ORIGINAL

ATTACHMENT B

BellSouth Telecommunications, Inc.
FPSC Docket No. 990649-TP
Request for Confidential Classification
Page 1 of 1
7/18/00

REQUEST FOR CONFIDENTIAL CLASSIFICATION OF BELLSOUTH'S RESPONSE TO STAFF'S SIXTH REQUEST FOR PRODUCTION OF DOCUMENTS (POD NOs. 21, 22 and 27) FILED JUNE 27, 2000 IN FLORIDA DOCKET NO. 990649-TP

Two Redacted Copies

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BELLSOUTH TELECOMMUNICATIONS, INC.

FPSC DKT NO 990649-TP

STAFF'S 6TH REQUEST FOR PRODUCTION OF DOCUMENTS

POD NO. 21

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Hurricane Georges"
Exhibit B

In September 1998, Hurricane Georges struck BellSouth. The path of destruction affected Florida, Alabama, Mississippi, and Louisiana. BellSouth spent to repair damages inflicted by the storm.

"Hurricane Georges"
Account 6XXX
($000)

Entity	Total Charges
BellSouth	

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Operation Support System Upgrades"
Exhibit C

Operation Support System Upgrades refer to BellSouth's plan to provide the backbone capabilities required to meet the Telecommunication Act of 1996, FCC and other mandates relative to local interconnection with service providers such as CLECs. Operation Support System Upgrades as used in this projection consists of Service Provider Portability and Service Provider Upgrade.

Service Provider Portability (SPP) refers to the ability of a customer to change service providers and retain their local telephone number. Service Provider Upgrade (SPUP) refers to upgrades necessary to support SPP. These projects provide funding for the planning and development required to deploy SPP in the live BellSouth network. This includes infrastructure and Operating Support Systems upgrades, development of electronic interfaces and other work necessary to support various orders including FCC Docket 95-1169.

"Operation Support System Upgrades"
Account 6XXX
($000)

Entity	Total Charges
BellSouth	

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Software Capitalization "
Exhibit D

Effective 1/1/99, BellSouth will adopt Statement of Position (SOP) 98-1 issued by the American Institute of Certified Public Accountants. SOP 98-1, "Accounting for the Costs of Computer Software Developed or Obtained for Internal Use" unifies the accounting presentation of expenditures for internally developed software. For BellSouth adopting SOP 98-1 requires capitalization of software development costs which were expensed during 1998. This adjustment would have decreased 1998 expense by It is embedded in projections for 1999 through 2002.

" Capitalization of Software"
($000)

Entity/Account	6210	6220	6230	6724	Total
BellSouth					

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"IT Mobilization"
Exhibit E

In 1998, BellSouth recognized a one-time charge associated with IT Mobilization expenses. IT Mobilization relates to a BellSouth program of outsourcing certain Information Technology functions.

"IT Mobilization"
Account 6728
$(000)

Entity	Total Charges
BellSouth	

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"SFAS 112 Liability"
Exhibit F

In October 1998, it became necessary to adjust the SFAS 112 liability to reflect updated projections of other post retirement benefits (OPEBS.) This review prompted an adjustment to the liability and a corresponding credit to expenses.

"SFAS 112 Liability"
Account 6728
$(000)

Entity	Total Charges
BellSouth	

PROPRIETARY

BELLSOUTH TELECOMMUNICATIONS, INC.

FPSC DKT NO 990649-TP

STAFF'S 6TH REQUEST FOR PRODUCTIOON OF DOCUMENTS

POD NO. 27

PROPRIETARY

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Inflation Factor"
Exhibit I

The projection of the "Union Wage" inflation factor for years 1999 through 2002 is provided on Attachment C, page 7, of the October, 1998 Forecast of BellSouth Telecommunications' *Telephone Plant Indexes* (TPI), RL: 97-11-002BT. Recognizing that the telecommunications business is highly labor intensive, the forecast of the percentage change in Union Wages is deemed as the appropriate forecast to utilize for all USOA Accounts.

"Inflation Factor"
Percentage Change in Union Wages

Account	Year 1999	Year 2000	Year 2001	Year 2002
All 6XXX				

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Load Factors"
Exhibit J

The load factors utilized in this projection are forecasts of the percentage change in BellSouth's Average Access Lines In-Service (AALIS). The AALIS is used as the driver because work is assumed to be driven by the total customers served by the regulated entity.

"Load Factors"

Account	Driver	Year 1999	Year 2000	Year 2001	Year 2002
6XXX	AALIS				

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002
"Operating Productivity Factor"
Exhibit K

This factor represents a level of operating productivity improvement which BellSouth expects to achieve for each year of the four years included in the projection. Total Factor Productivity (TFP) has been deemed as an appropriate inflation factor for load driven accounts. The TFP of 3.1% is the latest five-year moving average growth rate, based on years 1990-1995, for Local Exchange Carriers subject to price cap regulation. The TFP of 3.1% was presented by Christensen Associates, as referenced in USTA Comments to the FCC, CC Docket No. 96-262, January 29, 1998, Table 2.

"Operating Productivity Factor"

Account	Account Description	Load Driven	Productivity
6210	CO Switching	Yes	3.1%
6220	CO Operator Services	Yes	3.1%
6230	CO Transmission	Yes	3.1%
6310	Inf/Orig/Term	Yes	3.1%
6410	Cable & Wire	Yes	3.1%
6530	Network Operations	Yes	3.1%
6610	Customer Oper – Mktg	Yes	3.1%
6620	Customer Oper – Svcs	Yes	3.1%
All Other 6xxx	Various	No	0.0%

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Growth Rate"
Exhibit L

The Growth Rate Factor is calculated using the "Inflation Factor", the "Load Factor" and "Productivity". A simple mathematical formula for calculating Growth Rate is: Growth Rate = Inflation + Load - Productivity.

