BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF DETERMINING PRICES FOR UNBUNDLED NETWORK ELEMENTS (UNEs) IN QWEST CORPORATION'S STATEMENT OF GENERALLY AVAILABLE TERMS (SGAT)	))))	DOCKET NO. TC01-098

DIRECT TESTIMONY OF

PETER J. GOSE

On behalf of

THE STAFF OF THE PUBLIC UTILITIES COMMISSION OF SOUTH DAKOTA

PUBLIC VERSION

June 16, 2003

CONFIDENTIAL INFORMATION REDACTED AS FOLLOWS **[redacted]**

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. My name is Peter J. Gose. My business address is QSI Consulting, 2912 Hickory Ridge, Independence, Missouri 64057.

Q. PLEASE DESCRIBE QSI CONSULTING AND YOUR POSITION WITH THE FIRM.

A. QSI Consulting (QSI) is a consulting firm specializing in the areas of telecommunications policy, econometric analysis and computer aided modeling. I currently serve as a Senior Vice President within the firm.

Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH TELECOMMUNICATIONS POLICY ISSUES AND YOUR RELEVANT WORK HISTORY.

A. Prior to co-founding QSI, I worked as a Senior Consultant with the telecommunications consulting firm of Competitive Strategies Group (CSG). At CSG, I was involved primarily with cost issues, cost study reviews, tariff database development and computer modeling.

Immediately prior to joining CSG, I was a Manager of Tariffs and Training with the National Exchange Carrier Association (NECA). My responsibilities included providing tariff interpretations and training to the local exchange carriers that were members of NECA. I also provided training to public utility commission staffs, interexchange carriers, competitive local exchange carriers, and consultants.

Before joining NECA I served as a Management Services Specialist and a Federal Telecommunications Analyst at the Missouri Public Service Commission for over six years. As a Management Services Specialist I was responsible for the performance of management audits to identify opportunities for improvement in public utility operations. As a Federal Telecommunications Analyst I was responsible for analysis of federal telecommunications issues that had the potential to affect Missouri consumers. I was responsible for the preparation of comments in Federal Communications Commission (FCC) dockets and for conducting impact analyses respecting FCC-proposed rule makings. I assisted the Federal-State Joint Board staff in analysis of Universal Service Fund data collections, including modeling proposed changes to the Universal Service Fund. Along with the FCC, I participated in a joint audit of the affiliate transactions, including compliance with cost accounting manuals, of a Regional Bell Operating Company.

I graduated from Northwest Missouri State University with a Bachelor of Science degree with majors in Finance and Business Administration and a minor in Economics. I also received a Master of Business Administration degree from Northwest Missouri State University. While working at the Missouri Public Service Commission I additionally earned a Bachelor of Science degree in Accounting from Lincoln University.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE PUBLIC UTILITY COMMISSIONS?

A. Yes, I have. A listing the cases I have participated in is included in as Attachment PJG-1 to this testimony.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING AND WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. QSI has been retained by the Staff of the South Dakota Public Utilities Commission. The principal purpose of my testimony is to provide the South Dakota Public Utilities Commission (SDPUC) with recommendations regarding the cost factors applied by Qwest to its recurring and nonrecurring charges. My testimony also provides observations and recommendations with respect to the Qwest switching model.

II. QWEST PRICE DEVELOPMENT METHODOLOGY

Q. PLEASE DESCRIBE HOW QWEST GENERALLY DEVELOPS A PRICE FOR A PARTICULAR NETWORK ELEMENT.

A. The Qwest studies examine the costs of providing certain network elements. The testimony of Messrs. Gates, Stacy, and Morrison describe in detail how these direct costs are developed. Once the direct costs are derived, Qwest essentially adheres to the following algorithm in developing prices for recurring and nonrecurring elements:

	Total Direct Costs
+	***Investment Loadings (factors applied to total direct costs)***
=	***Total Investment Based Cost***
x	***Annual Cost Factors / 12***
=	***Monthly Investment Based Costs***
+	***Element Specific Expenses (e.g. billing and collection)***
+	***Marketing and Business Fees***

+ *Other Direct Expenses (e.g. network operations and support assets)*

+ *Common Costs*

= *Total Element Long-Run Incremental Cost (TELRIC) Rate*

Q. DO YOU HAVE ANY CONCERNS WITH THE WAY QWEST HAS USED THIS ALGORITHM TO DEVELOP THE NRC RATES?

A. Yes. I have concerns with Qwest's application of factors to the Investment Based and Direct Costs to recover marketing and business fees as well as the other direct expenses.

Q. PLEASE GIVE AN EXAMPLE OF WHAT QWEST CONSIDERS TO BE MARKETING AND BUSINESS FEE COSTS.

A. Qwest includes product management and advertising expense[1], sales expense, and business fees among these costs. Application of certain of these costs seems out of place. For example, aside from minimal occasions for answering CLEC questions, Qwest should not have to provide for much, if any, product management or sales expense for recurring or non-recurring charges for certain UNEs.

Q. HAVE SIMILAR OBSERVATIONS BEEN MADE IN OTHER JURISDICTIONS WITH RESPECT TO QWEST'S MARKETING AND BUSINESS FEE COSTS?

A. Yes, they have. More specifically the Post-Hearing brief of WorldCom in a similar matter before the Washington Utilities and Transportation Commission addressed this very issue with respect to non-recurring charges by observing the following:

> Non-recurring costs are the one-time costs incurred in order to provision network elements. The Joint CLECs have identified a number of problems

[1] Advertising expense factors have been set to zero in the Qwest models in South Dakota.

