 1053) BST witness Redmond agrees that a wire mesh cage costs less to construct compared to a gypsum board enclosure as advocated by BST. (Redmond TR 801)

- Gypsum Board (or Drywall)

  BST advocates the use of gypsum board enclosures. They believe that the wire mesh walls advocated by AT&T/MCI are unsafe because their use raises the possibility of introducing multiple isolated and integrated ground planes in close proximity to each other. (Redmond TR 791) According to BST's subject matter experts, they believe the introduction of various ground planes could cause electrocution. (The danger is present when there is a situation where items grounded to two different ground planes are close enough to each other that a person can touch them both. If there is any current on one of the grounds, the person becomes the connection for the two and could be electrocuted.) (Redmond TR 801)

- Fire Rated Walls

> While neither party specifically advocates the use of fire rated walls to construct the cages, it appears to be a necessity in order to meet local codes in certain areas. (Redmond TR 802) BST notes that in some municipalities, local code officials classify physical collocation enclosures as a multi-tenant building, thereby requiring the enclosures to be constructed of one hour fire rated walls. A fire rated wall is a certain thickness of gypsum, with solid studs that must go all the way up to the deck of the floor above. (EXH 22, pp.17 & 23) The purpose of a fire rated wall is so that a fire cannot spread over the wall into the next room. Fire rated walls are more expensive to construct and require more work to HVAC and cable racking. (TR 18) Of the municipalities where BST has received inquiries for physical collocation, Hollywood and Miami are ones where physical collocation has been classified as a multi-tenant situation. (EXH 22, p.139)

It should be noted that both parties provided detailed information to support their cage of choice (i.e., wire mesh or gypsum), and BST did provide adequate information regarding the multi-tenant classification.

Staff believes that rates should be set for all three types of enclosures and that it be left up to the ALEC to decide which enclosure (wire or gypsum) best meets its needs and municipal requirements (fire rated).

Staff was not swayed by BST's argument that wire cages are unsafe because of grounding issues. AT&T/MCI have produced photographs of a CO that has wire cages for collocators. (EXH 36, p.191) In addition, witness Bissell states that wire mesh walling, when properly grounded, is just as safe and secure a method of division among equipment as gypsum walling. (TR 1054-1055) Furthermore, when BST witness Redmond was asked if there was an industry standard on wire mesh walls, she did not know. (TR 812) Staff believes if there were industry standards on wire mesh cages it would have been brought to our attention in this proceeding. Finally, staff would like to note that the Georgia Commission has given ALECs the option of using chain link fence for physical collocation. (Redmond TR 810)

With regard to fire rated walls, if a local code official declares a physical collocation enclosure is a multi-tenant building, the LEC would have no choice but to build to meet local code. Staff believes it is appropriate for the ILEC to continue to

try and sway the local code officials, but when unsuccessful, the enclosure must meet the code.

RATE DEVELOPMENT:

In setting its rates for the various cage enclosures, staff used data provided by both AT&T/MCI and BST. For its proposed rates for wire cages, AT&T/MCI obtained price quotes from various contracting sources. In addition, its SMEs collected price information provided by R.S. Means Building Construction Cost Data and Electrical Cost Data publications for 1997. In most cases, the price quotes differed from the R.S. Means price by less than 5 percent; and in no cases by more than 20 percent, with the R.S. Means prices typically the higher prices. The SMEs therefore chose to use the R.S. Means rate wherever such data existed. (EXH 34, p. 73)

According to BST witness Redmond, R.S. Means is perhaps the best estimating tool of its type on the market. However, BST advocates use of this estimating guide only when no specific contractor data can be found. (TR 787) It appears for purposes of estimating the cost of wire mesh cage construction, AT&T/MCI has compared actual estimates with R.S. Means data. BST did not propose any costs for wire mesh construction.

BST developed its cost for gypsum wall enclosures based on actual quotes received (EXH 22, p.108) According to witness Redmond it was her direction to estimate what it would cost to construct the individual collocator's enclosure. Witness Redmond developed a mean value for what the total linear feet of gypsum board wall for each arrangement would be. Cost for dust barriers, doors, mechanical, and electrical considerations was applied, and finally architectural and engineering fees were assessed at 8% of the construction cost. These are basic components that are common to all enclosures. The cost study only asks for this cost and doesn't even consider any extra items that may be necessary to complete the enclosure, such as floor tile, etc. (TR 796-797)

AT&T/MCI believe BST's cost for gypsum walls construction is excessive when compared to the cost in the R.S. Means guide. (Bissell TR 1058-1059) However, staff has reviewed the actual quotes provided by various contractors to BST. (EXH 22, pp.146-174). In addition, staff does not believe this will significantly impact AT&T/MCI and WorldCom since staff is recommending that they may choose to use either a wire enclosure or gypsum enclosure when code allows.

Finally, AT&T/MCI also believe that BST's proposed rate for a one-hour fire rated gypsum wall is high in comparison to a figure

in R.S. Means. (Bissell TR 11058) The figure in R.S. Means ($27.12 per linear foot) is for an 8'-0" high, 1½ hour rated wall. BST's rate for a one hour fire rated wall is $115.00 per linear foot. (Bissell TR 1058) When BST witness Redmond was questioned regarding this variation, she explained that the walls in BST's COs have a minimum ceiling height of 13' 6" not 8'. In addition, she explains that gypsum board is sold in 8' sheets therefore, there are additional costs (especially labor costs) when using 8' sheets for ceiling heights in excess of 8'. (EXH 22, pp.86-87) AT&T\MCI witness Bissell agreed that CO walls are typically 13' high. (TR 1111)

Staff's proposed rates for the various types of cage enclosures can be found in the table at the conclusion of this section. All rates are for 100 sq. ft., plus a rate has been set for an additional 50 sq. ft. The cost for each additional 50 sq. ft. is applicable only when ordered with the first 100 sq. ft. element. The rate for the wire cage enclosure includes: partitioning (posts, fabric, gates, & installation), floor tile, one padlock, one sheet of plywood, electrical equipment (a light fixture, motion type light switch, outlets, circuit, conduit, and exit light fixture), phone jack and mesh grounding. The rate for gypsum cage enclosure includes: gypsum board (installed), dust barrier, floor tile, a door, electrical equipment (a light fixture, motion type light switch, outlets, circuit, conduit, and exit light fixture), and a phone jack. The rate for the one-hour fire rated walls includes all the same items as the gypsum cage enclosure, except that the gypsum board is one-hour fire rated. (EXH 5, pp.23-24; EXH 14, P.470; EXH 34, Part 1, pp.57-63)

Finally, it is staff's belief that the ALEC may construct its own cage using its own contractor. These contractors should meet the same standards as other contractors permitted to work in BST's COs. BST Property Management personnel should be allowed to monitor and inspect the project in order to maintain the integrity of the CO and the equipment of other collocators.

4. Floor Space/Land & Building

This element would recover the rental fees associated with land and building use. Both BST and AT&T/MCI have proposed a monthly recurring charge based on not only the floor space associated with the cage but also a portion of the common area required. According to witness Bissell, both proposals use R.S. Means as a source for the building investment starting points. In addition, witness Bissell notes that BST includes such real estate costs in other rate elements by applying land and building cost factors to other

non-real estate investments. (EXH 36, p.197) Both AT&T/MCI use a land investment amount of approximately $20. (EXH 36, p.197; EXH 13, P-1, p.393)

After making adjustments to both proposals for cost of capital, depreciation and other staff recommended items, the parties' proposed rates for this charge are very similar. BST proposed a rate per square foot, and AT&T/MCI proposed a rate per 100 square feet but which includes the costs for a portion of the common area. Staff has recommended use of a per square foot rate which should also be applied to the collocator's proportionate share of the common area.

5. Cable Installation/Entrance Fiber

BST has proposed a non-recurring Cable Installation Fee per cable which includes 27.5 hours of labor associated with engineering, cross connect and testing. The AT&T/MCI model proposes a non-recurring Entrance Fiber-Cable Installation Fee per cable which includes 14 hours of labor for installation, splicing, and testing of the cable. Witness Bissell states he included 6 hours of engineering labor costs associated with cabling in the planning element. (EXH 34, Part 1, p.101) Witness Bissell also noted that the main difference in the charges is the engineering labor. (EXH 36, p.198)

BST has also proposed a monthly recurring Cable Support Structure charge per entrance cable which would cover the use and maintenance of the CO duct, riser and overhead racking structure to the collocator's equipment. BST assumed that no sharing of these facilities would occur. According to witness Bissell, BST assumes a cable utilization factor of 50%, 400 feet of cable, and cable rack capacity of 30 cables. (EXH 36, p.198)

AT&T/MCI proposes a recurring fee per cable for Entrance Fiber that includes shared cable racks and use of the manhole. Costs are recovered through an occupancy charge that would ensure that BST costs are recovered even if a collocation space is not utilized 100% of the time. The AT&T/MCI model also includes labor for installation from the manhole to the collocation space, but assumes that materials would be provided by the ALEC. AT&T/MCI assume 85% cable rack utilization, 300 ft. cable lengths, and a maximum 74 cables per rack. AT&T/MCI also included a state specific Structure Charge per foot of innerduct. Witness Bissell states that BST included this charge as part of the cable support structure charge. (EXH 36, p.198)

When AT&T/MCI's utilization and sharing assumptions are input into the BST TELRIC Calculator, cost estimates are substantially reduced, and are similar to those in the AT&T/MCI model. Staff's recommendations incorporate AT&T/MCI's assumptions on the basis that sharing facilities will be necessary in the large, urban COs where collocation has been requested to date. We believe that efficient design and BST's plans to congregate collocators would require maximum possible utilization and sharing of cable racks and cable holes.

6. Power

BST proposed a recurring monthly charge per ampere that includes -48 Volt power equipment, redundant feeder fused positions and emergency backup power. AT&T/MCI divided the power costs between two recurring charges, one for DC Plant, per ampere, and the other for AC usage, per DC ampere. The AT&T/MCI DC Plant charge includes the same elements as BST's charge as well as cable and structure from the Power plant to the Battery Distribution Fuse Bay (BDFB). The AC usage charge recovers the cost of electricity required to power the -48 Volt DC plant.