" 1999 Growth Rate "

Account	Inflation (A)	Load (B)	Productivity (C)	Growth Rate (A+ B - C) (D)
61XX			.000	
62XX, 6310			.031	
6410			.031	
6510			.000	
6530			.031	
6610			.031	
6620			.031	
6727			.000	
67XX			.000	

" 2000 Growth Rate "

Account	Inflation (A)	Load (B)	Productivity (C)	Growth Rate (A + B - C) (D)
61XX			.000	
62XX, 6310			.031	
6410			.031	
6510			.000	
6530			.031	
6610			.031	
6620			.031	
6727			.000	
67XX			.000	

BELLSOUTH
OPERATING EXPENSE PROJECTION
CALENDAR YEAR 1999-2002

"Growth Rate"
Exhibit L

" 2001 Growth Rate "

Account	Inflation (A)	Load (B)	Productivity (C)	Growth Rate (A + B - C) (D)
61XX			.000	
62XX, 6310			.031	
6410			.031	
6510			.000	
6530			.031	
6610			.031	
6620			.031	
6727			.000	
67XX			.000	

" 2002 Growth Rate "

Account	Inflation (A)	Load (B)	Productivity (C)	Growth Rate (A + B - C) (D)
61XX			.000	
62XX, 6310			.031	
6410			.031	
6510			.000	
6530			.031	
6610			.031	
6620			.031	
6727			.000	
67XX			.000	

FL Docket 940260-TL
Staff's Sixth PODs
June 13, 2000
Item No. 22
Attachment B
Page 1 of 1

BELLSOUTH TELECOMMUNICATIONS TPIs
OCTOBER 1998 FORECAST ASSUMPTIONS

	PRICE INDEX NONRESIDENTIAL STRUCTURES	CHAIN PRICE INDEX GDP	GDP 1992$	CAPITAL EQUIPMENT PPI	UNION WAGES	COPPER CATHODE PPI	PVC PPI	SEMICOND. PPI
1994	3.6	2.4	3.5	2.1	3.1	22.2	13.3	-0.9
1995	4.2	2.5	2.0	2.0	2.6	27.9	10.5	-7.0
1996	2.3	2.3	2.8	1.2	2.7	-21.5	-14.5	-8.1
1997	3.3	2.0	3.8	0.0	2.6	-2.9	4.7	-10.9
1998	2.5	1.2	3.3	-0.7	2.9	-26.3	-17.0	-9.5
1999	2.0	1.9	1.9	-0.2	3.2	-5.0	-1.5	-9.0
2000	1.9	2.3	2.6	1.2	3.4	3.5	1.0	-8.0
2001	2.1	2.3	2.3	1.4	3.5	8.0	6.0	-8.0
2002	1.9	2.3	2.3	1.3	3.5	5.0	4.0	-7.0
2003	2.0	2.3	2.4	1.5	3.5	2.5	3.0	-7.0
2004	2.0	2.3	2.5	1.6	3.5	2.5	2.5	-7.0
2005	2.2	2.3	2.5	1.6	3.5	3.0	2.6	-7.0
2006	2.2	2.3	2.5	1.5	3.7	3.5	2.6	-7.0
2007	2.2	2.3	2.4	1.5	3.7	3.5	2.6	-7.0

ATTACHMENT 5

"UPDATED RESULTS FOR THE SIMPLIFIED TFPRP MODEL AND RESPONSE TO PRODUCTIVITY QUESTIONS IN FCC'S ACCESS REFORM PROCEEDING"

Laurits R. Christensen, Philip E. Schoech and Mark E. Meitzen

USTA COMMENTS
CC Docket No. 96-262
January 29, 1997

Updated Results for the Simplified TFPRP Model and Response to Productivity Questions in FCC's Access Reform Proceeding

Laurits R. Christensen, Philip E. Schoech, and Mark E. Meitzen
January 29, 1997

I. Introduction

In this paper, Christensen Associates presents updated results for the Simplified TFP Review Plan model (TFPRP) that produces Total Factor Productivity (TFP) estimates for the local exchange carriers (LECs) subject to price cap regulation. The FCC has tentatively concluded that a TFP approach should be adopted for developing the price cap X-Factor for the LECs.[1] We have previously demonstrated that the methods used in the Simplified TFP Review Plan model are based on proper economic principles and provide an economically meaningful measure of TFP growth.[2]

The model has been updated to include results for 1995. In addition, beginning with the 1995 over 1994 annual growth rates, the updated TFPRP incorporates new BEA chain-weighted price indexes.[3] For the most recent five-

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[1] Federal Communications Commission, First Report and Order, CC Docket 94-1, March 30, 1995, para 145.

[2] See Laurits R. Christensen, Philip E. Schoech, and Mark E. Meitzen, "Total Factor Productivity Methods for Local Exchange Carrier Price Cap Plans" December 18, 1995. Submitted as Attachment A to Comments of United States Telephone Association on Fourth Further Notice of Proposed Rulemaking, CC Docket 94-1, January 16, 1996. Hereafter referred to as "December, 1995 Report."

[3] This is accomplished by adopting the chain-weighted indexes for 1995 growth rates, leaving the previous 1988-1994 results as they were originally reported.

year period, 1990-1995, LEC TFP growth has averaged 3.1% annually. Considering that average annual U.S. TFP growth has been 0.4% over this period, the TFP differential that forms the basis of the X-Factor is 2.7% over the most recent five-year period.

We also respond to questions posed by the FCC in the December 24, 1996 Notice related to the estimation of TFP for the LEC price cap plan as the industry becomes more competitive.[4] In particular, the FCC inquires whether there is any justification for increasing the productivity offset, and if using a forward-looking cost of capital and economic depreciation has an impact on measured TFP growth. As we have previously demonstrated in the FCC's price cap proceeding, there is no basis for increasing the productivity offset as competition intensifies and, in fact, the evidence indicates that the X-Factor should be reduced. In the event that the FCC uses economic depreciation in establishing benchmark prices for other regulatory applications, we believe our depreciation rates will still be the most appropriate for a TFP study. While it may be an important consideration in other applications, using a forward-looking cost of capital (which is likely to be higher than the cost of capital under rate of return regulation) will have a negligible effect on TFP measurement.