> with Qwest's non-recurring cost studies with which WorldCom concurs. Additionally, WorldCom challenges Qwest's inclusion of a product management expense factor as part of its development of Direct Costs. The cross-examination of Ms. Million demonstrated that the majority of activities associated with product management are unnecessary in the case of wholesale services. *Tr.* At pp. 1895-1898. Further, the costs associated with activities such as product and service identification that are typically recovered through application of a product management expense factor are already being recovered by the ILECs as part of their OSS recovery in the case of network elements. *Tr.* At 1896. For this reason, WorldCom recommends that the Commission require Qwest to reduce its product management expense factor to zero.[2]

The same concerns hold true for sales expense factors applied to non-recurring charges for wholesale services.

Q. CAN QWEST ISOLATE COSTS SUCH AS PRODUCT MANAGEMENT AND SALES COSTS FOR WHOLESALE ELEMENTS AND IF SO WHAT SHOULD QWEST DO WITH THAT INFORMATION?

A. In testimony in other jurisdictions Qwest witnesses have insisted that it was appropriate to directly assign costs in study development because items such as product management and sales costs can be identified. If this is so, then Qwest should put forth a stand-alone study that specifically identifies these costs and maps them to specific wholesale elements. Said another way, Qwest should be required to prove why the same amount or percentage of sales and product management expense applies to a recurring charge for an unbundled loop as well as to a non-recurring charge to remove a load coil.

Q. WHAT COSTS DOES QWEST INCLUDE IN THE APPLICATION OF THE OTHER DIRECT EXPENSES?

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[2] Washington Utilities and Transportation Commission Docket No. 003013, Part B, In The Matter of The Continued

A. Qwest's other direct expenses include network operations, network support assets, general support assets, general purpose computers, uncollectibles, accounting and finance expense, human resource expense, information management expense, and intangibles.

Q. HOW DOES QWEST APPLY COMMON COSTS TO THE DIRECT COSTS?

A. Qwest applies factors for several categories of common costs. These factors add to the total cost of the investment based and direct dosts.

Q. DO YOU BELIEVE THE APPLICATION OF FACTORS FOR MARKETING AND BUSINESS FEES TO NRCS COMPORT WITH TELRIC PRINCIPLES?

A. No, I do not. The FCC rule §51.505 states that the forward-looking economic cost of an element equals the sum of the TELRIC cost of the element plus a reasonable allocation of forward-looking Common Costs. Hence any factor allocations not directly linked to a particular non-recurring charge should be removed. The Qwest cost factor model does not adequately demonstrate why certain costs should apply to non-recurring charges. Until such time as Qwest makes such a showing, these marketing and business fee costs should not be included.

Q. HAVE YOU REMOVED THESE COSTS IN THE ADJUSTMENTS YOU HAVE MADE TO THE QWEST FACTORS MODELS?

A. No, I have not; however, other adjustments made to the models with respect to forward-looking maintenance expense calculations through a ratio of current expenses and current investment as opposed to historical investment have had an impact on these factors. These adjustments are described later in this testimony.

Costing and Pricing of Unbundled Network Elements, Transport, Terminations and Resale., ¶11. Filed May 29, 2001.

III. QWEST'S COST FACTOR FOR DIRECTLY ATTRIBUTED EXPENSES AND COMMON COSTS

Q. EARLIER IN YOUR TESTIMONY YOU INDICATED THAT QWEST USES DIFFERENT TERMS IN SOUTH DAKOTA FOR ITS FACTOR CATEGORIES THAN IT HAS IN OTHER STATES. HAVE OTHER STATES REQUIRED QWEST TO USE SPECIFIC PERCENTAGES FOR THE VARIOUS FACTOR CATEGORIES?

A. Yes. As an example, the Washington Utilities and Transportation Commission approved a Directly Attributable factor of ** [redacted] ** and a common cost factor of ** [redacted] ** for Qwest.[3]. These compare to the following in South Dakota

**

Marketing and Business Fees	[redacted]
Other Direct Expenses	[redacted]
Common Factors	[redacted]
TOTAL OF ALL FACTORS	[redacted]

**

Q. WHAT ARE YOUR RECOMMENDATIONS FOR DIRECTLY ATTRIBUTED EXPENSES AND COMMON COSTS IN THIS PROCEEDING?

A. Absent a specific showing from Qwest with respect to the appropriateness of the factors to specific elements, I recommend that Qwest use factors no higher than those approved in Washington for Directly Attributed Expenses and Common Costs.

IV. MAINTENANCE EXPENSE FACTORS

Q. WHAT ARE MAINTENANCE EXPENSE FACTORS?

A. Maintenance expense factors are a tool used to estimate the amount of operating expenses required to maintain the investment necessary to operate a telecommunications network. They are investment-based factors that are calculated through a relationship of maintenance expenses and the investment those expenses support. This investment is typically determined through the use of cost models that take into account the quantity of the various components required to operate a telecommunications network and the prices of these components. In this proceeding, Qwest's Integrated Cost Model (ICM) and stand-alone models and studies purportedly estimate the amount of investment required to operate a forward-looking network.