AT&T/MCI also propose non-recurring charges associated with power delivery. These consist of three separate non-recurring charges for various power delivery amperage options. Costs include the cables and racking from the (BDFB) to the collocation area. (EXH 36, p.199) Witness Bissell states that this cost does not appear to be included in BST's cost data. He surmises that BST has included this cost as part of its Space Preparation Charge as an ICB. (EXH 36, p.199)

In its Physical Collocation Guidelines, BST states that any required changes or expansions to electrical infrastructure be included as part of the ICB charge for space preparation. This could include an outlet/lighting panelboard with a main breaker and individual circuit breakers, feeder breakers, minimum general lighting and electrical systems for general space requirements, and any necessary conduit and cabling for the above. (EXH 5, pp.516-517)

AT&T/MCI witness Bissell expressed concern that BST is proposing to double recover costs of power plant expansion in its proposed rates. He argues that BST has included both the cost of power plant expansion in the Space Preparation charge plus includes a recurring charge that would recover these costs on an ongoing basis. Witness Bissell contends that BST is entitled to either one or the other but not both or else double recovery would result. (Bissell TR 1049)

To respond to witness Bissell, staff was referred to BST witness Baeza who submitted a late-filed deposition exhibit on this point. Witness Baeza denies that BST is double recovering for the cost of power plant expansions, stating that when the Physical Collocation Guidelines refer to charges for power plant expansions, this would include only any building construction necessary, not the addition of batteries, rectifiers, or other plant items. (EXH 20) Indeed, the Guidelines specifically state that:

> Should the customer elect to add/build DC power plant, the costs for construction of the power equipment enclosure will be included in the space preparation fee when BellSouth performs the construction. Such enclosure, whether constructed by BellSouth or a contracted vendor, will become the property of BellSouth. (EXH 5, p.506)

However, the Guidelines also state that:

> Additions and/or upgrades to the power plant in any central office should be considered part of the Space Preparation Charge determined at the time of application based on building and space modification requirements for shared space at the requested central office. Alteration of power plant is included in the category of extraordinary costs to BellSouth.
>
> Power Plant requirements should be determined (by BST Capacity Management) during the initial survey/review of the central office. The collocator should be advised as soon as possible if power plant is a factor in the calculation of Space Preparation charges. (EXH 5, p.518)

This language could be interpreted to indicate that BST intends to charge a specific collocator for power plant expansion costs. This would be inappropriate if BST also intends to assess a recurring charge for power that includes recovery of this investment. Staff believes that power plant expansions are more appropriately recovered in recurring charges as they will benefit both BST and future collocators. Therefore, power plant investment should not be included in any Space Preparation charge assessed to a collocator. Staff believes that it might be advisable for BST to clarify its Physical Collocation Guidelines to avoid any misinterpretation by either BST personnel, regulators, or collocators in the future on this point.

Staff has recommended BST's proposed rate structure consisting of a single recurring charge per ampere. After staff's recommended rate of return and depreciation adjustments are incorporated, and the calculation run using the same per KWH

electric rate, the parties' proposed rates are not substantially different.

7. POT Bays

According to BST's Physical Collocation Guidelines, collocated equipment will be cabled to a Point of Termination (POT) device which serves as a test point and a physical demarcation between BST and the collocator's equipment. Both BST and the collocator have access to the POT bay. The Guidelines also state that collocators will have the option to provide their own POT bays, and that floor space designated for POT equipment will be controlled by BST. A POT bay is a relay rack approximately seven feet high and less than two feet wide. (EXH 5, p.504)

BST proposed monthly recurring charges per cross connect for four different types of POT bays. AT&T/MCI assume they will provide their own, and do not propose rates for POT bays. Staff has therefore not set rates for POT Bays. Since WorldCom has proposed that AT&T/MCI's proposals be adopted if its interim rates are not approved, staff recommends that WorldCom provide its own POT Bays as well.

8. Cross Connects

Cross connects provide the connectivity between the ALEC's collocation area and the ILEC's facilities. (EXH 34, Part 1, p.45) Both BST and AT&T/MCI have proposed rates for cross connects at various transmission speeds. BST proposed recurring charges per cross connect, and non-recurring charges per cross connect order, for 2-wire, 4-wire, DS-1 and DS-3 cross connects. BST's proposed recurring charge per 4-wire cross connect is simply twice the rate for the 2-wire. (EXH 13, P-1, pp.404,410) Witness Bissell states that BST's non-recurring charges are for labor associated with customer order processing and that BST includes some costs for repeaters for DS-1 and DS-3 cross connects. (EXH 13, P-1, pp.409,415,421,427; EXH 36, pp.201-202)

AT&T/MCI's non-recurring charge includes the cost of the cabling and terminal blocks used for interconnection. This element was assumed to be non-reusable and was therefore treated as a non-recurring charge. (EXH 36, pp.201-202) AT&T/MCI does not include separate charges for customer order processing for collocation cross connects, stating that the labor charge is reflected in AT&T/MCI's Non-recurring Cost model. (EXH 36, p.201)

AT&T/MCI's recurring charges include costs for shared cable racking and shared MDF, and assume the use of 100 pair cables. They proposed the same recurring charge for both types of voice grade circuits (2- & 4- wire cross connects), on a per 100 circuit basis. AT&T/MCI also assume that both DCS and DSX circuits are used. (EXH 36, p.202)

BST assumes that repeaters will be required for 5-10% of the cabling. (EXH 36, p.198) AT&T/MCI disagree with BST's use of repeaters for CO cabling, noting first that even BST's assumed cable lengths do not require the use of repeaters, and second, that the FCC's Collocation order required that repeaters not be included in ILEC cabling costs. (Bissell TR 1063) They also note that BST does not include repeaters in its cost study for virtual collocation. This indicates that BST does not anticipate that the cable lengths in its own equipment areas would require repeaters. AT&T/MCI witness Bissell claims that to include repeaters in physical collocation costs is therefore discriminatory, particularly since BST has control over placement of the physical collocation areas. (TR 1063)

The difference between BST's and AT&T/MCI's proposed recurring rates for cable is substantial. BST witness Caldwell sponsored the cable costs in the TELRIC Calculator. However, BST's collocation witnesses did not address cabling costs in their testimony. Although witness Caldwell was aware that BST had differences of opinion with respect to AT&T/MCI's assumptions for sharing and cable lengths needed to reach the POT bays, she was unable to explain the reason for those differences. (EXH 14, pp.112-113) Staff requested a late-filed exhibit in an effort to understand the nature of BST's assumptions with respect to cable lengths. The BST response simply noted that the distance between BST's equipment and the ALEC POT bay in BST's cost study is an engineering estimate of the average distance, and that the estimate assumes a concentration of physical collocation in large, multi-floor metropolitan central office buildings. (EXH 14, p.473)

In addition, staff sought BST's response to AT&T/MCI witness Bissell's concerns over BST assumptions of average cable length, cable rack lengths, use of repeaters, cable utilization factors, the number of cables per rack, and sharing of racks by ALECs. In general, BST's response was that these were inputs from BST network and engineering experts. (EXH 14, pp.121-123) Some of the

differences were a function of the different planning assumptions in the two models with respect to location of collocation spaces relative to the cross connects. According to witness Caldwell, AT&T/MCI's model assumes use of space close to the cross connects, while BST's numbers reflect what BST believes it can achieve based on discussions with subject matter experts. (EXH 14, p.136) BST provided no further rationale addressing why their estimates and assumptions for cable related elements were better than those provided by AT&T/MCI.

At deposition, AT&T/MCI witnesses Bissell and Klick discussed their own assumptions with respect to cable lengths. In particular, staff was concerned that application of the FCC's "first come, first served" criteria would disadvantage newer ALECs in that the first ALECs to request collocation would be able to get available space close to cross connects while subsequent ALECs would be required to take space further away, with resulting higher cable lengths and costs. Witnesses Bissell and Klick stated that this would not occur under their model assumptions because they calculated cable lengths using a "best case" and "worst case" scenario in terms of cable lengths and distance from the cross connects. They then averaged the results and have proposed that all ALECs pay for cable based on that average length. (EXH 36, p.78,84) Hence no ALEC would experience an advantage relative to another despite their actual locations within the CO.

Another major cause for the difference between BST and AT&T/MCI cable lengths, according to AT&T/MCI witness Bissell, was that BST has assumed only "worst case" scenarios with respect to its choice of COs from which to take measurements. (EXH 36, pp.91-96) Witness Bissell contends that BST has selected only extremely large, downtown COs which contain, among other things, retired-in-place equipment and large empty spaces around and through which cable must be placed. (Bissell TR 1061) Very large COs require longer cable lengths. Witness Bissell contends that only a few of BST's COs match this description and the more appropriate approach would be to measure cable lengths based on an average of all the COs in BST territory. Witness Bissell states that the AT&T/MCI model incorporates a three floor CO which is still likely to be twice the size of an average CO in BST's territory. (EXH 36, p.92)

Staff reviewed Florida CO and collocation request information provided by BST witness Redmond at deposition. Of 20 COs reviewed

for space availability pursuant to an ALEC inquiry, 7 were in Miami, 5 in Orlando, 4 in Ft. Lauderdale, 2 in Hollywood, and 1 each in Perrine and Lake Mary. Of the 7 in Miami, one inquiry was made for a downtown Miami CO. (EXH 22, p.142) According to the data provided, 10 firm orders were placed, seven of which have been completed. Six of the ten are in Orlando COs, one in Miami, two in Hollywood, and one in Ft. Lauderdale. The collocation order in Miami was in the downtown CO. (EXH 22, p.144)

Staff believes that most collocation requests will involve relatively urbanized areas, at least for the near future. We believe that cabling lengths should reflect this assumption. Although we do not believe that cable lengths should necessarily reflect all the "worst case" scenarios in BST's Florida COs, neither do we think it is appropriate to give a great deal of weight to the rural COs where it is unlikely that collocation space will be requested for at least a few years.

Staff believes that each party has incentives to design their models in a manner most advantageous to their respective companies. This is understandable, and analysis of their positions has provided us with insight into their specific concerns. Both parties have agreed in general on the need to design rates based on forward-looking, least cost principles. Staff believes that the approach which this Commission has adopted requires that we balance these competing interests to the extent that we afford ALECs the opportunity to enter the market and compete effectively, and still allow BST to recover its appropriate costs to provide these elements. In this instance, BST is faced with the fact that its COs are not brand new, and they do not have the ability to arrange placement of their own or ALEC equipment in an ideal manner. ALECs also have legitimate concerns that they may be required to pay for excessive cable runs around and through existing equipment.

Staff believes that the best approach would be to attempt to average out the ideal and the reality. To the extent that worst case and best case scenarios were created, these should be combined to produce a reasonable reflection of costs and prices that will provide appropriate incentives to BST to be efficient and still require ALECs to compensate BST adequately for the costs it reasonably incurs. We have developed average cable and cable rack lengths incorporating estimates provided by both parties. We have not included repeaters because those cable lengths requiring

repeaters are excessive, and we have assumed there will be sharing of cable racks by ALECs.

In addition, BST estimates its own cable rack utilization is approximately 67%, although it has used a lower factor for physical collocation. (EXH 14, p.475) AT&T/MCI propose that 85% be used. Since BST's goal is to establish a single common collocation area in its COs that would concentrate collocators together, it is reasonable to assume that sharing of facilities to manage space and equipment efficiently will take place. Such sharing of facilities may be more difficult if small pockets of space are utilized by collocators as advocated in the AT&T/MCI model. Staff has used 85% as a reasonable utilization factor for cable racks. In addition, staff agrees with the AT&T/MCI collocation model's assumption of a 75% occupancy factor to account for space that may not be in use all the time.