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[4] Federal Communications Commission, Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry, CC Dockets 96-262, 94-1, 91-213, and 96-263, December 24, 1996. Hereafter referred to as the "Access Reform Proceeding."

II. Updated TFP Review Plan Results for 1995

Table 1 presents the annual growth rates for Total Output, Total Input, and TFP for the 1988-1995 period from the TFP Review Plan model. For the most recent five years of growth covering the period 1990-1995, average annual growth is 3.3% for Total Output, 0.2% for Total Input, and 3.1% for TFP.[5] Complete price cap LEC TFP results are presented in Attachment A.

Table 1
Local Exchange Carrier Total Factor Productivity Growth
1988-1995

	Total Output Growth	Total Input Growth	TFP Growth
1988			
1989	4.7%	2.9%	1.8%
1990	3.8%	0.0%	3.8%
1991	2.7%	0.7%	2.0%
1992	2.0%	-1.5%	3.5%
1993	4.0%	0.3%	3.7%
1994	3.8%	1.4%	2.4%
1995	4.1%	0.3%	3.8%
Average Growth			
1988-1995	3.6%	0.6%	3.0%
1990-1995	3.3%	0.2%	3.1%

[5] 1995 values were not available from BEA for current cost of U.S. net capital stock and constant cost of U.S. net capital stock that go into producing the U.S. economy cost of capital. 1995 values for these items were estimated by applying each series' respective average annual growth rate from the 1990-1994 period (found in TFPRP, page 2 of 3 schedule MISC1, lines 452 and 462).

Table 2 presents the latest five-year moving average growth rates, 1990-1995, for LEC TFP (from Table 1), U.S. economy TFP and the resulting TFP differential that forms the basis of the price cap X-Factor.[8] Over the 1990-1995 period, LEC TFP growth averages 3.1%, U.S. TFP growth averages 0.4%, and the resulting TPF differential is 2.7%.

Table 2
TFP Differential
1990-1995

	Five-Year Moving Average 1990-1995
LEC TFP Growth	3.1%
US TFP Growth	0.4%
TFP Differential	2.7%

III. Response to FCC's Productivity-Related Questions in Access Reform Proceeding

In the December 24, 1996 Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry, the FCC solicits comment on whether there is

[8] The 1995 value for the U.S. multifactor productivity measure of the private business sector is not available at this time. We have estimated the 1995 value by using the average annual growth rate in the series over the 1990-1994 period (found in TFPRP, page 1 of 3, schedule MISC1, line 261).

any justification for increasing the productivity offset.[7] According to the record we have previously established, there is no basis for increasing the productivity offset and, in fact, the evidence indicates that the offset should be reduced. The evidence we previously submitted in our December 1995 report shows that as prices are more closely aligned with marginal costs, total factor productivity (TFP) growth will decrease.[8] The evidence also shows that decreases in the rate of incumbent LEC (ILEC) output growth will also lead to decreases in ILEC TFP growth. Since ILEC market share will decline as we move to a competitive environment, one would expect the rate of ILEC output growth to decrease, as well as its rate of TFP growth.

The FCC also invites parties to discuss the effects of a forward-looking cost of capital and economic depreciation on TFP measurement. As we have previously established on the record, economic depreciation is the correct depreciation concept for purposes of measuring TFP, even when regulatory depreciation rates deviated from that concept. The fact that the FCC is considering a move toward economic depreciation for purposes of establishing cost benchmarks for certain regulatory applications has no implication for TFP measurement. This is because the depreciation rates used in our study are based on extensive academic research and are the most appropriate

[7] Access Reform Proceeding, paragraph 233.
[8] Specific cites from this report are noted below.

depreciation rates for measuring TFP. While the forward looking cost of capital may be higher than the ILEC's cost of capital under rate of return regulation (or previously under price caps) due to the increased volatility of its expected earnings and other sources of increased risk, this will have negligible impact on TFP measurement.

In the following sections, we elaborate on each of these points.

1. The restructuring of rates toward marginal costs will reduce the rate of TFP growth.

In our previous report, we established that using marginal cost weights, instead of current revenue weights, to measure output produces a considerably lower rate of measured TFP growth in the telephone industry.[9] This is due to the fact that telephone services with high price-marginal cost margins have had higher than average output growth. Access and toll services are the prime examples. To measure the growth in Total Output, one weights together the growth rates for the individual outputs. In the revenue weighted output index, the weights are based on revenue shares for the outputs. In the marginal cost weighted output index, the weights are based on cost elasticity shares. A service with a high price-marginal cost margin will have a higher revenue share

[9] December, 1995 Report, p. 8.

than a cost elasticity share. If that service also has an above average rate or output growth, using the revenue weight instead of the marginal cost weight will push the rate of measured Total Output growth upward.

The previous studies that we cited in our report, Crandall and Galst[10] and Fuss[11] show that this difference is substantial. The Crandall and Galst study of the U.S. telephone industry shows that the difference between the annual TFP growth rate based on a marginal cost weighting of output and the annual TFP growth rate based on revenue weighting is 1.7 percentage points per year. The Fuss study of Bell Canada showed a difference of 2.0 percentage points.

A corollary to this established fact is: if ILEC prices are realigned in the direction of marginal cost, the measured rate of TFP growth will decrease. The reason is that one of the sources of historical TFP growth, namely that high price-marginal cost margins for rapidly growing outputs, will be eliminated. Rapidly growing services will now have revenue weights much closer to cost elasticity weights, leading to a lower rate of Total Output growth and a lower rate of TFP growth. Thus, for any given rate structure, the effects of competition (or specific regulatory actions) that move existing rates closer to marginal costs will be to reduce TFP growth. Because we have no direct evidence on the expected

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[10] Robert W. Crandall and Jonathan Galst, "Productivity Growth in the U.S. Telecommunications Sector: The Impact of the AT&T Divestiture," The Brookings Institution, February 1991.