Q. HOW ARE MAINTENANCE FACTORS CALCULATED?

A. Maintenance expense factors are calculated by dividing maintenance expenses by the plant investment the maintenance expenses support. This is also called an expense-to-investment ratio which is nothing more than a fractional representation of the relationship that maintenance expenses have with investments. The following hypothetical example illustrates the calculation of a maintenance expense factor for copper cable:

Copper cable maintenance expense (USOA 6421)		=	$1,000
Copper cable investment (USOA 2421)		=	$100,000
Maintenance factor	= $1,000 / $100,000	=	0.01000

[3] Commission's Seventeenth Supplemental Order issued in Phase II of UT-960369.[3] In this order issued on September 23, 1999, the Commission accepted U S WEST's (Qwest's predecessor) proposal to increase the NRC by ** 19.62%

This maintenance factor is then applied against copper cable investment determined by a cost model to estimate copper cable maintenance expenses.

Q. PLEASE DESCRIBE HOW MAINTENANCE FACTORS CAN BE OVERSTATED.

A. Maintenance factors can be overstated in two primary ways. First, the numerator, maintenance expenses, can be overstated by not removing expenses that should be properly excluded from a forward-looking cost study. Expenses incurred to maintain obsolete equipment such as analog switches should be excluded from a TELRIC study because this equipment is not forward-looking, least cost nor most efficient. Also, older vintage equipment typically costs more to maintain which inflates the amount of maintenance expense that would occur with a forward-looking network.

The second way a maintenance factor can be overstated is when the denominator, investment, is understated. This can occur when the historical cost of investment is used in the expense-to-investment ratio instead of the current value of that investment. Plant investment is recorded on the books of a telecommunications carrier at the original cost of the equipment. Under the FCC's Uniform System of Accounts (USOA), the original cost of an asset purchased by a carrier is never adjusted to reflect the value of the asset in today's dollars.

Q. WHAT IS THE APPROPRIATE METHODOLOGY FOR CALCULATING MAINTENANCE EXPENSE FACTORS IN A FORWARD-LOOKING CONSTRUCT?

A. A forward-looking construct is one that determines forward-looking maintenance expense through a ratio of current (or book) expenses and current investment as opposed to historical investment. This

** for attributed expenses and by ** 4.05% ** for Common Costs.

methodology was first articulated by the FCC in its *Inputs Further Notice*[4] and then adopted in its *USF Inputs Order*.[5] In the *Inputs Further Notice*, the FCC tentatively concluded that forward-looking plant specific operations expense input values should be calculated as the ratio of current or booked expense to current investment.[6] The FCC stated that these expense-to-investment ratios should then be multiplied within a cost model by model-derived investment to produce an estimate of forward-looking plant-specific operations expenses,[7] which include Network Support Expense, General Support Expense, Central Office Switching Expense, Central Office Transmission Expense, Information Origination/Termination Expense, and Cable and Wire Facilities Expense. Most of these plant-specific operations expenses are considered maintenance expenses which are the focus of this portion of my analysis.

Q. PLEASE DESCRIBE CURRENT INVESTMENT AND HOW IT SHOULD BE DETERMINED.

A. The FCC stated that current investment is determined by restating historic accounting balances using a current cost-to-book cost ("CC / BC") ratio.[8] Historic cost is restated because it reflects investment decisions made over many years. A current-to-book ratio restates historic costs to present day replacement cost. A current-to-book ratio will be greater than 1 if prices have risen over time for a particular asset. Conversely, the ratio will be less than 1 if prices have declined over time.

Q. HOW CAN CURRENT INVESTMENT BE USED TO DETERMINE FORWARD-

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4 See *In the Matter of Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs*, FCC 99-120, Further Notice of Proposed Rulemaking, Released May 28, 1999, ¶¶ 204-209. ("*Inputs Further Notice*")

5 See *In the Matter of Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs*, FCC 99-304, Tenth Report and Order, Released November 2, 1999, ¶ 365. ("*USF Inputs Order*")

6 See *Inputs Further Notice*, ¶ 204.

7 *Id.* ¶204.

LOOKING MAINTENANCE EXPENSES?

A. The following formula illustrates how current investment is used to help determine forward looking maintenance expenses:

$E_F = [E_C / (I_B * CB)] * I_F$

E_F = Forward-looking expenses

E_C = Current expenses

I_B = Book investment

CB = Current-to-Book investment ratio

I_F = Forward-looking investment

This formula is an algebraic representation of the FCC's aforementioned methodology.[9] In the above equation, current investment would be calculated by multiplying book investment by a current-to-book ratio (I_B * CB). Current maintenance expenses for a given type of equipment such as copper cable are then divided by current copper cable investment to calculate the expense-to-investment ratio. This ratio is then multiplied by forward-looking copper cable investment derived by the cost model. The result is an estimation of forward-looking maintenance copper cable expenses based upon an expense-to-investment ratio determined through a numerator and denominator from the same time period.

Q. CAN YOU ILLUSTRATE THE IMPACT OF USING THE FCC'S ADOPTED EXPENSE FACTOR METHODOLOGY?

A. Yes, I can. **Attachment PJG-2** demonstrates the impact on forward-looking maintenance expenses if the investment used to calculate the requisite expense-to-investment ratios is restated to current

[8] *Id.* ¶205.

prices. This analysis is organized into four steps based upon the aforementioned formula and the FCC's hypothetical values.

Q. WHAT IS THE FIRST STEP IN YOUR ANALYSIS?

A. Step 1 of my analysis is determination of the CC / BC ratio or CB in the equation noted above. Lines 1 – 5 show the calculation of the CB which is the quotient of dividing current prices by historic prices. The resulting ratio is then multiplied by existing network investment valued at historic prices to determine the reproduction cost of the current network configuration. This value is shown on line 6.