AT&T/MCI include costs for optical circuits while BST did not. In addition, AT&T/MCI witness Lynott noted that BST modeled only DSX cross connects and plug-ins in their studies. BST did not model a forward-looking technology using Digital Cross connect systems (DCS) which does not require a manual copper cross connect at the DSX-1, but instead is an electronic cross-connect performed automatically in 2 seconds from an upstream OSS/INE provisioning system in a mechanized flow-through manner. (EXH 6, pp.38-39) AT&T/MCI witness Bissell states that the majority of DS-1 and DS-3 circuits to which ALECs will want to interconnect are currently located on DSX panels. But in some COs those higher bandwidth circuits may have been relocated to an electronic digital cross-connect system. (EXH 34, Part 1, p.45) Staff has included DCS connectivity rates and optical circuits based on AT&T/MCI's proposal, and believes that BST should offer them if available. If the parties have any difficulties they cannot resolve themselves, they may request that this Commission resolve the matter for them.

As noted previously, BST did not provide a specific witness for cross connects associated with collocation. It was therefore difficult to compare the different approaches used by the parties in developing these rates. As noted, AT&T/MCI includes in its proposed non-recurring charges the costs of cabling and terminal blocks used for interconnection on the presumption that they are non-reusable. (EXH 36, pp.210-204) BST has incorporated these costs in its recurring charges. (EXH 13 - Proprietary) AT&T/MCI

witness Bissell states that these costs were made non-recurring as they are assumed to be non-reusable.

Staff has recommended recurring rates based on AT&T/MCI's proposed rate structure including rates for DCS connectivity and optical circuits which BST did not propose.

9. Security

AT&T/MCI, BST, and WorldCom appear to agree that there is a need for security in the physical collocation environment. (EXH 34, Part 1, p.54; Redmond TR 783) However, there is disagreement as to how security should be provided.

BST has proposed security escorts for all physical collocators that do not have a separate entrance. The minimum time billed for an escort is a half-hour (based on regular time, overtime, and premium time). (EXH 11, p.5) The AT&T/MCI Physical Collocation Cost Model assumes no security escorts are required. The model does assume the cost of 5 security access cards and maintenance for a security card reader. (EXH 36, p.205)

According to BST witness Redmond, out of 197 COS in Florida, only 58 have electronic security card systems. (TR 784). Witness Redmond goes on to clarify that even though 58 of the 197 have card readers, that does not mean that every door has the card reader. For example, the card reader may be placed on the front door of the CO, while the collocation project may be dealing with a back or side door, that does not have the card reader. (EXH 22, p.30) The card access system used by BST costs $10,000 per door. Therefore, it is installed in facilities only after BST considers the risk factors at that CO. (Redmond TR 784)

The AT&T/MCI model includes the cost of the card reader as part of the cost per square foot. The AT&T/MCI Model assumes the cost of a completely brand new building, and a brand new building would have up-to-date security access. Witness Bissell stated that he did not believe there is any new building that was built in the past five years that doesn't have security access cards. (EXH 36, p.44) According to witness Redmond, the latest BST urban CO was built in 1975. (TR 778) Witness Bissell states "...that doesn't mean to say that there could not be situations where we could, in fact, entertain the idea of an escort for those COS that don't have security cards." (EXH 36, p.46)

Staff believes that where card readers are in place and at the entrance the ALEC will use, the ALEC would pay for only the access cards and maintenance. Where card readers are not in place, ALECs would pay for a security escort. According to BST witness Baeza, in

some cases the only space available for physical collocation may be in the middle of a restricted area and therefore a card reader would not work. (EXH 20, p.103) Staff believes the security escort should be billed in increments of 1/4 of an hour, rather than in the ½ hour increments proposed by BST. When BST was questioned as to why they choose one-half hour as a minimum for the security escort, they stated that one-half hour is used to be consistent with the billing structure for labor rates currently used in the Virtual Collocation tariff and in the state access tariff. (EXH 14, p.472)

Witness Caldwell believes that a card reader and access cards are reasonable assumptions, in terms of allowing the collocator direct access into their collocation space and securing their space from others entering. Witness Caldwell goes on to discuss that this is not always the case. In most cases one is either going to have an escort or lock and key. The cost of a card reader itself is significant. Not all collocators want to pay that; if they can use a lock and key, it would be much cheaper to do that. (EXH 14, pp.107-8)

Both BST and MCI/AT&T believe the appropriate rate for a security escort is the labor rate of a frame technician. (EXH 14, pp.110-11; Klick TR 1007) Therefore, staff recommends security escorts be billed in 1/4 hour increments at the labor rate of a frame technician.

Finally, AT&T/MCI proposed response times for both maintenance (Which is needed for virtual collocation) and security escorts. (Bissell TR 1040) BST did not dispute these response times. Staff believes the response times proposed by AT&T/MCI are reasonable. These response time are shown below.

CO TYPE	RESPONSE TIME
Staffed & Attended	1 Hour
Staffed & Unattended	4 Hours
Not Staffed & Normal Business Day	2 Hours
Not Staffed & Non-Normal Business Day	4 Hours

DEFINITIONS:
Staffed - technicians are scheduled to work in the location.
Attended - hours during which technicians are required to be at the CO.
Normal Business Day - usually Monday-Friday,0800 to 1700.
(EXH 34, Part 2, p.25)

RECOMMENDED RATES/ELEMENTS FOR PHYSICAL

Based on the above analysis staff recommends the following rates and elements for physical collocation. The parties' proposed rates are also shown following staff's recommendation.

Table 1d-1
PHYSICAL COLLOCATION - STAFF RECOMMENDATION

ELEMENT	UNIT	NRC	RECURRING
APPLICATION FEE/PLANNING FEE	Per Request	$3248	$15.53
SPACE PREPARATION	Per Request	ICB	N/A
CAGE CONSTRUCTION	Per 100 sq. ft.	N/A	
- Wire Cage			$41.99
- Gypsum Board Cage			$84.10
- Fire Rated Cage			$99.73
- Wire Cage	Per Additional 50 sq. ft.	N/A	$4.14
- Gypsum Board Cage			$9.35
- Fire Rated Cage			$11.30
FLOOR SPACE/LAND AND BUILDING	Per sq. ft	N/A	$4.25
CABLE INSTALLATION	Per Cable	$1056	$2.77
CABLE RACK		N/A	$22.94
POWER	Per Amp	N/A	$6.95
CROSS CONNECTS			
- 2-wire	Per 100 Circuits	$1157	$5.24
- 4-wire	Per 100 Circuits	$1157	$5.24
- DS-1 - DCS	Per 28 Circuits	$1950	$226.39
- DS-1 - DSX	Per 28 Circuits	$1950	$11.51
- DS-3 - DCS	Per Circuit	$528	$56.97
- DS-3 - DSX	Per Circuit	$528	$10.06
OPTICAL CIRCUITS	Per Connection	$2431	$6.46
SECURITY ESCORT[3]			
-Regular Time	Per 1/4 Hour	$10.89	N/A
-Overtime		$13.64	
-Premium Time		$16.40	
SECURITY ACCESS CARDS	Per Request (Request assumes 5 cards)	$85.12	N/A

N/A= Not Applicable

[3] Staff has recommended adopting AT&T/MCI's proposed response times for equipment maintenance and security escorts.

Table 1d-2
PHYSICAL COLLOCATION - PARTIES' PROPOSALS

BST			AT&T/MCI			WORLDCOM		
ELEMENT	**NRC**	**REC.**	**ELEMENT**	**NRC**	**REC.**	**ELEMENT**	**NRC**	**REC.**
APPLICATION FEE	$7,186	N/A	CAGE CONSTRUCTION/ PLANNING	$3,325	$15.13	APPLICATION FEE	$3,850	N/A
SPACE PREPARATION	ICB	N/A	SPACE PREPARATION	no separate charge	N/A	SPACE PREPARATION	ICB	N/A
SPACE CONSTRUCTION (100 sq ft. gypsum board)	N/A	$149.18	CAGE PREPARATION (100 sq. ft. wire mesh)	N/A	$103.52	SPACE CONSTRUCTION (Wire Mesh, size unknown)	$4,500	N/A
(add'l 50 sq. ft. gypsum board)		$17.30	Racking -	N/A	$20.66			
			Grounding -	N/A	$4.05			
FLOOR SPACE (per sq. ft.)	N/A	$4.49	LAND & BLDG. (per sq. ft).	N/A	$3.82	FLOOR SPACE ZONE A FLOOR SPACE ZONE B	N/A N/A	$7.50 $6.75
Cable Installation (per cable)	$2,424		ENTRANCE FIBER (per cable)	$1,081	$2.46	CABLE INSTALLATION (per cable)	$2,750	
Support Structure (per cable)		$24.75	STRUCTURE CHARGE (per ft.)	N/A	$.0156	CABLE SUPPORT STRUCTURE (per cable)		$13.35

BST			AT&T			WORLDCOM		
ELEMENT	**NRC**	**RC**	**ELEMENT**	**NRC**	**RC**	**ELEMENT**	**NRC**	**RC**
Power Delivery Power (Per Amp)	No separate NRC. N/A	N/A $7.63	POWER DELIVERY (per 20 Amp) (per 50 Amp) (per 100 Amp) POWER CONSUMPTION (per amp)- DC Plant AC Usage	 $160.37 $209.18 $272.63 N/A	 N/A $3.97 $2.03	DC POWER	N/A	$5.00
POT Bays (per cross connect) - 2-wire - 4-wire - DS-1 - DS-3	 N/A	 $.1138 $.2277 $.9399 $5.81	POT Bays	No rates proposed.	N/A	POT BAYS DS-1 DS-3	N/A	 $1.20 $8.00

CROSS CONNECTS	per order	per cross connect	CROSS CONNECTS			CROSS CONNECTS		
- 2-wire			-Voice grade			DS-1	N/A	$8.00
1st-	$48.07	$.3808	circuits			DS-3		$72.00
add'l-	$45.31		(per 100)	$879.58	$4.98			
- 4-wire						DS-1 or DS-3 1st	$155.00	N/A
1st-	$47.94	$.7617	DS-1			DS-1 or DS-3 add'l	$27.00	
add'l-	$45.19		(per 28					
-DS-1			circuits)					
1st-	$70.38	$2.80	- DCS	$1335.66	$226.51			
add'l-	$49.93		- DSX	$1335.66	$11.17			
-DS-3								
1st-	$76.23	$51.27	DS-3					
add'l-	$55.32		(per circuit)					
			- DCS	$341.31	$56.80			
OPTICAL CIRCUITS	no rate proposed	N/A	- DSX	$341.31	$9.80			
			OPTICAL					
			CIRCUITS	$2464.06	$6.43			
			(per cable)					