[11] Melvyn A. Fuss, "Telecommunications Growth in Canadian Telecommunications," Canadian Journal of Economics, May 1993.

magnitude of this specific effect as competition increases, we have not presented a specific prediction of the size of this reduction in measured TFP growth. Regardless of the lack of an estimate here, this effect will be real. Two other effects, however, can be quantified.

2. Impact of Rate Structure Changes on ILEC TFP Growth

The previous studies cited above lead to the conclusion that if ILEC prices are more closely aligned with marginal cost, measured TFP growth will decrease. In addition, restructuring that moves cost recovery from more rapidly growing rate elements to more slowly growing rate elements (or new rate elements with slower or no growth) will also reduce TFP growth. For example, the restructuring of the Carrier Common Line Charge (CCLC) and Transport Interconnection Charge (TIC) are currently under consideration. It is our understanding that the USTA proposes that the CCLC be recovered on a presubscribed line basis and TIC be recovered on a bulk-billed basis (currently, both are recovered on a per-minute basis). To determine how this change would affect measured TFP growth, we used the TFP Review Plan model to recompute TFP growth under the assumption that CCLC is recovered on a per-line basis and TIC is recovered as a per company assessment. Compared to the most recent five year period, 1990-1995, the TFP differential would decrease by 0.4 percentage points to 2.3% when these revenues are recovered under the proposed rate restructure.[12]

One must also recognize that restructuring will have a much larger impact on interstate revenue growth than it will on measured total factor productivity growth, due in part to the fact that interstate revenue represents approximately only twenty-three percent of total operating revenue for the price cap LECs. Currently, approximately 32 percent of interstate revenue is recovered through per-line charges and 55 percent is recovered through per-minute charges (of the remaining 13 percent, most comes from special access services). Under the restructuring proposed by USTA, approximately 48 percent of interstate revenue would be recovered through per line charges (or other rate elements with significantly slower growth than minutes), about 26 percent would be recovered through per-minute charges, and about 12 percent (currently recovered through the TIC) would presumably be recovered through bulk billing (i.e., a per company assessment).

Over the last five years, access lines have grown 3.0% per year while switched access minutes of use have grown 6.5% per year. Thus the growth in lines and minutes have contributed 4.5 percentage points to the growth in interstate revenue (.32 × 3.0 + .55 × 6.5). Under rate restructuring, the per line

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[12] Since the reweighting of output has no impact on the methods used to measure input prices, the reweighting has no impact on the input price differential.

and per minute growth would contribute only 3.1 percentage points to the growth in interstate revenue (.48 × 3.0 + .26 × 6.5). Thus, any X-Factor based on an analysis of interstate activity would need to incorporate a downward adjustment of 1.4 percentage points to recognize the fact that volume growth no longer generates the same revenue growth.

3. The decrease in market share that ILECs can expect under competition will lead to reductions in the rate of TFP growth.

In our original report in CC Docket 94-1, we established that there is a relationship between ILEC output growth and TFP growth, which is due to economies of density.[13] Economies of density describe the change in average cost when more output is provided over a network of fixed size. When average cost falls as output rises over a given network, economies of density are present. We established that the economic literature indicates that a one percentage point decrease in the annual rate of ILEC total output growth will lead to a 0.3 to 0.5 percentage point decrease in the rate of ILEC TFP growth.[14]

Under competition, the ILECs can expect to experience a decrease in total output growth, from what it otherwise would have been. This in turn will

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[13] Laurits R. Christensen, Philip E. Schoech, and Mark E. Meitzen, "Productivity of the Local Operating Telephone Companies Subject to Price Cap Regulation," Christensen Associates, May 3, 1994, pp. 19-23.
[14] Id., p. 23.

lead to a reduction in ILEC TFP growth. This effect will be present regardless of any movement of prices closer to marginal cost and any rate restructuring as described above.

Suppose, for example, for a given set of prices and rate structure, that the ILECs see a 10 percent decrease in their output growth over a five year period due to competitive losses, or an average 2 percent decrease per year. Using the 0.3 to 0.5 range established from the economic literature, annual TFP growth would decrease by between 0.6 to 1.0 percentage points over this period of time. Alternatively, if ILEC output growth would decrease by 20 percent over a five-year period due to competitive losses, or an average 4 percent decrease per year, annual TFP growth would decrease by between 1.2 to 2.0 percentage points. These ranges are found in Table 3 below. The first column of Table 3 presents the assumed annual output growth decrease, the second column presents the impact on TFP growth assuming a 1 percentage point decrease in output growth leads to a 0.3 percentage point decrease in TFP growth, and the third column presents the impact on TFP growth assuming a 1 percentage point decrease in output growth leads to a 0.5 percentage point decrease in TFP growth.

Table 3
Impact of Output Growth Reductions on ILEC TFP Growth

Output Growth Loss After Five Years	Annual Output Growth Decrease	Annual TFP Growth Decrease @ 0.3	Annual TFP Growth Decrease @ 0.5
-10%	-2%	-0.6%	-1.0%
-20%	-4%	-1.2%	-2.0%

4. The correct measure of TFP growth is based on economic depreciation, regardless of whether the ILEC is required to use regulatory depreciation in its accounting. Any FCC decision to use economic depreciation in establishing benchmark access prices would have no impact on the appropriate basis for measuring TFP.

In our December 1995 report, we established that the depreciation rates in our TFP study are based on extensive academic research, summarized by Hulten and Wykoff, and on the expected lifetimes used by the U.S. Bureau of Economic Analysis and U.S. Bureau of Labor Statistics for purposes of measuring capital in the U.S. economy.[15] We determined that these depreciation rates are the most appropriate ones for a TFP study. We furthermore established that it is inappropriate to use regulatory depreciation rates in a TFP study. In the event that the FCC uses economic depreciation in establishing benchmark prices for other regulatory applications, we believe our depreciation rates will still be the most appropriate for a TFP study.