Q. WHAT IS THE SECOND STEP IN YOUR ANALYSIS?

A. Step 2 of my analysis is the determination of the maintenance expense factors that will be used to calculate forward-looking maintenance expenses within a TELRIC study. Lines 7 – 9 compare the maintenance factors determined using investment priced at historic cost versus current cost, and they demonstrate that factors are inversely proportional to changes in investment prices. Where prices have increased over time as with copper in my analysis, the expense factor based on current prices will be less than the factor based upon historic prices.

Q. WHAT IS THE THIRD STEP IN YOUR ANALYSIS?

A. Step 3 is the determination of forward-looking investment as illustrated in lines 10 – 12. Line 10 reflects a change in plant mix to include less copper in the network which one would expect in a forward-looking construct. The amount of copper required has decreased to 60 miles from the 100 miles assumed in the current network configuration. A TELRIC model would then value this forward-looking network design with current prices. This is reflected on lines 11 and 12.

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[9] See *USF Inputs Order*, ¶ 369.

Q. PLEASE DESCRIBE THE FOURTH STEP IN YOUR ANALYSIS.

A. Step 4 of my analysis is a comparison of the forward-looking maintenance expenses calculated by the two methods of determining expense factors: (1) using historic investment values as the denominator or (2) using current investment values as the denominator. Expense factors determined by both methods, on lines 8 and 9, are multiplied by the same forward-looking investment on line 12. In this hypothetical example, forward-looking maintenance expenses determined using factors based on historic investment are $9.00 on line 13 versus $6.00 using factors based on restated investment on line 14. The lower expense on line 14 is primarily due to an increase in the unit price of the higher dollar value component in the network, copper cable. If copper investment prices had declined, the associated maintenance costs in Step 4 would have increased due to a declining denominator in the expense-to-investment ratio.

Q. IS QWEST'S MAINTENANCE FACTOR METHODOLOGY CONSISTENT OR INCONSISTENT WITH THE FCC'S METHODOLOGY?

A. Qwest's maintenance factor methodology is inconsistent with the FCC's methodology. Qwest divides current maintenance costs by historic investment to derive the maintenance factors used within its cost models. Qwest's investment amounts are obtained from its MR2A reports[10] which reflect the cost of buildings and equipment purchased over a number of years. The FCC's methodology restates historic investment to current prices through the use of the CC / BC ratios discussed above.

Q. HAS QWEST PREVIOUSLY COMMENTED ON THE FCC'S EXPENSE-TO-INVESTMENT FACTOR METHODOLOGY?

[10] This refers to periodic accounting reports generated by Qwest.

A. Yes, it has. The former U S WEST asserted that in theory it is correct to adjust expense-to-investment ratios using current-to-book ratios. However, it also stated that in practice there is a problem because current-to-book ratios are based on reproduction costs and a forward-looking cost model estimates replacement costs.[11] U S WEST defined reproduction cost as the cost of reproducing the existing plant using today's prices and replacement cost as the cost of replacing the existing plant with equipment that harnesses new technologies and is priced at today's prices.[12] U S WEST went on to claim that the FCC's methodology increases the mismatch between historic and forward-looking investment because reproduction costs are not the same as replacement costs.[13]

Q. HOW DID THE FCC RESPOND TO THE FORMER U S WEST'S ARGUMENTS?

A. The FCC agreed that reproduction costs are not the same as replacement costs because the mix of equipment and technology will differ. However, the FCC stated that, "US West's claim that our methodology results in a mismatch because of these cost differences, however, is wrong."[14] The FCC went on to say that the hypothetical example used by U S WEST to illustrate its argument failed to account for changes in technology.

Q. WHAT IS THE IMPACT OF QWEST'S USE OF HISTORIC INVESTMENT IN CALCULATING MAINTENANCE FACTORS?

A. To the extent historic investment is less than investment restated to current prices, the maintenance expense factors calculated by Qwest will be overstated. An understated denominator in the expense-to-investment equation produces an overstated factor, which overstates UNE costs.

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11 See *USF Inputs Order*, ¶ 368.
12 *Id.*
13 *Id.*

Q. HAVE YOU ASCERTAINED WHETHER QWEST'S HISTORIC INVESTMENT VALUES ARE GREATER OR LESS THAN THE INVESTMENT RESTATED TO CURRENT PRICES?

A. Yes, I have. For Qwest operations in the state of New Mexico I investigated whether Qwest's historic investment is greater or less than restated investment by reviewing Qwest's CC / BC ratios. Where an investment account has a CC / BC ratio greater than 1, historic investment will be less than restated investment. Conversely, where an investment account has a CC / BC ratio less than 1, historic investment will be greater than restated investment. At this juncture I would note that I have used the New Mexico CC / BC ratios as a surrogate for South Dakota. My review of Qwest's information from New Mexico indicates that the following investment accounts used in the calculation of maintenance expense factors have CC / BC ratios greater than 1:

**

Acct.	Description	Acct.	Description
[redacted]			

[14] *Id.* ¶369.