BST			AT&T			WORLDCOM		
ELEMENT	**NRC**	**RC**	**ELEMENT**	**NRC**	**RC**	**ELEMENT**	**NRC**	**RC**
SECURITY ESCORTS (per half hour) - Basic 1st- add'l- - Overtime 1st- add'l- -Premium 1st- add'l-	 $43.86 $26.05 $55.74 $33.09 $67.62 $40.12	 N/A	SECURITY ACCESS CARDS (per 5 cards)	$87.16	N/A	Security Escorts, per half hour Basic, 1st- add'l- Overtime, 1st- add'l- Premium, 1st- add'l-	 $41.00 $25.00 $48.00 $30.00 $55.00 $35.00	N/A

SOURCE: EXH 11, pp. 4-5; EXH 32, p.21; EXH 46, pp. 2-3.

c) Virtual Collocation

According to BST witness Caldwell, virtual collocation provides for the installation of collocator-owned equipment and facilities in BST's central offices to connect to BST's network. Virtual collocator arrangements are located in the BST equipment line-up. Collocators place a private fiber entrance facility from outside the central office to an interconnection point designated by BST. The wiring between the collocator equipment and BST equipment is completed by a certified vendor. (EXH 13, EXH. P-2, p.5) AT&T/MCI witness Bissell's description is similar, and he adds that typically, the ALEC purchases the equipment it wants to use on the ILEC premises, and sells it to the ILEC for a nominal $1.00 sum. The equipment is then installed in vacant space. The ILEC handles maintenance and is reimbursed by the ALEC. When necessary, the ALEC may enter the premises with a security escort. (Bissell TR 1035) In contrast to physical collocation requirements, the virtual collocation arrangement does not require construction of cages or investment in cabling for connections, power or grounding. (TR 1037-38)

BST witness Varner sponsored the BST rates for virtual collocation. Although BST has submitted TSLRIC studies pursuant to this Commission's order, as well as TELRIC estimates, witness Varner proposes that the current tariffed rates for virtual collocation be retained. (Varner TR 72) He argues that prices must account for the cost of the element plus reflect the market, regulatory and competitive conditions that exist for similar services. (TR 72) Since BST currently has approved interstate and intrastate tariffs in place for virtual collocation, he argues that arbitrage would result if this Commission were to set different prices in Florida. (TR 76) He notes that arbitrage opportunities arise when two different rates apply for the identical service. (TR 76)

Witness Varner stated at hearing that he believes that the current virtual collocation tariffs comply with the requirements of the Act and that they were based on costs at the time they were filed in 1994. (TR 140) However, BST did not offer those costs in support of its virtual collocation proposal in this proceeding. The TSLRIC and TELRIC estimates submitted by BST for virtual collocation differ, in some cases substantially, from the rates in the tariff.

It was suggested at hearing that to the extent BST is concerned with arbitrage, that it could modify its Florida interstate tariffs to conform to the decisions made in this docket,

if different. Witness Varner responded that BST's interstate tariffs are region-wide. Although he stated that at one time, BST did have state specific federal tariffs, he did not know whether regional tariffs were a current requirement. (TR 141)

Staff has recommended rates for virtual collocation based on cost data submitted by both parties in this proceeding. We believe that this is the most appropriate course of action based on the requirements of the Act. To the extent that BST believes that its intrastate and interstate tariffs should be identical, we believe that BST may modify its Florida interstate tariffs. This Commission is required to act based on federal and its own state laws. We further believe that to the extent BST wishes to have region-wide rates for collocation, then it could attempt to accomplish that through negotiations with ALECs.

As noted, cages are not required for virtual collocation. The necessary elements are an application charge to cover planning and processing of the collocation request; floor space, cable installation, power, cross connect connectivity, and security escorts. In AT&T/MCI's approach, virtual collocation includes the same investment assumptions for cable racks and building space as with physical collocation. (Bissell TR 1037)

Both parties' proposals reflect lower manpower requirements associated with the Application Fee relative to those for physical collocation. BST has included 45 hours in its Application Fee, whereas AT&T/MCI proposed to incorporate 66 hours. Both propose a one-time non-recurring charge. AT&T/MCI also proposes that a separate application fee be developed for virtual collocation requests that involve provision of additional cable only. Witness Bissell proposes that the 20 hours of planning and engineering should be sufficient to reflect this smaller type of installation. (Bissell TR 1070; EXH 36, p.206) BST witness Baeza responded that the Application Fee covers only the cost to review the application to assess what work needs to be accomplished, and must be performed on all applications. (EXH 20, p.102) As with our recommendation for physical collocation, staff has recommended use of AT&T's manpower estimates for virtual collocation, which are greater than those which BST has proposed but include more labor associated with design engineering. Therefore, staff believes that the manpower requirements to process an application for additional cable for an existing collocator will not be as great as those for an initial application, which would involve planning and engineering for equipment and power as well as cabling requirements. (Bissell TR 1070) Staff has therefore included a separate application fee for virtual collocation requests that involve placement of additional cable only.

Staff's recommendations for floor space, power, cable support structure, and security escort charges are the same as those for physical collocation. AT&T/MCI included a tariffed "structure" charge per foot of innerduct which it states BST has included in its cable support structure charge. (EXH 36, p.207) Staff has not included that charge in its recommendation as we do not believe that it requires Commission approval if it is already tariffed. Finally, AT&T/MCI have included rates for connections between collocators in the CO. BST did not propose such rates or address those proposed by AT&T/MCI. However the Physical Collocation Guidelines acknowledge that such connections are permissible. On that basis, staff has recommended use of AT&T/MCI's proposed rates, as adjusted.

Table 1c-1
VIRTUAL COLLOCATION - STAFF RECOMMENDATION

ELEMENT	UNIT	NRC	RECURRING
APPLICATION FEE/PLANNING FEE	Initial Request	$4122	N/A
	Add'l Cable Request	$1249	N/A
FLOOR SPACE/LAND AND BUILDING	Per sq. ft.	N/A	$4.25
CABLE INSTALLATION	Per Cable	$965	$12.45
CABLE RACK	Per 1/4 Rack	N/A	$2.24
POWER	Per Amp	N/A	$6.95
CROSS CONNECTS			
- 2-wire	Per 100 Circuits	$1157	$5.02
- 4-wire	Per 100 Circuits	$1157	$5.02
- DS-1-DCS	Per 28 Circuits	$1950	$226.39
- DS-1-DSX	Per 28 Circuits	$1950	$11.51
- DS-3-DCS	Per Circuit	$528	$56.97
- DS-3-DSX	Per Circuit	$528	$10.06
OPTICAL CIRCUITS	Per Connection	$2431	$6.71
VIRTUAL to VIRTUAL CONNECTION			
-FIBER	Per Cable	$526.17	$.19
-DS-1/DS-3	Per Cable	$134.46	$.17
EQUIPMENT MAINTENANCE AND SECURITY ESCORT[4]			
-Regular Time	Per 1/4 Hour	$10.89	N/A
-Overtime		$13.64	
-Premium Time		$16.40	

[4] Staff has recommended adopting AT&T/MCI's proposed response times for equipment maintenance and security escorts.

Table 1c-2
VIRTUAL COLLOCATION-PARTIES' PROPOSALS

	BST-TELRIC RATE		BST-PROPOSED (CURRENT TARIFFED RATES)		AT&T/MCI		
ELEMENT	NRC	REC	NRC	REC	ELEMENT	NRC	REC
APPLICATION FEE	$3,715	N/A	$2,848.30	N/A	PLANNING Initial Request Add'l	$4220.74 $1279	N/A
FLOOR SPACE (per sq. ft.)	N/A	$4.49	N/A	$3.20	LAND & BUILDING 1/4 Rack RELAY RACK 1/4 Rack-	N/A N/A	$8.62 $2.03
CABLE INSTALLATION (per cable) Support Structure (per cable)	$2,424 N/A	N/A $21.65	$2,750 N/A	N/A $13.35	ENTRANCE FIBER (per cable) STRUCTURE CHARGE (per innerduct ft.)	$987.93 N/A	$12.10 $.0156
POWER (per amp)	Not identified separately	$7.63	N/A	$3.48	POWER CONSUMPTION (per amp) DC Plant AC Usage POWER DELIVERY (per cable rack)	N/A N/A	 $3.92 $2.03 $.06

	BST-TELRIC RATE		BST-PROPOSED (CURRENT TARIFFED RATES)		AT&T/MCI		
ELEMENT	**NRC**	**REC**	**NRC**	**REC**	**ELEMENT**	**NRC**	**REC**
CROSS CONNECTS	Per Manual Order,	Per Cross Connect	Per Order	Per Cross Connect	CROSS CONNECTS		
-2-wire							
1st-	$48.07	$.1068	$48.07	$.1068	VOICE GRADE CIRCUITS		
add'l-	$45.31		$45.31		(per 100 circuits)	$879.58	$4.98
-4-wire							
1st-	$47.94	$.2137	$47.94	$.2137			
add'l-	$45.19		$45.19		-DS-1-DCS		
-DS-1					(per 28		
1st-	$70.38	$1.16	$155.00	$7.50	circuits)	$1335.66	$226.51
add'l-	$49.93		$14.00		-DS-1-DSX		
-DS-3					(per 28	$1335.66	$11.17
1st-	$76.23	$14.76	$151.90	$56.25	circuits)		
add'l-	$55.32		$11.83				
					-DS-3-DCS		
OPTICAL CIRCUITS	No rate proposed.	N/A	No rate proposed.	N/A	(per circuit)	$341.31	$56.80
					-DS-3-DSX		
					(per circuit)	$341.31	$9.80
					OPTICAL CIRCUITS		
					(per cable)	$2464.06	$6.43
VIRTUAL to VIRTUAL CONNECTION	No rate proposed.	N/A	N/A	N/A	VIRTUAL to VIRTUAL CONNECTION		
					Fiber	$526.17	$.19
					DS-1/DS-3	$134.46	$.15

SECURITY ESCORTS (per half hour) -Basic 1st- add'l- -Overtime 1st- add'l- -Premium 1st- add'l-	 $43.86 $26.05 $55.74 $33.09 $67.62 $40.12	 N/A N/A N/A	 $41.00 $25.00 $48.00 $30.00 $55.00 $35.00	 N/A N/A N/A	SECURITY ESCORT & EQUIPMENT MAINTENANCE Staffed,Attended (1/4 hour) Staffed, Unattended (4 hours) Unstaffed/NBD (1/4 hour) Unstaffed/NonNBD (4 hours)	 $10.49 $167.88 $10.49 $167.88	 N/A

NBD= Normal Business Day
N/A= Not Applicable

SOURCE: EXH 11, pp.5-6; EXH 36, pp. 206-207; EXH 46, pp.3-4

Directory Assistance;

ISSUE 1(e): What are the appropriate permanent recurring and nonrecurring rates for the Directory Assistance Transport UNE?

ISSUE 1(f): What are the appropriate permanent nonrecurring rates for the Dedicated Transport UNE?