[15] December, 1995 Report, pp. 12-14.

The term "depreciation rate" is often used as shorthand for two related, but distinct concepts in productivity analysis. The first concept, depreciation, is equal to the difference in value of two assets of different vintage at a given point in time. Depreciation is one component of the price of capital. The second concept, replacement, represents the decline in efficiency of an asset as it ages. Replacement is a central concept in the measurement of capital quantity. Academic research has shown that one can generally use the same geometric rate to represent both depreciation and replacement, hence the term depreciation rate is often used for both concepts. While both concepts are used in measuring TFP, the concept of replacement is of primary importance, since it is a key element in measuring the quantity of capital.

The age-efficiency trends of assets are independent of regulatory costing rules. Consequently, the correct replacement rate in a TFP study should be determined independently of the process whereby benchmark access rates are set. Furthermore, the determination of the appropriate replacement rates is a complicated technical issue requiring extensive research.

5. The ILEC cost of capital is likely to be higher under competition than under regulation. This higher cost of capital will increase the price of capital, but will have a negligible impact on measured TFP.

Under competition, the ILECs will have a more volatile income stream, which will result in a higher cost of capital. This increase in the cost of capital will lead to an increase in the price of capital input (though it might increase, decrease, or leave unchanged the growth rate of the price of capital input). This increase in the price of capital input will lead to a small increase in the capital cost share. Since the quantity of capital input has grown at a more rapid rate than other inputs, its larger cost share will lead to an increase in the rate of Total Input growth, and a decrease in TFP growth, though the magnitude of the impact on TFP growth would in all likelihood be minimal.

IV. Conclusion

For the most recent five-year period, 1990-1995, the results of the TFP Review Plan model show that TFP for the LECs under price cap regulation grew at an average annual rate of 3.1%. Over this same period, average annual TFP growth for the U.S. economy was 0.4%, resulting in a 2.7% TFP differential as the basis for the X-Factor in the LEC price cap formula.

In response to the FCC's December 24, 1996 Notice, we believe there is no basis for increasing the X-Factor as competition in LEC markets intensifies. In fact, the evidence indicates that the X-Factor should be reduced. For example, restructuring of CCLC and the TIC will reduce measured TFP growth by approximately 0.4% per year. Other or different restructuring could produce larger reductions. Loss of demand growth to competitors could reduce measured TFP growth by 0.6% to 2.0% per year.

Economic depreciation is the appropriate concept for measuring TFP, and we have consistently used economic depreciation rates in our measurement of TFP. Finally, the use of a forward-looking cost of capital (which is likely to be higher that the LECs cost of capital under regulation) would have a minimal effect on measured LEC TFP.

BELLSOUTH TELECOMMUNICATIONS, INC.

FPSC DKT NO 990649-TP

STAFF'S 6TH REQUEST FOR PRODUCTIOON OF DOCUMENTS

POD NO. ____________

PROPRIETARY

BellSouth Telecommunications, Inc.
FPSC Dkt No. 990649-TP
AT&T's 1st Set of Interrogatories
May 2, 2000
Item No. 36
Page 1 of 1
Proprietary

REQUEST: For the last five years of available data, please provide the number of minutes per line in Florida that are 1) local, 2) toll, and 3) IXC access. If this information is not available per line, please provide BellSouth total minutes in Florida that are 1) local, 2) toll, and 3) IXC access. Specify whether the minutes are monthly, annual, etc. and for what year. Also provide total switched lines in Florida for the same time period.

RESPONSE: BellSouth is providing toll messages for the past three years, which is the extent of the available data. This information is proprietary and is being provided subject to the written protective agreement executed by AT&T.

RESPONSE PROVIDED BY: Steve Bigelow
Director
3535 Colonnade Pkwy
Birmingham, AL 35243

BellSouth Telecommunications, Inc.
FPSC Dkt No. 990649-TP
AT&T's 1st Set of Interrogatories
May 2, 2000
Item No. 44
Attachment
Proprietary

Entire Document

BELLSOUTH TELECOMMUNICATIONS, INC.

FPSC DKT NO 990649-TP

AT&T'S 2ND REQUEST FOR PRODUCTION OF DOCUMENTS

POD NO. 32

PROPRIETARY

Entire Page

BELLSOUTH TELECOMMUNICATIONS, INC.

FPSC DKT NO 990649-TP

AT&T'S 2ND REQUEST FOR PRODUCTION OF DOCUMENTS

POD NO. 33

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	A	B	C
1	Florida		
2	Back-up for CLASS Modem Card Penetration		
3	Study Period: 2000-2002		
4			
5			
6	Item/Description	Source	Amount
7	**Lines per Office w/ CND**	Network	
8	Residence		12,000
9	Business		900
10			
11	**Percent Distribution**		
12	Residence		
13	Business		
14			
15	**Melded Input - Lines per Office**	Ln8*Ln12+Ln9*Ln13	8,699
16			
17	**Average Number of Lines per Office**	SCIS/MO Inputs	
18			
19	**Penetration of CND**	Ln15/Ln17	**54%**