[redacted]

**

Q. WOULD YOU EXPECT SOUTH DAKOTA CC / BC RATIOS TO FOLLOW A SIMILAR PATTERN?

A. Yes, I would.

Q. BASED ON THE RESULTS OF YOUR REVIEW OF THE NEW MEXICO CC / BC RATIONS, DO YOU HAVE ANY RECOMMENDATIONS?

A. Yes, I recommend that Qwest recalculate its maintenance expense factors using restated South Dakota specific investment values and that the results from such recalculation be applied to the cost studies appropriately. Qwest uses CC / BC ratios to restate investment used in calculating "Asset Related Expenses," known as asset related or secondary investment,[15] but it chooses not to use these CC / BC ratios for its other investment based factors. Qwest should apply these CC / BC factors consistently.

Q. HAVE YOU MADE THIS RECOMMENDED ADJUSTMENT TO QWEST'S COST STUDIES?

A. Yes, I have as an interim step. I have populated the South Dakota specific Qwest Expense Factors Module with the 2000 Qwest CC / BC ratios as reported in discovery answers from Qwest in New Mexico. I then copied all requisite formulas in the Microsoft Excel workbook containing the Expense Factors Module. In so doing the logic contained in the model performed the appropriate adjustments to the various accounts used to derive the expense factors.

[15] See Qwest's *Expense Factors Module – TELRIC User Manual*, Asset Related Expenses section.

Q. WHAT WERE THE RESULTS OF YOUR ADJUSTMENTS TO THIS PORTION OF THE QWEST COST STUDY?

A. The results were mixed for various account types with some accounts increasing and others decreasing; however, the general result was a decrease in the maintenance factors overall. I have attached **Attachment PJG-3** to this testimony that provides a before and after analysis of the impact of the changes described above.

Q. AFTER MAKING THESE CHANGES WHAT DID YOU DO WITH THE RESULTS?

A. Once all the changes were made I forwarded the revised Expense Factors Module to Messrs. Gates, Morrison and Stacy for inclusion in their analysis of loops, non-recurring activities, and switching respectively.

Q. HAVE YOU PERFORMED ANY ADDITIONAL ANALYSIS WITH RESPECT TO QWEST'S MAINTENANCE RATIOS?

A. Yes, I have. To do so I gathered plant investment balances for Qwest that were specific to South Dakota. The source of this information was publicly available ARMIS data filed by Qwest with the FCC in report 43-04. I also gathered South Dakota network specific operating expense data from the same Qwest ARMIS reports. From this information I was able to derive South Dakota specific maintenance ratios for Qwest for the years 1992 through 2001.

Q. WHAT WERE THE RESULTS OF YOUR ANALYSIS?

A. Though erratic in 2001, in general the results indicated that maintenance ratios are declining over time. In **Attachment PJG-4** I have included a chart that depicts the results of this analysis for central office switching, central office transmission, and cable and wire.

V. PRODUCTIVITY FACTORS

Q. WHAT IS A PRODUCTIVITY FACTOR?

A. A productivity factor is a mathematical method of measuring the productive efficiency of an economy or a firm. It can be defined either as the ratio of an output of given value to the value of the inputs required to produce the output, or obtaining a greater value of output from the same set of inputs. In either case, the fewer the inputs needed to produce the output, the more productive a producer is said to be.

Q. PLEASE DESCRIBE TRENDS WITH RESPECT TO PRODUCTIVITY.

A. Over the long run, firms tend to improve their productivity. The sources of the improvement are better production techniques, more capital equipment, reductions in redundant workers, better-trained workers, cheaper input prices and so forth. Indeed Qwest indicated in its 3rd Quarter 2001 Form 10Q filed with the Securities Exchange Commission that it had achieved significant cost savings through reductions in employees and operational efficiencies.

> Cost of services:
>
> ... Partially offsetting these increases were ***decreases in employee-related costs due to the reduction in the overall number of employees and contractors and other savings generated through cost controls and operational efficiencies since June 30, 2000. Operational efficiencies have been realized through the consolidation of core operational units that provide common services and by leveraging our purchasing power throughout the Company***. [emphasis added]
>
> Selling, general and administrative:
>
> Selling, general and administrative. Selling, general and administrative expenses, as a percentage of revenues, decreased from 28.2% for the three months ended September 30, 2000, to 27.4% for the three months ended

September 30, 2001. For the nine months ended September 30, 2001, selling, general and administrative expenses, as a percentage of revenues, decreased to 26.0% as compared to 29.2% for the nine months ended September 30, 2000. ***The percentage decreases were primarily attributable to the reduction in employee headcount and the number of contractors***, an increase in the pension credit (net of other post- retirement benefits) and lower taxes (other than income taxes).

Selling, general and administrative expenses for the three months ended September 30, 2001, decreased $39 million when compared to the same period of 2000. The decrease was primarily due to a higher pension credit (net of other post-retirement benefits) and lower commissions due to changes in our commission compensation plan. These lower costs were offset somewhat by higher professional fees, uncollectible expenses, marketing costs and occupancy costs relating to the opening of several new CyberCenters. For the nine months ended September 30, 2001, selling, general and administrative expenses decreased $159 million compared to the same period in 2000. ***The decrease was primarily attributable to decreased employee headcount and contractors, a reduction in advertising, lower taxes (other than income taxes), higher pension credit (net of other post-retirement benefits) and lower commissions due to changes in our commission compensation plan. Since June 30, 2000, we have reduced our employee headcount and contractors by approximately 13,400, a portion of which also impacts cost of services.*** Increases in professional fees, uncollectible expenses and occupancy costs relating to the opening of several new CyberCenters partially offset some of the cost decreases.[16] [emphasis added]

Q. WHAT EFFECTS CAN PRODUCTIVITY IMPROVEMENTS HAVE ON A FIRM?

A. Improved productivity enables a firm to lower its prices because it costs less for it to produce a given level of output, although it is not a certainty that lower prices will be the outcome. A firm may try to keep the productivity gains by pocketing the growing difference between its expenses and the market price for its product. In a competitive market, however, the presence of several producers forces the individual producers to pass along productivity improvements to customers. If a firm resists, its higher prices will cause it to lose market share.