STAFF ANALYSIS:

I. DEFINITIONS

Operator Systems

The FCC determined that incumbent LECs must provide access to operator services and directory assistance facilities where technically feasible. In Section 51.5 of the FCC's Rules, operator services and directory assistance are defined as follows:

> 'Operator services' are any automatic or live assistance to a consumer to arrange for billing or completion of a telephone call. Such services include, but are not limited to, busy line verification, emergency interrupt, and operator-assisted directory assistance services.
>
> 'Directory assistance service' includes, but is not limited to, making available to customers, upon request, information contained in directory listings.

In its Order the FCC explained:

> We conclude that incumbent LECs are under the same duty to permit competing carriers nondiscriminatory access to operator services and directory assistance facilities as all LECs are under section 251(b)(3). We further conclude that, if a carrier requests an incumbent LEC to unbundle the facilities and functionalities providing operator services and directory assistance as separate network elements, the incumbent LEC must provide the competing provider with nondiscriminatory access to such facilities and functionalities at any technically feasible point. We believe that these facilities and functionalities are important to facilitate competition in the local exchange market. Further, the 1996 Act imposes upon BOCs, as a condition of entry into in-region interLATA services the duty to provide nondiscriminatory

> access to directory assistance services and operator call completion services. We therefore conclude that unbundling facilities and functionalities providing operator services and directory assistance is consistent with the intent of Congress. (Order 96-325, ¶ 534)

Dedicated Transport and Common Transport

The FCC considers dedicated and common transport as interoffice transmission facilities, which it defines as follows:

> (1) Interoffice transmission facilities are defined as incumbent LEC transmission facilities dedicated to a particular customer or carrier, or shared by more than one customer or carrier, that provide telecommunications between wire centers owned by incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting telecommunications carriers. (47 C.F.R. § 51.319)
>
> Pursuant to Commission Order PSC-96-1579-FOF-TP, ILECs are required to provide access to Dedicated Transport and Directory Assistance Transport. Therefore, permanent rates need to be established for each of these UNEs.

II. Element Descriptions

The rate elements and respective descriptions for the Directory Transport UNEs (i.e., Local Channel DS1, DS1 Level interoffice per mile, DS1 Level interoffice per facility, and DS1 installation, per trunk or signaling connection), and the Dedicated Transport UNE (i.e., DS1 Interoffice per Facility Termination) are as follows. Staff would note that only non-recurring charges for Dedicated Transport DS1 Interoffice per Facility Termination will be set in this proceeding. Recurring rates for this element were set in the earlier proceeding in Docket No. 960833-TP.

Local Channel DS1

Provides a transmission path and its associated electronics between switching locations to enable a call to be transported from one location to another. These facilities are dedicated to a single network provider between BellSouth (BST) end offices and tandem offices and ALEC end offices. This segment includes the transport from the Point of Presence (POP) or Point of Interconnection (POI) to the Serving Wire center (SWC) on to the

Access Tandem, Local Channel (LC), and Interoffice Transport, either dedicated or common routed. (EXH 13)

DS1 Interoffice per Mile;
DS1 Interoffice per Facility Termination (Directory Transport and Dedicated Transport); and
DS1 Interoffice per Trunk or Signaling Connection:

All provide a transmission path and the associated electronics between BST's end offices so that an ALEC can transport DS1s from one location to another. These facilities are dedicated to a single network provider. (EXH 13)

III. RECURRING RATES

1. METHODOLOGY

BST's proposed recurring rates for the UNEs discussed above were each developed using its TELRIC calculator.

AT&T/MCI's proposed recurring rates for these UNEs were each developed using BST's TELRIC calculator and applying AT&T's proposed inputs and assumptions.

2. AT&T's ADJUSTMENTS

All of the adjustments to the Local Channel DS1 (EXH 11), DS1 Interoffice Per Mile (G.6.2) and Per Facility termination (G.6.3) rate elements are associated with the following: depreciation, cost of money, income tax factors, plant specific factors, ad valorem factors, and shared cost factors.

3. STAFF'S ADJUSTMENTS

Based on staff's analysis in Sections I-VII discussed in an earlier part of staff's recommendation, staff recommends recurring rates for the rate elements of the Directory Assistance Transport UNE are shown in Table 1(e)-1 below.

Table 1(e)-1: Proposed/Recommended Recurring Rates for the rate elements of the Directory Assistance Transport UNE

(RECURRING RATES)

Rate Element	BellSouth's Proposed Rate	AT&T/MCI's Proposed Rate	Staff's Recommended Rate
Local Channel DS1	$46.62	$40.44	$44.35
DS1 Interoffice Per Mile	$.6368	$.4577	$0.6013
Per Facility Termination	$106.84	$94.20	$101.61

IV. NONRECURRING RATES

1. METHODOLOGY

BST used its TELRIC calculator to develop the nonrecurring costs. Witness Caldwell states that the generic process for developing the nonrecurring costs for the UNEs is as follows:

> Determine the cost elements to be developed;
> Define the work functions;
> Establish work flows;
> Determine work times for each work function;
> Develop directly assigned labor costs for each work function (labor rate x work time);
> Accumulate work function costs to determine the total nonrecurring costs for each cost element and add gross receipts tax (which reflects TELRIC economic cost). (TR 338)

AT&T/MCI used its nonrecurring cost model to develop the nonrecurring costs for the DS1 Interoffice Per Facility termination (G.6.3/D.4.2) rate elements. Witness Ellison states that:

> the nonrecurring cost model multiplies individual work activity times by the applicable rate per hour to determine the activity cost. After the total costs of provisioning the service type are calculated, the model sums the costs and applies an "overhead factor" to arrive at the total cost of provisioning that service type. (TR 1223)

AT&T/MCI's proposed nonrecurring rates for the remaining rate elements of these UNEs were each developed using BST's TELRIC calculator and applying AT&T's proposed inputs and assumptions.

2. PARTIES POSITIONS

AT&T witness Lynott states that BellSouth has vastly overstated its nonrecurring rates for a variety of reasons, including faulty assumptions or inaccurate values relating to network architecture, OSSs, labor costs, and inappropriate work centers and work groups performing those tasks. (TR 1247)

A. Use of Forward-Looking Technologies

Witness Lynott states that forward looking network architectures are important because they are forward looking intelligent processor controlled network elements that can communicate over standard interfaces to the OSSs in such a manner that little-or-no manual intervention is required for provisioning or maintenance activities. (TR 1217)

Witness Caldwell asserts that some of the interfaces mentioned by AT&T are available; however, but not to the extent that witness Lynott described. Witness Caldwell contends that the capability of total mechanization connecting the facility all the way from the central office to the customer's premises is not available. (EXH 14, pp.434-435)

Witness Varner states that BellSouth proposes to use the cost of equipment that is required to provide these elements in the future. Witness Varner also states that other parties propose to use the cost of hypothetical equipment that will not be used and in some cases is non-existent. (TR 131)

Witness Lynott asserts that Bellcore specifications are available that provides how vendors should build their equipment. In addition, witness Lynott contends that in a multiple-vendor environment, this technology is in fact available today.(EXH 45, p.97)

Witness Zarakas states that the cost study which is presented today is based on a efficient and forward-looking technology, and in that sense it's very hypothetical, yet it is grounded in realities which will not likely change in the future and,

therefore, those realities should be reflected in a cost study. (TR 361) However, staff would note that BST witness Landry states that digital cross connects have not been considered in BellSouth's cost studies. (EXH 16, p.296) Instead, BellSouth asserts that manual cross connects have been used in its cost studies.

B. Continuity Testing

Witness Lynott states that the Nonrecurring Cost Model (NRCM) assumes certain levels of testing. As an example, the NRCM does recognize continuity-type testing to insure connectivity. The costs of conformance-type testing (necessary to insure that installed facilities deliver services meeting the required specifications), however, are captured within the maintenance loading factor on recurring rates because this testing is performed during the Engineer, Furnish and Install (EF&I) phase associated with plant placement. (TR 1219) BST agrees with AT&T witness Ellison's classification of costs between recurring and nonrecurring. (EXH 16, p.296)

Staff agrees with AT&T that it is appropriate to recover costs associated with continuity-type testing associated with the Engineering, Furnish and Install (EF&I) phase of the plant placement process in recurring charges. Therefore, staff recommends that BST's nonrecurring costs reflected in JFC 31XX be removed. Instead, staff recommends that the costs associated with JFC 31xx (engineering) be applied to the recurring rates through the application of AT&T/MCI's Telco Labor Loading Factor. This adjustment is reflected in Table 1e-3.

C. Work Times

AT&T witness Hyde asserts that BST's cost studies consistently include errors that result from incorrect application of BST's own methodologies. For example, BST's model does not recognize the currently available OSS systems that allow ALECs to interface with BST electronically. (TR 1758-1759) Instead, AT&T/MCI witness Lynott asserts that the its NRCM contains many of the necessary work steps/activities and work times required to order and provision the UNEs in this proceeding. Following the NRCM's costing guidelines, adjustments were made to recognize electronic ordering, efficiently managed OSSs, and forward-looking network architecture benefits. (TR 1239) As noted earlier, AT&T only used its NRCM for the non-

recurring rates related to the DS-1 facility termination (Directory Transport and Dedicated Transport).

Witness Landry states that the work force administration system (WFAS) basically is an electronic system for coordinating the dispatch of technicians and monitoring the completion of service turn-ups, among other things. He also states that there are some limitations to the WFAS's capabilities. Witness Landry points out that the impact of the electronic capabilities of WFAS is reflected in the work times, which are provided by the network subject matter experts (SMEs). (TR 522)

With respect to AT&T/MCI's proposal of four activities per trip, witness Lynott states that this assumption is based on load and work time record samples out of a WFA system. This system is deployed by all of the RBOCs and not Florida specific. (TR 1257)

BST believes witness Lynott uses substantially lower work times for included functions in its NRCM. BST asserts that AT&T witness Lynott considers many required functions to be unnecessary and in some cases does not include these functions. BST asserts that this causes AT&T's work times, and consequently AT&T's costs, to be understated. (EXH 14, p.481)

Staff notes that AT&T/MCI used data from WFAS and network SMEs as the basis for their work times, whereas BellSouth used Florida-specific data from time sheets and network SMEs as the basis for its work times. Staff reviewed the job function descriptions and the respective work times provided by the parties. Without further record evidence, staff believes BST, the company actually performing such job functions, has the edge over AT&T/MCI as to what real-world work times are achievable. Therefore, staff recommends reducing BST's proposed work times by 25% of the difference between BST's and AT&T/MCI's proposed work times.