Number Portability
Calculation of DMS Vendor EF&I Investments

Residential

Workpaper: B8
State: All
Date: 11/25/96
Page: 1 of 1

LN	Description	Source	Amount
1	**DMS Investment Calculations -- Marginal**		
2			
3	**Investment Category**		
4	A. Getting Started	MO1*IP1*RT33	
5	B. CCS		
6	C. Call		
7	D. Minmum Cost per Line		
8	E. Hardware		
9	F. Memory	(MP33*IT14+MD33*IT15)/IP2+MF33*IT16	
10	G. SSP Octet		
11	H. Total End Office (USOC: TNPRL)	LN4+LN9	
12	I. Investment per Additional Path	LN4+MF33*IT16	
13			
14	**Model Office Outputs -- Marginal**	SCIS/MO BC836	
15	MO1 Investment per Meas		
16			
17	**User Input**		
18	IP1 BH Calls per Line	Network Cost Group	
19	IP2 Average RCF Lines per Office	StatMaster Extract	
20			
21	**SCIS/IN Database Items**	SCIS/IN Tables	
22	IT14 Program Store Cost per Word		
23	IT15 Data Store Cost per Word		
24	IT16 Data Fill Cost per Word		
25	MD33 Data Store Memory Requirement		
26	MF33 Data Fill Memory Requirement		
27	MP33 Program Store Memory Requirement		
28	RT33 Realtime Requirement per RCF Call		
29			
30			
31	**DMS Investment Calculations -- Capacity**		
32			
33	**Investment Category**		
34	A. Getting Started	MO1*IP1*RT33	
35	B. CCS		
36	C. Call		
37	D. Minmum Cost per Line		
38	E. Hardware		
39	F. Memory	(MP33*IT14+MD33*IT15)/IP2+MF33*IT16	
40	G. SSP Octet		
41	H. Total End Office (USOC: TNPRL)	LN34+LN39	
42	I. Investment per Additional Path	LN34+MF33*IT16	
43			
44	**Model Office Outputs -- Capacity**	SCIS/MO BC836	
45	MO1 Investment per Meas		
46			
47	**User Input**		
48	IP1 BH Calls per Line	Network Cost Group	
49	IP2 Average RCF Lines per Office	StatMaster Extract	
50			
51	**SCIS/IN Database Items**	SCIS/IN Tables	
52	IT14 Program Store Cost per Word		
53	IT15 Data Store Cost per Word		
54	IT16 Data Fill Cost per Word		
55	MD33 Data Store Memory Requirement		
56	MF33 Data Fill Memory Requirement		
57	MP33 Program Store Memory Requirement		
58	RT33 Realtime Requirement per RCF Call		
59			
60			

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8

BST Projection - (BOY)

a =
b =

	FP Ratio	% Fiber	% Copper	HISTORICAL % Fiber	HISTORICAL % Copper
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					

Development of IOF Metallic Cable Future Life Expectancy

BOY Year	% Fiber	% Copper	Survival Rate	Percent Of Pre-1998 Surviving Circuits
A	B	C = 1 - B	D	E[+1] = E * D
2000			63.45%	100.0%
2001			0.00%	63.4%
2002				0.0%

Future Life Expectancy: Sum(col-E)/E[1999] - 0.5 = 1.1 Years

BellSouth Feeder Cable

		Universe 1		Universe 2		Total				
		a =		a =						
		b =		b =						
		SR(b) =		SR(b) =						
A BOY Year	B Actual Fiber Penetration %	C Projected Fiber Penetration %	D Contribution to Total Substitution Rate % Universe 1	E Projected Fiber Penetration %	F Contribution to Total Substitution Rate % Universe 2	G Projected Fiber Penetration % Total	H Technological Obsolescence Rate %	I Historical Mortality Rate %	J Combined Mortality Rate %	K Embedded Equipment Surviving %
1982		0.95%	0.19%	-0.19%	0.00%	0.19%				
1983		1.50%	0.29%	-0.29%	0.00%	0.29%				
1984		2.36%	0.46%	-0.46%	0.00%	0.46%				
1985		3.69%	0.72%	-0.72%	0.00%	0.72%				
1986		5.73%	1.12%	-1.12%	0.00%	1.12%				
1987		8.79%	1.71%	-1.71%	0.00%	1.71%				
1988		13.25%	2.58%	-2.58%	0.00%	2.58%				
1989		19.51%	3.80%	-3.80%	0.00%	3.80%				
1990		27.76%	5.41%	-5.41%	0.00%	5.41%				
1991	7.47%	37.87%	7.38%	0.09%	0.00%	7.38%				
1992	9.61%	49.16%	9.58%	0.03%	0.00%	9.58%	2.37%			
1993	11.49%	60.53%	11.80%	-0.31%	0.00%	11.80%	2.45%			
1994	14.04%	70.86%	13.81%	0.23%	0.18%	14.00%	2.49%			
1995	17.18%	79.41%	15.48%	1.71%	1.37%	16.85%	3.32%			
1996	19.49%	85.95%	16.75%	2.74%	2.20%	18.96%	2.53%			
1997	22.54%	90.66%	17.67%	4.87%	3.92%	21.59%	3.25%			
1998	25.83%	93.90%	18.30%	7.53%	6.06%	24.36%	3.54%			
1999	28.83%	96.06%	18.72%	11.92%	9.60%	28.32%	5.23%			
2000		97.48%	19.00%	16.80%	13.52%	32.52%	5.86%	1.40%	7.19%	100.00%
2001		98.40%	19.18%	23.15%	18.64%	37.81%	7.84%	1.51%	9.23%	92.81%
2002		98.98%	19.29%	31.00%	24.96%	44.25%	10.35%	1.63%	11.81%	84.24%
2003		99.36%	19.36%	40.13%	32.31%	51.67%	13.31%	1.74%	14.82%	74.29%
2004		99.59%	19.41%	50.00%	40.26%	59.67%	16.54%	1.86%	18.09%	63.28%
2005		99.74%	19.44%	59.87%	48.20%	67.64%	19.77%	1.99%	21.37%	51.83%
2006		99.84%	19.46%	69.00%	55.55%	75.01%	22.77%	2.12%	24.41%	40.76%
2007		99.90%	19.47%	76.85%	61.87%	81.34%	25.35%	2.26%	27.03%	30.81%
2008		99.94%	19.48%	83.20%	66.99%	86.46%	27.44%	2.39%	29.18%	22.48%
2009		99.96%	19.48%	88.08%	70.91%	90.40%	29.05%	2.54%	30.85%	15.92%
2010		99.97%	19.49%	91.68%	73.81%	93.30%	30.23%	2.69%	32.11%	11.01%
2011		99.98%	19.49%	94.27%	75.89%	95.38%	31.08%	2.84%	33.04%	7.47%
2012		99.99%	19.49%	96.08%	77.36%	96.84%	31.68%	2.84%	33.62%	5.00%
2013		99.99%	19.49%	97.34%	78.37%	97.86%	32.09%	2.84%	34.02%	3.32%
2014		100.00%	19.49%	98.20%	79.06%	98.55%	32.38%	2.84%	34.30%	2.19%
2015		100.00%	19.49%	98.79%	79.53%	99.02%	32.57%	2.84%	34.49%	1.44%
2016		100.00%	19.49%	99.18%	79.85%	99.34%	32.70%	2.84%	34.61%	0.94%
2017		100.00%	19.49%	99.45%	80.07%	99.56%	32.79%	2.84%	34.70%	0.62%
								Average Remaining Life =		5.5