[16] Qwest Form 10Q for Quarter Ended September 30, 2001, page 20.

Q. PLEASE EXPLAIN THE IMPORTANCE OF THE PRODUCTIVITY FACTOR IN THIS PROCEEDING.

A. The wholesale prices that are the outcome of this proceeding must be forward-looking and consistent with what an efficient producer would achieve. According to economic theory, competitive markets yield the most efficient outcomes for production. Thus, another way to describe the standard against which the wholesale rates are evaluated is to say the prices should emulate the prices of a competitive market. In a competitive market, producers must pass along productivity gains to customers, so the rates in this proceeding should reflect Qwest's productivity gains.

Q. WHAT HAS QWEST PROPOSED FOR A PRODUCTIVITY FACTOR IN THIS PROCEEDING?

A. Qwest has proposed a productivity factor of 5.0 percent as indicated in the expense factors module. It derives this factor from an FCC price-cap docket.[17] Qwest arrived at this value by finding an average of proposed X-factors[18] submitted by the FCC, AT&T, and the United States Telephone Association (USTA) in the docket. The FCC used multi-year spans to calculate several weighted averages. The averages Qwest used to find its productivity factor are shown in the following table. It is noteworthy that the FCC did not use the average of averages method Qwest uses for this proceeding.

Years	FCC	AT&T	USTA	Average
1990-95	5.8%	7.1%	2.9%	5.27%

[17] *In the Matters of Price-Cap Performance Review for Local Exchange Carriers and Access Charge Reform*, CC Docket Nos. 94-1 and 96-262, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket 96-262, FCC 97-159 (Released May 21, 1997), ¶¶133-143. ("*Price Cap Review*")

[18] "X-factor" is the term used for productivity gains in price-cap index calculations.

1991-95	5.2%	6.3%	2.7%	4.73%
Qwest Average				5.0%

Q. DID THE FCC ADOPT THE SAME X-FACTOR VALUE IN THE DOCKET?

A. No, the FCC adopted an X-factor, or productivity factor, of 6.5 percent in the same price-cap docket. The FCC used the same information that Qwest refers to as it arrived at this quite different conclusion.

Q. WHAT DID THE FCC SAY ABOUT THE PROCESS BY WHICH IT SELECTED THE PRODUCTIVITY FACTOR OF 6.5 PERCENT?

A. First, the FCC did not give the USTA proposal any weight because the amounts submitted did not incorporate reductions in input prices.[19] The FCC concluded telecommunications input prices have decreased in absolute terms and relative to the remainder of the economy, and that there was no reason to believe the trend would not continue. Thus, the USTA rates severely understate the actual value of the X-factor.[20] The FCC also found fault with AT&T's submission, but did give it some weight.[21] The FCC concluded that its own estimates of productivity growth for the two spans shown were reduced by anomalous results for 1992, and that there was an upward trend in the productivity rates starting with 1993. For all these reasons, the FCC settled on an X-factor of 6.0 percent.[22] Then the FCC added a 0.5 percent Consumer Productivity Dividend (CPD). The CPD was added to reflect that the productivity estimates for the years covered were from a period when the ILECs did not face competition. The FCC found the CPD to be an appropriate method of incorporating the

19 See *Price Cap Review* order, ¶137.
20 Id., ¶102.
21 Id., ¶137.
22 Id., ¶¶138-140.

greater pressure on ILECs to be efficient as the economic environment in which the ILECs operated switched from monopoly regulation to competitive.[23]

Q. GIVEN THAT THE FCC'S PRICE CAP REVIEW ORDER WAS RELEASED IN 1997, IS THERE CURRENT EVIDENCE THAT SUPPORTS THE FCC'S PROJECTION OF CONTINUED PRICE REDUCTIONS FOR THE INPUTS REQUIRED FOR TELECOMMUNICATIONS SERVICES?

A. Yes, there is current evidence of continued price reductions and such evidence is even specific to Qwest. The following Bloomberg news release was reported in the June 1, 2001 edition of the Denver Post, which is a full four years after the FCC's Price Cap Review order was released:

> QWEST MAY CUT BUDGET: Qwest Communications International Inc., which sells local and long-distance phone and data services, may reduce its 2001 capital-spending budget further as network-equipment makers lower prices. In April, the company cut its capital-spending forecast for this year by $300 million, to $9.2 billion. Communications-service providers are paying less for equipment to upgrade and expand their networks as suppliers such as Lucent Technologies Inc. cut prices amid slower demand, analysts said.

As demand has weakened for telecommunications equipment, prices have continued to decline causing significant losses for Lucent and other equipment manufacturers. The impact of these price reductions must be considered in addition to the job cuts of 16,000 implemented and expected since the Qwest-U S WEST merger through 2002.[24]

Q. WHAT PRODUCTIVITY FACTOR IS APPROPRIATE FOR THIS PROCEEDING?

A. The 6.5 percent productivity factor adopted by the FCC in its price-cap review is appropriate for use in calculating UNE rates. Hence, I have incorporated this productivity factor in my revisions of

[23] Id., ¶141.