V. STAFF'S RECOMMENDATION

1. DS-1 Local Channel

a. Digital Cross-Connect System (DCS)

Upon review of the data provided by AT&T witness Lynott, staff notes that BST has proposed installation work times of .4167 (first) and .4167 (additional), whereas, AT&T/MCI proposed work times of 0.4867 (first) and 0.4200 (additional) for the DCS Connect

& Test function, which is one of the activities associated with establishing the DS-1 local channel. (EXH 45, p.182)

BST proposes one activity per trip for the installation of a digital cross-connect system, whereas AT&T/MCI proposed four activities per trip. Witness Caldwell agreed that the 20 minutes for travel time proposed by AT&T/MCI was comparable to BST's estimates. (TR 457) Staff has adjusted AT&T/MCI's proposed work activities and times in order to determine our recommended work times for DCS. First, staff has removed the work times associated with ordering activities. In addition, staff believes that BST's assumption that one work activity per trip is not consistent with an efficient, forward-looking installation process. On the other hand, AT&T/MCI's assumed four activities is too optimistic. Staff has used a middle-range estimate assuming two work activities per trip. Staff's recommended installation work time for DCS cross connect installation therefore calculates at .3550 hours, as reflected in Table 1e-2 below. The remainder of staff's recommended adjustments to BST's proposed installation work times for the DS-1 Local Channel are reflected in the following tables:

Table 1e-2 - DS-1 Local Channel - Work Times
(Rate Element for the Directory Assistance Transport UNE.)

FUNCTION	JFC	BST's First/Add'l		AT&T-MCI's First/Add'l		Staff's First/Add'l	
Engineering	32XX	3.0000	3.0000	0.0000	0.0000	2.2500	2.2500
Engineering	470X	0.4917	0.4917	0.0150	0.0150	0.3725	0.3725
Engineering	400X	0.0163	0.0155	0.0000	0.0000	0.0122	0.0116
Engineering	341X	0.0500	0.0000	0.0000	0.0000	0.0375	0.0000
Connect & Test	431X	0.4167	0.4167	0.4867	0.4200	0.3550	0.3550
Connect & Test	411X	2.1333	2.1333	0.0833	0.0167	1.6208	1.6042
Connect & Test	471X	0.6500	0.6500	0.0000	0.0000	0.0000	0.0000
Travel[5]	411X	0.3000	0.0000	0.0000	0.0000	0.3000	0.0000

[1] Staff believes BST's worktimes are reasonable because BST has firsthand

5

knowledge as to what travel times are achievable in its operating areas.

Table 1e-3 - DS1 Level Facility Termination -(Rate Element for the DA Transport and Dedicated Transport UNE.)

FUNCTION	JFC	BST's First/Add'l		AT&T-MCI's First/Add'l		Staff's First/Add'l	
Engineering	341X	0.0333	0.0000	0.0000	0.0000	0.0250	0.0000
Engineering[1]	31XX	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
Connect & Test	470X	0.4917	0.4917	0.0150	0.0150	0.3725	0.3725
Connect& Test[2]	471X	0.6500	0.6500	0.0000	0.0000	0.0000	0.0000
Connect & Test	431X	0.8333	0.8333	0.2125	0.1458	0.6781	0.6614

[1] Recovered in recurring rates by applying Telco Labor Loading Factors (EXH 45)

Table 1e-4 - Installation Per Trunk or Signaling Connection - (Rate Element for the Directory Assistance Transport UNE.)

FUNCTION	JFC	BST's First/Add'l		AT&T-MCI's First/Add'l		Staff's First/Add'l	
Engineering	4N2X	2.5000	0.0500	1.5000	0.0500	2.2500	n/c
Connect & Test[1]	430X	2.0000	0.0000	0.2300	0.1600	n/c	n/c

N/c: no change
[1] Based on the work activities required to perform the on-site installation, staff believes BST's installation work times are reasonable.

2. NONRECURRING RATE COMPARISONS

The following table shows the parties proposes rates and staff's recommended non-recurring rates for each of the elements associated with interoffice transport. Staff would note that the DS1 facility termination rate applies to both directory assistance and dedicated transport. The other two rate elements apply only to directory assistance.

Table 1(e)-5 Staff's Recommended nonrecurring rates

(NONRECURRING RATES)			
Rate Element	BST TSLRIC Proposed Rate	AT&T/MCI's Proposed Rate	Staff's Recommended Rate
Local Channel DS1	$550.88 $476.38	$48.82 $41.28	$246.50 $230.49
DS1 Facility Termination	$224.89 $170.13	$11.20 $11.20	$45.91 $44.18
Installation Per Trunk or Signaling Connection	$415.60 $11.23	$150.62 $16.41	$332.42 $8.82

ISSUE 1(g): What are the appropriate recurring and non-recurring rates and charges for the 4-Wire Analog Port?

I. Definition of the element

The Commission determined in Order No. PSC-96-1579-FOF-TP that incumbent LECs must provide local switching as an unbundled element. Section 51.319(c)(1)(i) of the FCC rules defines the local switching element to encompass:

> (A) line-side facilities, which include, but are not limited to, the connection between a loop termination at a main distribution frame and a switch line card;
>
> (B) trunk-side facilities which include, but are not limited to, the connection between trunk termination at a trunk-side cross-connect panel and a trunk card; and
>
> (C) all features, functions, and capabilities of the switch which include, but are not limited to:
>
> (1) the basic switching function of connecting lines to lines, lines to trunks, trunks to lines, trunks to trunks, as well as, the same basic capabilities made available to the incumbent LEC's customers, such as telephone number, white page listing, and dial tone; and
>
> (2) all other features that the switch is capable of providing, including but not limited to custom calling, custom local area signaling service features, and Centrex, as well as any technically feasible customized routing functions provided by the switch.

The local switching element consists of the actual switch functionalities and the port. According to BST witness Caldwell, the port is the facility used to connect a loop to an end office or local switch. Witness Caldwell also states that the port facility includes required signaling and transmission plug-ins, which are necessary to convert the 4-wire signaling to 2-wire signaling on incoming calls, and conversion from 2-wire to 4-wire signaling on outgoing calls. (EXH 13, p.2) According to AT&T witness Ellison, the "4-wire port being priced in this proceeding is identical to

the 2-wire port already priced; i.e., the 4-wire port is simply a 2-wire port bundled with signaling and terminating equipment." (TR 1306)

The Commission established usage charges for local switching and recurring and non-recurring rates for the 2-wire port in Order No. PSC-96-1579-FOF-TP. In this proceeding, the Commission must establish recurring and non-recurring rates for the 4-wire port.

II. Cost Models

Two models were used in the development of costs for the 4-wire port. BST used BellCore's Switching Cost Information System (SCIS) to develop switch-related costs. BST witness Garfield states that SCIS is a PC-based software application that determines the switching investment required to provide end users with services and features. (TR 685) SCIS determines switching investment by taking engineering and pricing information obtained from switch manufacturers and combining that with a particular carrier's network configuration and demand characteristics to calculate the cost of switching functions and features. (TR 686) SCIS is a proprietary model and, although it has been provided for review in this proceeding, public disclosure of the model's internal design is prohibited. Staff would note that there have been no objections made to the accuracy of the model by the parties in this proceeding.

There are two programs in the SCIS model that determine investment amounts for features and services provided by central office switching machines. First, the SCIS Model Office program (SCIS/MO) determines investment amounts for the functions that a switch performs. The other program is the SCIS Intelligent Network (SCIS/IN) which calculates the investment required to provide a given feature or service. (Garfield TR 694) According to AT&T witness Petzinger, BST used the SCIS/MO program to calculate the investments for the 4-wire port, but did not actually use the SCIS/IN program to develop the investments for the features provided by the switch. (TR 1594) The discussion on the use of SCIS/IN and vertical features continues later in this issue.

BST witness Caldwell states that SCIS uses Florida specific switch data, including: "office characteristics and traffic patterns, parameters of the switch being studied, and vendor information, including technical descriptions and prices." (TR 324) BST used SCIS to calculate the investment amount attributable to the port. BST then inserted the SCIS-generated port investment amount into the TELRIC Calculator to determine the recurring rate. (Zarakas TR 327) AT&T and MCI also relied on SCIS to develop the

port investment amount and used BST's TELRIC Calculator to develop the rates for the 4-wire port. In addition, when determining the proposed rate for the port, BST added the residual recovery requirement (RRR). The RRR was discussed in a preceding section in staff's recommendation.

III. Recurring Charge Analysis

The cost analysis of the 4-wire analog port demonstrates that there are two material components. These are: 1)port investment; and 2) the signaling and terminating equipment which converts signals from 2-wire to 4-wire. AT&T and MCI do not dispute the material or investment amount proposed by BST for the signaling and terminating equipment. However, AT&T and MCI disagree with the investment amount proposed by BST for the switch that is applicable to the port.

a. SCIS: Average mode vs. Marginal mode

According to AT&T witness Petzinger, in the 1970's SCIS was originally designed to determine average switching costs. (EXH 58, pp.46-47) The assumption at the time was that all elements of the switch should be considered usage sensitive in order to determine the average cost of vertical features and services. Witness Petzinger explained further that in the late '80s and early '90s, incremental costing became more prevalent and the ability to calculate marginal costing was added to the model. Witness Petzinger states that the marginal mode in SCIS distinguishes between items which are fixed costs and those that are variable costs. If an investment is classified as a fixed cost by the model, then that investment will not be recovered on a millisecond basis, as would a variable cost. (EXH 58, p.47)

BST witness Garfield agrees with witness Petzinger, stating that SCIS was originally developed using average costing methods only. (EXH 4) Witness Garfield states that SCIS was enhanced to accommodate both average and marginal costing methods to keep up with the changing needs of local exchange carriers. Witness Garfield states that the choice to run SCIS in one mode over the other is not dependent on individual hardware components of a switching system, but is a choice made by BST's subject matter experts. (EXH 4)

BST witness Garfield states that SCIS/MO, when run in the average mode, is designed to apportion switch investment over demand to assure total recovery of the switch. Witness Garfield

also states that SCIS run in the marginal mode, determines the investment associated with the next unit of demand. (TR 728) Witness Garfield states further that marginal cost results are typically less than average cost results, because fixed or shared investments are treated differently in each mode. (EXH 4)

AT&T witness Petzinger states that it was incorrect for BST to run SCIS in the average mode. According to witness Petzinger, when SCIS is run in the average mode, the model automatically assigns the Getting Started Investment as a traffic sensitive investment. The Getting Started Investment consists of:

1. Central processor and related equipment;

2. Maintenance and test equipment;

3. Spare components;

4. Miscellaneous equipment; and

5. Investment for underutilized equipment (TR 1605)

Witness Petzinger states that the reason SCIS, when run in the average mode, assigns the Getting Started Investment as traffic sensitive, is based on the assumption that the switch will be replaced due to processor exhaust. Witness Petzinger states that BST assumed that switch processor utilization at the time of replacement would be 28%. (TR 1605) Witness Petzinger states that her assertion that switch capacity will not exhaust is valid, because BST's own input into the SCIS model indicates that BST's switches in Florida are currently utilizing only 27% of processing capacity. Therefore, switch processor capacity would not exhaust during the life of the switch. (TR 1603-1604) Witness Petzinger asserts that the marginal mode of SCIS does not treat the processor investments as traffic sensitive if those investments are not expected to exhaust. Instead, these investments are treated as fixed costs that are required to make the switch operational over its life. (TR 1605)