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BellSouth Distribution Cable

A	B	C	D	E	F	G	H	I	J
BOY Year	Projected Fiber Penetration %	Technological Obsolescence Rate % (due to Fiber)	Projected Wireless Penetration %	Projected Wireless Penetration % (adjusted for data growth)	Technological Obsolescence Rate % (due to Wireless)	Combined Technological Obs. Rate %	Historical Mortality Rate %	Combined Mortality Rate %	Embedded Equipment Surviving %
1998									
1999									
2000									
2001									100.00%
2002									97.96%
2003									95.43%
2004									92.23%
2005									88.13%
2006									82.85%
2007									76.11%
2008									67.05%
2009									56.65%
2010									44.58%
2011									32.42%
2012									22.49%
2013									14.98%
2014									9.56%
2015									5.90%
2016									3.55%
2017									2.10%
2018									1.24%
2019									0.73%
2020									0.42%
									0.25%
							Average Remaining Life =		8.4

Analog Circuit Eqpt

Fiber Penetration in the Feeder

NOTE:
The Life estiamte of Analog Ckt eqpt is based on the demise of copper in the feeder. The life curves for feeder copper are shown here (end date of 2012).

A BOY Year	B Projected Fiber Penetration %	C Technological Obsolessence Rate %	D Historical Mortality Rate %	E Combined Mortality Rate %	F Embedded Equipment Surviving %
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					100.00%
2001					86.30%
2002					72.03%
2003					57.76%
2004					44.22%
2005					32.17%
2006					22.20%
2007					14.55%
2008					9.09%
2009					5.44%
2010					3.14%
2011					1.75%
2012					
2013					

Average Remaining Life = **4.0**

TECHNOLOGY: **ANALOG / DIGITAL CONVERSION CIRCUIT EQUIPMENT**
UNITS: **(CIRCUITS)**

YEAR	% SURVIVING BOY	(Dt) DISPLACEMENT TECHNOLOGICAL OBSOLESCENCE	(Dm) DISPLACEMENT NORMAL MORTALITY	(Dc) DISPLACEMENT COMBINED RATE	(Sc) SURVIVAL COMBINED RATE
		NOTE 1	NOTE 2		
1993					
1994					
1995					
1996					
1997	A	B	C	D	E
1998					
1999					
2000	100.0%				0.91674
2001	91.7%				0.72746
2002	66.7%				0.52434
2003	35.0%				0.48361
2004	16.9%				0.12987
2005	2.2%				0.08601
2006	0.0%				0.08485

ARL = **2.6**

NOTE 1:

* H = HISTORICAL
* E = ESTIMATED

NOTE 2:

3

TECHNOLOGY: **OTHER DIGITAL CIRCUIT EQUIPMENT**
UNITS: **(CIRCUITS)**

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1.

YEAR	BOY SURVIVORS	FIBER PENETRATION RATE	TECHNOLOGICAL OBSOLESENCE RATE	% SURVIVING BOY	(Dm) DISPLACEMENT RATE	COMBINED RATE	% SURVIVING BOY	(Sm) SURVIVAL RATE
					NOTE 1			
		A	B	C	D	E	F	G
1992								
1993								
1994								
1995								
1996								
1997								
1998								
1999								
2000							100.00%	0.93384
2001							93.38%	0.92467
2002							86.35%	0.91542
2003							79.05%	0.90612
2004							71.63%	0.89670
2005							64.23%	0.88730
2006							56.99%	0.83187
2007							47.41%	0.81738
2008							38.75%	0.79138
2009							30.67%	0.76119
2010							23.34%	0.72764
2011							16.98%	0.69258
2012							11.76%	0.65788
2013							7.74%	0.62580
2014							4.84%	0.59756
2015							2.89%	0.57373
2016							1.66%	0.55408
2017							0.92%	0.53792
2018							0.49%	0.52460
2019							0.26%	0.00000
2020							0.20%	0
2021								
2022								
2023								
2024								
2025								
2026								
2027								
2028								
2029								
2030								

6.90

NOTE 1:

I

ASYNCHRONOUS OPTICAL CIRCUIT EQUIPMENT
(CIRCUITS)

YEAR	BOY SURVIVORS	% SURVIVING BOY	(Dt) DISPLACEMENT TECHNOLOGICAL OBSOLESCENCE	(Dm) DISPLACEMENT NORMAL MORTALITY	(Dc) DISPLACEMENT COMBINED RATE
			NOTE 1	NOTE 2	
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000		100.0%			
2001		79.9%			
2002		60.5%			
2003		43.5%			
2004		29.8%			
2005		19.6%			
2006		12.4%			
2007		7.7%			
2008		4.6%			
2009		0.0%			
2010					
	ARL =	3.1			

NOTE 1:

NOTE 2:

TECHNOLOGY: **ASYNCHRONOUS OPTICAL CIRCUIT EQUIPMENT**
UNITS: **(CIRCUITS)**

(Sc) SURVIVAL COMBINED RATE		ASYNC OPTICAL % of Optical (1999 ANALYSIS) (BOY) Q	SONET % of Optical (1999 ANALYSIS) (BOY) R	F-P RATIO (NEW/OLD) (1999 ANALYSIS) S	(Dt) DISPLACEMENT TECHNOLOGICAL OBSOLESCENCE (1999 ANALYSIS) T = 1 - (Q(+1) / Q)	(Dt) DISPLACEMENT TECHNOLOGICAL OBSOLESCENCE (1999 ANALYSIS) U = T(-3)	IOF & Loop Actual % of Optical
	SR =						
	a =						
	b =						
	1991						
	1992						
	1993						
	1994						
	1995						
	1996						
	1997						
	1998						
	1999						
0.79886	2000						
0.75713	2001						
0.71855	2002						
0.68508	2003						
0.65745	2004						
0.63530	2005						
0.61771	2006						
0.60357	2007						
0.59202	2008						
0.58218	2009						
0.57357	2010						
1.00000	2011						
1.00000	2012						
	2013						
	2014						
	2015						
	2016						
	2017						
	2018						
	2019						
	2020						

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BST
SONET IOF Equipment
Development of the Economic Life and the Average Remaining Life

	Newly Placed Equipment = c = g = s		NG-SONET = a = b = sr		SONET Equipment		
Year	Beginning of Period Surviving % A	Historical Mortality Rate % B	Penetration % C	Technological Obsolessence Rate % D	Historical Mortality Rate % E	Combined Mortality Rate % F	Embedded Surviving % G
2000							100.00%
2001							93.35%
2002							86.27%
2003							78.89%
2004							71.37%
2005							63.83%
2006							56.39%
2007							49.15%
2008							42.19%
2009							35.55%
2010							29.28%
2011							23.43%
2012							18.05%
2013							13.23%
2014							9.13%
2015							5.87%
2016							3.50%
2017							1.95%
2018							1.02%
2019							0.51%
2020							0.24%
2021							0.11%
2022							0.05%
2023							
2024							
2025							
2026							
2027							
2028							
2029							
2030							
2031							
2032							
2033							
2034							
2035							
2036							
2037							
2038							
2039							
2040							

Average Remaining Life = 7.3

16

BST
Digital Switching - Analog Line Equipment (ALE)
Development of the Average Remaining Life

IDLC Actual %

BOY Year	Projected IDLC Penetration %	Technological Obsolescence Rate %	Historical Mortality Rate %	Combined Mortality Rate %	Survivors %
1998					
1999					
2000					100.00%
2001					86.58%
2002					73.08%
2003					60.05%
2004					47.97%
2005					37.25%
2006					28.11%
2007					20.63%
2008					14.75%
2009					10.29%
2010					7.01%
2011					4.67%
2012					3.06%
2013					1.96%
2014					1.24%
2015					0.77%
2016					0.47%
2017					0.37%
2018					0.28%
2019					0.21%
2020					0.16%
2021					

Average Remaining Life = 4.49

Historical Mortality Patterns of Digital Switching ALE

ALE Technology

BST
Digital Switching - Digital Line Equipment (DLE)
Development of the Average Remaining Life

= c
= g
= s

Used in 1997 study
= a
= b
= sr

Year	Newly Placed DLE Equipment: Beginning of Period Surviving %	Newly Placed DLE Equipment: Historical Mortality Rate %	TR303 Complient DLE: Penetration %	TR303 Complient DLE: Technological Obsolessence Rate %	DLE Switching Equipment: Historical Mortality Rate %	DLE Switching Equipment: Combined Mortality Rate %	DLE Switching Equipment: Embedded Surviving %
2000							
2001							100.00%
2002							92.83%
2003							84.80%
2004							75.75%
2005							65.69%
2006							54.61%
2007							42.59%
2008							30.12%
2009							18.38%
2010							9.07%
2011							3.36%
2012							0.86%
2013							0.15%
2014							0.02%
2015							0.00%
2016							0.00%
2017							0.00%
2018							0.00%
2019							0.00%
2020							0.00%
2021							0.00%
2022							0.00%
2023							0.00%
2024							0.00%
2025							0.00%
2026							0.00%
2027							0.00%
2028							
2029							
2030							
2031							
2032							
2033							
2034							
2035							
2036							
2037							
2038							
2039							

Average Remaining Life = 5.3

Notes:

Historical Mortality Patterns of Digital Switching DLE

TR-303 DLE Technology

BST
Digital Switching - Trunk Interface Equipment (TIE)
Development of the Average Remaining Life

	Newly Placed DLE Equipment =c =g =s		SONET Complient TIE (from 1998 study) =a =b =sr		TIE Switching Equipment		
Year	Beginning of Period Surviving % (A)	Historical Mortality Rate % (B)	Penetration % (C)	Technological Obsolessence Rate % (D)	Historical Mortality Rate % (E)	Combined Mortality Rate % (F)	Embedded Surviving % (G)
2000							
2001							1.00000
2002							90.28%
2003							79.46%
2004							67.79%
2005							55.69%
2006							43.76%
2007							32.74%
2008							23.27%
2009							15.74%
2010							10.17%
2011							6.32%
2012							3.79%
2013							2.22%
2014							1.27%
2015							0.71%
2016							0.39%
2017							0.21%
2018							0.11%
2019							0.06%
2020							0.00%
2021							0.00%
2022							0.00%
2023							0.00%
2024							0.00%
2025							0.00%
2026							0.00%
2027							0.00%
2028							0.00%
2029							
2030							
2031							
2032							
2033							
2034							
2035							
2036							
2037							
2038							
2039							

Average Remaining Life = 4.8

Notes:

Historical Mortality Patterns of Digital Switching TIE 1–8

SONET TIE Technology 9–28

D

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RHYTHMS LINKS' FIRST REQUEST FOR PRODUCTIOON OF DOCUMENTS

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AT&T's 1st POD ✓
AT&T's 2nd POD ✓
Staff's 4th POD ✓
Staff's 5th POD ✓
FCCA's 1st POD ✓

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RHYTHMS LINKS' FIRST REQUEST FOR PRODUCTIOON OF DOCUMENTS

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RHYTHMS LINKS' FIRST REQUEST FOR PRODUCTIOON OF DOCUMENTS

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