Qwest's cost studies filed in this proceeding. Likewise, I provided these revisions to Messrs. Gates, Morrison and Stacy for inclusion in their reviews of the Qwest cost studies.

Q. CAN YOU POINT TO ANY INFORMATION FROM PUBLICALLY AVAILABLE SOURCES THAT SUBSTANTIATES YOUR RECOMMENDATION FOR ADOPTING THE FCC PRODUCTIVITY FACTOR?

A. Certainly. I have gathered access line counts for Qwest in South Dakota from 1992 through 2001. This information was found in the ARMIS 43-08 reports. Using this information I have created the chart as **Attachment PJG-5**. The chart depicts the steady access line growth that Qwest has experienced from 1992 through 2001. Given the same number or fewer employees over an increasing base of access lines results in an increased number of access lines served by each employee, and hence productivity correspondingly increases.

Q. DO YOU HAVE ANY ADDITIONAL MATERIAL THAT SUPPORTS YOUR PRODUCTIVITY ADJUSTMENT?

A. Yes, I have attached as **Attachment PJG-6** a document from the Industry Analysis and Technology Division of the Wireline Competition Bureau of the FCC entitled "Trends in Telephone Service". This document corroborates my recommendations with respect to the productivity factor adjustment.

Q. IN ADDITION TO MODIFICATIONS TO THE PRODUCTIVITY FACTOR, HAVE YOU MADE ANY OTHER CHANGES TO THE QWEST FACTORS MODEL?

A. Yes, I have used a data series of inflation information to trend inflation over a greater period of time. Since the purpose of this proceeding is to establish wholesale prices for inputs used by other

[24] See Million supplemental direct testimony, page 30.

producers of services, the appropriate index to calculate inflation for this proceeding is the Producer Price Index (PPI). According to the Bureau of Labor and Statistics (BLS) publication No. 98-3, *How Does the Producer Price Index Differ from the Consumer Price Index?*, the following describes why the PPI is the best measure of inflation for this proceeding:

> The target set of goods and services included in the PPI is the entire marketed output of U.S. producers. The set includes both goods and services purchased by other producers as inputs to their operations or as capital investment, as well as goods and services purchased by consumers either directly from the producer or indirectly through a retailer. .... In contrast, the target set of items included in the CPI is the set of goods and services purchased for personal consumption by urban U.S. households.[25]

Q. AFTER MAKING THE ADJUSTMENTS YOU DESCRIBE ABOVE DID YOU PROVIDE THE RESULTS TO MESSRS. GATES, STACY, AND MORRISON?

A. Yes, I did so that they could incorporate the updated factors into their individual analyses.

Q. BEFORE CONCLUDING YOUR TESTIMONY ON FACTORS, DO YOU HAVE ANY FINAL OBSERVATIONS?

A. Yes, I do. In reviewing several filings in the last six months in various jurisdictions, I have noticed that the cost of money component has been much lower for other firms. In reviewing the Qwest capital structure and the debt and equity cost components in the ICM I observed that the debt cost component was substantially higher than what I have recently seen. I discussed this with Mr. Gates and consequently he has made an adjustment in the ICM to the debt cost component. It is my understanding that the consultants for the Staff will be supporting a different cost of money in this matter and as such I would urge the Commission to require Qwest to perform runs of their models using the revised cost of money as developed.

VI. SWITCHING COSTS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. The purpose of this portion is to discuss Qwest's switching cost model submitted in this docket. I will discuss several issues that should be required in a recalculation of certain unbundled local switching (ULS) costs unbundled network element (UNE) total element long run incremental cost (TELRIC) based rates for these elements.

Q. BEFORE YOU PROCEED WITH A DETAILED DISCUSSION ABOUT THE QWEST MODELS, WOULD YOU PLEASE DISCUSS THE GENERAL TELRIC COSTING PRINCIPLES YOU NOTED ABOVE?

A. Certainly. Qwest's cost studies should be reviewed within the context of the FCC's TELRIC principles as defined in the FCC's Local Competition Order.[26]

In general, the most important and applicable TELRIC principles can be summarized as follows:

Principle # 1: *The firm should be assumed to operate in the long run.*

Principle # 2: *The relevant increment of output should be total company demand for the unbundled network element in question.*

Principle # 3: *Technology choices should reflect least-cost, most efficient technologies.*

Principle # 4: *Costs should be forward-looking.*

Principle # 5: *Cost identification should follow cost causation.*

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[25] This BLS publication can be found at the following BLS website: http://www.bls.gov/ppi/#publications.

While these principles do not appear verbatim in the FCC's First Report and Order, I believe that they accurately summarize the FCC's TELRIC methodology.