BST witness Caldwell disagrees with AT&T witness Petzinger's assertion that the Getting Started Investment should be allocated to the non-traffic sensitive portion of the port investment. Witness Caldwell states that BST looked to the actual function in the switch that is going to utilize the getting started investment. Witness Caldwell's position is that the cost should be assigned to the call processing millisecond because that is the cost causer of needing the switch. (EXH 14, p.21) BST witness Garfield states that

SCIS, when run in the average mode, will compute a Getting Started Investment per millisecond based on the switch's average processor utilization over the life of the switch, as opposed to current processor utilization only. BST witness Garfield disagrees with AT&T witness Petzinger's proposal for allocation of Getting Started Investment. Witness Garfield states that the allocation of Getting Started Investment over the total lines that exist today, and not the total lines expected to be served over the life of the switch, will result in an overrecovery of the Getting Started Investment. (EXH 4)

AT&T witness Petzinger counters by stating that in addition to the processor, there are numerous other items in the Getting Started Investment, which are one-time fixed investments that are incurred as a first cost. Witness Petzinger states that BST has treated all of the Getting Started Investment for every switch as traffic sensitive. Witness Petzinger asserts that this treatment of the Getting Started Investment violates the basic principle of reflecting costs based on causation, and therefore, the non-traffic sensitive Getting Started Investment should be assigned to the non-traffic sensitive port element. (TR 1605-1606)

During staff's deposition of BST witness Caldwell, staff attempted to verify many of BST's inputs into the SCIS model, including BST's 27% input for switch processor capacity utilization. However, witness Caldwell stated that she was unfamiliar with the program, and therefore, could not verify any of the inputs used in the model.(EXH 14, pp.46-47)

Staff's conclusion is provided in the recommendation discussion below.

b. Switch Contract Prices

The SCIS model contains current list prices from various switch vendors. The SCIS user then enters the contract discount as an input into the model. The model then calculates the appropriate switch unit investments. (Petzinger TR 1614) There are, however, several types of switch contracts that BellSouth has with switch vendors. BellSouth has contracts with NorTel for DMS 100 switches, contracts with Lucent for the 5ESS switches and a contract with Siemens Stromberg-Carlson. (Petzinger TR 1595-1596) These contracts fall under one of two types: contracts for new switches or contracts for adding growth capabilities to existing switches. (Petzinger TR 1621-1623; EXH 15)

AT&T witness Petzinger states that she reviewed the Nortel and Siemens switch contracts and three Lucent switch contracts. Witness

Petzinger states that BST used the prices from the Nortel contract and from two of the three Lucent contracts. The two Lucent contracts consist of a general contract negotiated in 1992 and a newer growth contract. According to witness Petzinger, the manner in which BST used these contracts resulted in a per line price that is two and a half times the prices witness Petzinger reviewed in BST switch contracts. (TR 1614) Witness Petzinger asserts that BST used the higher priced cost of a switch from the general contract and applied it to one small category of equipment known as the getting started costs. (TR 1625) Witness Petzinger states that "SCIS defines getting started investment as that equipment that is required to get a switch up and running without respect to size and traffic." (EXH 58, pp.16-17) Witness Petzinger further asserts that for all other equipment for every line ever installed in all of BST's service territory, BST applied the higher growth price contained in the older Lucent contract. (TR 1625-1626)

Under cross examination, witness Petzinger agreed that she did not use the switch price from the Nortel contract or any switch growth prices, but only the replacement switch price from the 1996 Lucent contract in the SCIS model. (TR 1639-1630) A replacement switch contract typically contains a lower per line price then does a growth contract. In other words, the cost per line to add equipment that will provide additional lines to an existing switch is typically higher than the per line cost of a new switch. (TR 1628-1629; EXH 58, p.31)

Witness Petzinger supported her position for the per line price that she used by: 1) stating that it is an actual BST contract price; 2) demonstrating that it is neither the highest nor lowest BST contract price; and 3) stating that it is unreasonable to believe that BST would purchase switches out of its higher price contracts, when it has lower prices contained in other contracts. (TR 1596, 1626) In addition, witness Petzinger explained that she did take into consideration higher growth prices and further explained how a net present value analysis plays a significant part in switching investment. Witness Petzinger stated:

> I did take into account the concept that a higher growth price exists. The reality is it isn't relevant, and the reason it's not relevant is because you have an option to buy today at a lower price and then you can pay a higher price tomorrow and next year and the year after that. At some point in the life cycle of that switch, it will be cheaper in today's dollars to buy at the higher growth price. The reality is, that insures that the maximum price you will ever actually pay is the new switch number. You're only going to go and buy out of the

higher growth price number when it's actually cheaper to do so in today's dollars." (TR 1638-1639)

Witness Petzinger states that the process used by BST on how the switching investment is formulated is performed outside SCIS. That is, the methodology for determining which BST switches are priced at which contract price is not a part of the SCIS model. It is the result of the calculation that is used as an input into SCIS. (EXH 58, p.37) BST witness Garfield also stated that the "process involves taking the information that's in the contract and developing the appropriate number that goes into the system. There is more to it than just matching a number in the contract to what is in the system." (TR 720) Witness Petzinger stated during her deposition that she did not see, in the cost study papers or in the CD-ROM provided by BST, the methodology used by BST. (EXH 58, pp.37-38)

During staff's panel deposition of BST witnesses Caldwell and Zarakas, staff asked witness Caldwell to verify the per line prices shown in witness Petzinger's testimony as those BST used as inputs to the SCIS model. BST was unable to verify that those prices were input into the SCIS model, because witness Caldwell was not familiar enough with the model. Witness Caldwell stated in her deposition that she has another cost analyst that runs the SCIS model. (EXH 14, pp.46-47)

Staff then requested a late-filed deposition exhibit from BST witness Caldwell, to demonstrate how BST derived its proposed per line price for both the Nortel and Lucent switches. The calculation that BST provided did not demonstrate how many lines were associated with new switches, and how many lines were obtained under the growth contract. The calculation only showed the total cost for lines associated with Lucent switches and the total cost for lines associated with the Nortel switches. BST then used these numbers to calculate a melded per line switch cost. (EXH 15)

In summary, staff cannot determine whether or not BST applied the switch prices correctly to develop the melded rate. As stated above, staff requested that BST provide the calculation of how it determined its per line switch price. BST should have demonstrated the calculations that resulted in the final inputs into the SCIS model. BST did not show in its calculation, how it determined the total cost for lines served by the two different switch types that BST uses. This analysis should have shown how many lines were associated with switches purchased under which contract and those lines that were added under the growth contracts. Therefore, staff cannot verify that these per line prices which are used to calculate investment amounts for the 4-wire analog port are

accurate. AT&T witness Petzinger's analysis included more contract information than that provided by BST. In addition, witness Petzinger fully explained her assumptions. Staff's conclusion is provided in the recommendation discussion below.

c. Treatment of Vertical Features

BST witness Caldwell states that switch features are incremental to the port and local switching, and that the feature components consist mainly of right-to-use (RTU) fees and processor usage over and above the processor usage to switch a call. (EXH 13) The local switching usage rates set by the Commission in Order No. PSC-96-1579-FOF-TP were set to include processor usage for vertical features. This is consistent with the FCC's definition that all features, functions and capabilities of the switch are included with the switching element. (¶423, FCC First Report and Order, Docket No. 96-98) Staff would note that if the features, functions and capabilities of the switch were to be unbundled from the switch, then separate rates would have been established to account for different usage levels of the switch.

As stated above, the local switching usage rates set by the Commission were set to recover costs associated with processor usage for vertical features. The local usage rates set by the Commission apply regardless of which port is used. AT&T witness Ellison states that the 4-wire port is identical to the 2-wire port that the Commission already priced, except that the 4-wire port is simply a 2-wire port bundled with signaling and terminating equipment. Witness Ellison states further that adding this additional equipment to the 2-wire port should not cause the pricing structure to change, but should reflect only the cost of the added equipment. (TR 1306)

Staff would note that individual rates for vertical features were neither proposed or established in the arbitration proceeding. The AT&T and MCI contracts reflect the Commission's decision by stating that there is no additional charge for use of features functions and capabilities of the switch.

IV. Non-Recurring Charge Analysis

The non-recurring charge for the port was developed in BST's TELRIC Calculator. AT&T and MCI did not use the Non-Recurring Cost Model (NRCM) to develop the proposed NRCs for the port. Instead, AT&T and MCI chose to use the TELRIC Calculator with their own inputs. The non-recurring cost development as proposed by BST

includes five job functions: 1) Customer Point of Contact; 2) Network Services Clerical; 3) Recent Change Line Translations (RCMAG); 4) Central Office Installation and Maintenance; and 5) Account Customer Advocate Center (ACAC).

The parties differ in their proposed work times for each of the five job functions. BST, AT&T, and MCI all used the TELRIC Calculator to develop the NRC for the port. However, the combined analysis of AT&T and MCI reflects their own adjustments to BST's cost study. Staff believes that the AT&T/MCI proposed work times represent the best case scenario for provisioning a 4-wire port. This scenario assumes an efficient OSS such that manual intervention is negligible. BST's proposal represents work times that are greater in duration. Table 1g-1 below compares the work times proposed by each party and staff's recommended work times.

Table 1g-1: Comparison of work times for 4-wire port

Job Function	Description	BellSouth Work times (First/Addl)	AT&T/MCI Work times (First/Addl)	Staff Recommended Work Times
Connect and Test	Network Services Clerical	.0104/.0104	.0032	.0104/.0104
Connect and Test	Recent Change Line Translation	.0250/.0250	.0078	.0250/.0250
Connect and Test	Central Office Install. & Maint.	.1000/.1000	.0000	.1000/.1000

Staff would note that the Customer Point of Contact and ACAC functions were removed per the Commission's Order to remove service ordering functions in this proceeding.

During cross examination at the hearing, staff asked AT&T witness Lynott to explain what accounts for the differences in the work times between BST and the AT&T/MCI proposal. (TR 1267-1269) AT&T witness Lynott states that BST's position on the Recent Change Line Translation function, is that the RCMAG would perform the manual input for switch translations. (TR 1267-1268) Staff would note that switch translations must be performed when a port is provided to an ALEC. The translations inform the switch about

which company the customer belongs to. This is similar to the Primary Interexhange Carrier (PIC) code change that occurs when an end user changes long distance carriers.

Witness Lynott assumes that a line translation in the switch should flow through from the service order processor to the switch, and therefore, no manual intervention will be incurred. However, witness Lynott assumes that the loop and port that are currently serving the end user will be provided as-is to the ALEC. (TR 1224-1225) Staff would note that migration of UNEs is a subject that was removed from this proceeding, and is being addressed in Docket No. 971140-TP. Therefore, staff must assume, for this proceeding, that the local switching function is being ordered as a single network element that is unbundled from other network elements. Under this assumption, the port provided by BST may be connected to a loop provided by the ALEC. In such case, staff believes that the switch must be updated with new instructions to route the call accordingly. Staff believes that these instructions can only be entered manually by BST. The work time of .0078 proposed by AT&T/MCI, which is switch processor time only, does not reflect the time necessary for manual input of the switch translations. Therefore, staff recommends using BST's Recent Change Line Translation work time.

The work time proposed by AT&T for the Network Services Clerical function is very small. No explanation was provided by witness Lynott for this function. (TR 1269-1270) Staff recommends using BST's proposed work time for the Network Services Clerical function.

V. Staff's Recommendation

A. Recurring Rate

Staff believes that the port investment amounts that result from the position of each party represent the minimum and maximum investment boundaries. BST used contract prices for all Lucent switches from its oldest, highest priced contract. The Lucent switches represent the majority of switches used in BST's network. AT&T/MCI propose using one contract price as a surrogate for all of BST's switch contract prices (Lucent and NorTel switch contracts). Staff believes that there is insufficient evidence in the record to choose one party's port investment amount over the other's. Staff believes splitting the difference in the port investment amount would be a reasonable solution.

The 4-wire port recurring rate proposed by staff does not include any change to the portion of the investment attributable to the signaling and transmission equipment. AT&T and MCI do not dispute BST's proposed investment amount attributable to the signaling and transmission equipment. (EXH 48, p.21) Therefore, staff believes that the recurring rate for the 4-wire port should be based on averaging the two investment estimates provided by the parties which are amount attributable to the port and using the agreed upon investment amount for the signaling and transmission equipment. In addition, the cost of capital, depreciation, and shared and common cost factors should be adjusted per staff's recommendation. Also, staff's recommended rate does not include the amount attributable to BST's proposed residual recovery requirement. Staff's recommended recurring rate for the 4-wire port is shown along with the rates proposed by the parties in Table 1g-2.

Table 1g-2: Comparison of Recurring Rates

4-Wire Port	BellSouth Proposed Rate	AT&T Proposed Rate	Staff Recommended Rate
Recurring Rate	$11.14	$8.46	$9.14

B. Non Recurring Charge

Table 1g-3 lists the proposed NRC by BST and AT&T/MCI along with staff's recommended NRC for the 4-wire port. Staff's recommended rate is for initial and additional orders.

Table 1g-3: Comparison of Non-Recurring Charges

4-Wire Port	BellSouth Proposed NRC	AT&T/MCI Proposed NRC	Staff's Recommended NRC
Non-Recurring Charge	$29.18	$1.09	$5.86

ISSUE 2: Should these dockets be closed?

RECOMMENDATION: No, the parties should be required to submit a final arbitration agreement conforming with the Commission's ultimate determination in this docket for approval within 30 days of issuance of the Commission's order. This docket should remain open pending Commission approval of the final arbitration agreement in accordance with Section 252 of the Telecommunications Act of 1996.

STAFF ANALYSIS: The parties should be required to submit a final arbitration agreement conforming with the Commission's ultimate determination in this docket for approval within 30 days of issuance of the Commission's order. This docket should remain open pending Commission approval of the final arbitration agreement in accordance with Section 252 of the Telecommunications Act of 1996.

BELLSOUTH COST PROCEEDING
DOCKET NOS. 960833-TP/960846-TP/971140-TP

Category	(EXH 4,23) BST Projection Life (Cunningham) (yrs)	(EXH 53) ATT/MCI Projection Life* (Majoros) (yrs)	(EXH 4,23) BellSouth Prop.FL Specific (yrs)	Staff Recommendation (yrs)
Motor Vehicles	8.1	7.5	8.0	7.5
Aircraft	N/A			
Special Purpose Vehicles	7.0		7.0	7.0
Garage Work Equipment	12.0	12.0	12.0	12.0
Other Work Equipment	16.2	15.0	15.0	15.0
Buildings	45.0	48.0	48.0	45.0
Furniture	14.1	11.0	11.0	11.0
Office Support Equip.	11.5	10.5	10.5	10.5
Company Comm. Equip.	7.0	7.0	7.0	7.0
Computers	5.0	5.5	4.4	4.4
Analog Switching	4.2			4.2
Digital Switching	10.0	16.0	10.0	16.0
Operator Systems	10.0	10.0	10.0	10.0
Radio	10.5		7.0	7.0
Circuit-DDS	7.1		6.0	6.0
Circuit-Digital	9.3	10.5	9.4	10.5
Circuit-Analog	6.9		6.8	6.8
Large PBX	5.6		5.0	5.0
Public Telephone	7.0	7.0	7.0	7.0
Other Terminal Equip.	6.0		6.0	6.0
Poles	34.0	35.0	35.0	35.0
Aerial Cable-Metallic	14.0	18.0	14.0	18.0
Aerial Cable-Fiber	20.0	25.0	20.0	20.0
Undergrd. Cable-Metallic	12.0	23.0	12.0	23.0
Undergrd. Cable-Fiber	20.0	25.0	20.0	20.0
Buried Cable-Metallic	14.0	18.0	14.0	18.0
Buried Cable-Fiber	20.0	25.0	20.0	20.0
Submarine Cable-Metallic	14.0		14.0	18.0
Submarine Cable-Fiber	14.0		14.0	20.0
Intra-Building Cable-Met.	21.0	20.0	20.0	20.0
Intra-Building Cable-Fiber	21.0	20.0	20.0	20.0
Conduit	59.0	55.0	55.0	55.0

* FCC prescribed 1995

BELLSOUTH COST PROCEEDING
DOCKET NOS. 960833-TP/960846-TP/971140-TP

Category	(EXH 4,23) BST Net Salvage (Cunningham) (%)	(EXH 53) ATT/MCI Net Salvage* (Majoros) (%)	(EXH 4,23) BellSouth Prop.FL Specific (%)	Staff Recommendation (%)
Motor Vehicles	12.0	10.0	10.0	10.0
Aircraft	N/A			
Special Purpose Vehicles	0.0		0.0	0.0
Garage Work Equipment	0.0	0.0	0.0	0.0
Other Work Equipment	0.0	1.0	1.0	1.0
Buildings	3.0	4.0	4.0	4.0
Furniture	9.0	14.0	14.0	14.0
Office Support Equip.	10.0	10.0	10.0	10.0
Company Comm. Equip.	10.0	10.0	10.0	10.0
Computers	0.0	0	0.0	0.0
Analog Switching	0.0		0.0	0.0
Digital Switching	0.0	0.0	0.0	0.0
Operator Systems	0.0	0.0	0.0	0.0
Radio	(4.0)		(5.0)	(5.0)
Circuit-DDS	0.0		0.0	0.0
Circuit-Digital	0.0	0.0	2.0	0.0
Circuit-Analog	(4.0)		(10.0)	(10.0)
Large PBX	(2.0)		0.0	0.0
Public Telephone	10.0	10.0	10.0	10.0
Other Terminal Equip.	(3.0)		(4.0)	(4.0)
Poles	(61.0)	(75.0)	(75.0)	(75.0)
Aerial Cable-Metallic	(14.0)	(11.0)	(11.0)	(11.0)
Aerial Cable-Fiber	(15.0)	(11.0)	(12.0)	(11.0)
Undergrd. Cable-Metallic	(17.0)	(7.0)	(7.0)	(7.0)
Undergrd. Cable-Fiber	(15.0)	(6.0)	(6.0)	(6.0)
Buried Cable-Metalic	(9.0)	(8.0)	(8.0)	(8.0)
Buried Cable-Fiber	(6.0)	0.0	0.0	0.0
Submarine Cable-Metallic	(5.0)		(5.0)	(5.0)
Submarine Cable-Fiber	(5.0)		(5.0)	(5.0)
Intra-Building Cable-Met.	(13.0)	(12.0)	(12.0)	(12.0)
Intra-Building Cable-Fiber	(13.0)	(12.0)	(12.0)	(12.0)
Conduit	(8.0)	(7.0)	(7.0)	(7.0)

* FCC prescribed 1995

COMMON COST FACTORS

Account	Description	BST Proposed Calculation	AT&T Proposed Calculation	Staff Proposed Calculation
1	Costs common to both wholesale and retail operations.	$840,416,637	$606,350,914	$722,245,481
2	Total costs	$18,660,705,137	$15,310,001,103	$16,646,114,512
3	Total costs excluding costs common to both wholesale and retail	$17,820,288,500	$14,703,650,189	$15,923,869,031
4	Directly assigned and directly attributed retail costs	$1,839,824,540	$1,546,794,599	$1,642,286,205
5	Retail portion of allocated common costs	$86,767,347	$63,786,904	$74,487,789
6	Total retail costs	$1,926,591,887	$1,610,581,503	$1,716,773,994
7	Wholesale portion of allocated common costs	$753,649,290	$542,564,010	$647,757,693
8	Directly assigned and attributed wholesale costs	$88,399,885	$72,941,144	$79,996,598
9	Total wholesale common costs	$842,049,175	$615,505,154	$727,754,291
10	Total directly assigned and directly attributed wholesale costs	$15,892,064,075	$13,083,914,446	$14,201,586,228
11	Wholesale common cost factor	5.30%	4.70%	0.0512%

SHARED COST FACTORS

Account	Description	BST Proposed Rate	AT&T Proposed Rate	Staff Proposed Rate
2121	Land and Building	0.0006	0.0000	0.0000
2211	Analog Electronic	0.0458	0.0556	0.0654
2212	Digital Electronic	0.0330	0.0315	0.0376
2215	Electromechanical	0.0359	0.0510	0.0596
2220	Operator Systems	0.0378	0.0508	0.0606
2231	Radio Systems	0.0262	0.0380	0.0462
2232	Circuit Equipment	0.0357	0.0397	0.0492
2232	Circuit Equipment	0.0313	0.0311	0.0493
2232	Circuit Equipment	0.0282	0.0314	0.0372
2232	Circuit Equipment	0.0285	0.0314	0.0372
2232	Circuit Equipment	0.0978	0.0513	0.0768
2311	Station Apparatus	0.8280	0.2828	0.3486
2341	Large PBX	0.0549	0.0565	0.0660
2362	Other Terminal Equipment	0.1140	0.0650	0.0816
2411	Poles	0.0157	0.0198	0.0243
2421	Aerial Cable	0.0376	0.0244	0.0293
2421	Aerial Cable	0.0225	0.0185	0.0233
2422	Underground Cable	0.0238	0.0203	0.0246
2422	Underground Cable	0.0170	0.0185	0.0232
2423	Buried Cable	0.0295	0.0232	0.0278
2423	Buried Cable	0.0179	0.0189	0.0233
2424	Submarine Cable	0.0134	0.0195	0.0234
2424	Submarine Cable	0.0135	0.0198	0.0231
2426	Intrabldg Network Cable	0.0161	0.0189	0.0229
2426	Intrabldg Network Cable	0.0180	0.0196	0.0237
2441	Conduit Systems	0.0122	0.0176	0.0212