In addition to these TELRIC principles, the FCC also noted the following:

1. An incumbent LEC must prove to the state commission that the rates for *each element it offers do not exceed the forward-looking economic cost* per unit of providing the element.[27]

2. The ILEC has the burden of proof since "incumbent LECs have greater access to the cost information necessary to calculate the incremental cost of the unbundled elements of the network.[28]" In view of the "asymmetric access to cost data," the FCC notes that "incumbent LECs must *prove* to the state commission the nature and magnitude of any forward-looking cost that it seeks to recover in the prices of interconnection and unbundled network elements.[29]"

3. Cost models should be transparent, open and verifiable by Commissions and intervenors.[30]

Q. THE FCC NOTED THAT COST MODELS SHOULD BE TRANSPARENT, OPEN AND VERIFIABLE. WHY IS THIS SO IMPORTANT?

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26 Local Competition Order, First Report and Order, CC Docket No. 96-98, released August 8, 1996.
27 FCC's *Local Competition Order*, § 51.505 (e).
28 Id, paragraph 680.
29 Id, paragraph 680.
30 The FCC recently directed that in upcoming cases to be arbitrated by the FCC, involving Verizon and three CLECs, computerized cost models "must be submitted in a form that allows the Arbitrator and the parties to alter inputs and determine the effect on cost estimates." Procedures Established for Arbitration of Interconnection Agreements Between Verizon, AT&T, Cox, and WorldCom, DA 01-270 (February 1, 2001), Paras. A.2.1.i; A.3.1.c.

A. First, it allows the analyst to completely understand how the model calculates costs and all the assumptions that are implied in the model. By analogy, it is one thing to read a description of an internal combustion engine; it is another to open the hood of a car and to work on the engine.

Q. HAVE YOU BEEN ABLE TO OPEN THE "HOOD OF THE CAR" WITH RESPECT TO THE QWEST SWITCHING MODEL?

A. In general the answer is yes. In December 2002 Qwest filed a new version of its switching model, Version X1.01 (hereinafter refereed to as the "redesigned SCM") that is based on Microsoft Excel and is contained within 27 worksheets inside the confines of a single Excel workbook. I have reviewed Qwest's testimonies, switching studies (viz. the SCM model) and documentation provided here in South Dakota as well as Qwest's responses to various data requests.

As will be discussed presently, the problem with the SCM is generally twofold:

1. The results *cannot be validated* because (a) Qwest fails to adequately identify its current switch vendor contracts, and (b) the SCM is not based on current contract prices.

2. The allocation process that constitutes the redesigned SCM's calculations no longer reflects the manner in which Qwest incurs switching costs. As such the model is inconsistent with the cost-causation principle of TELRIC.

Q. HAS QWEST PROVIDED THE INFORMATION NECESSARY TO VALIDATE ITS SWITCHING COSTS AND RATES?

A. No. In response to Staff's data request number 160, Qwest provided a set of electronic images containing redacted switch vendor contracts. However, the provided materials do not allow Qwest's switching rates to be validated.

The switch vendor contracts are redacted so that it is not possible to identify for which switch vendors these contracts are for. In its models, Qwest uses the obscure notation of SW1 and SW2, presumably to disguise to which switch vendors certain terms and conditions apply. Further, given that certain portions of the provisions have been redacted it is even less clear under what terms and conditions Qwest purchases switches.

In short, even though Qwest claims that the models can be validated from start to finish, the fact is that the starting point -- the incorporation of the critical switch vendor contracts into the studies -- is not adequately supported.

Q. SHOULD SWITCHING COST STUDIES BE BASED ON A CARRIER'S ACTUAL AND CURRENT SWITCH VENDOR CONTRACTS?

A. Yes. Under the TELRIC methodology, forward-looking switching cost studies should be based on a carrier's most current vendor contracts.[31] Indeed, other ILECs such as SBC/Ameritech, Verizon and Bell South have acknowledge that forward-looking switching costs should be based on their current contracts.

Q. DOES QWEST BASE ITS SWITCHING COST STUDIES ON ITS SWITCH VENDOR CONTRACTS?

[31] See, for example, FCC's *Local Competition Order*, pp. 690 - 699.

A. While this may be a starting point somewhere within the overall calculations, the answer is no. Qwest's redesigned SCM relies upon default values for switching investments. These investment amounts are "hard coded" in a manner wherein a number is entered and cannot be audited back to its source. The default values can be overridden and this will be the subject of my recommendations later in this testimony.

In answer to Staff discovery request number 192 Qwest indicated that vendor discounts are not inserted into or used by the redesigned SCM. Put another way, the actual or historic engineered, furnished, and installed prices are said to be used.

Q. PLEASE EXPLAIN HOW THE QWEST PROVIDED EXCEL SPREADSHEETS CORROBORATE YOUR CRITICISM THAT QWEST IS NOT USING ITS SWITCH VENDOR PRICES IN THE SCM?

A. The SCM uses the actual (or historic) prices to calculate the switching investments and ultimately the proposed rates (in an additional Excel workbook). This method is very different from using the exact prices found in the switch vendor contracts. It is totally inappropriate for Qwest to use prices that are outdated, stem from contracts that are no longer in effect or otherwise irrelevant, or prices that are substantially altered from actual contract prices. The latter issue is particularly important since the old contracts simply do not reflect the manner in which Qwest is currently purchasing its switches.

Q. PLEASE EXPLAIN WHY QWEST'S PROPOSED USAGE BASED SWITCHING RATES AND COSTS VIOLATE THE COST CAUSATION PRINCIPLE.

A. In response to Staff discovery request number 206 Qwest noted that it purchases switching components on a per line basis. Qwest no longer purchases switching facilities on an a la carte basis as if it were building the switches themselves component by component.

For example, there is not a separate charge that Qwest incurs for either the processor, switch matrix, or the switching features. Rather, Qwest, like virtually all other RBOCs, purchases switching facilities on a per line (line-port) basis. That is, Qwest purchases switching facilities on a per line-port basis for a per line-port price (for analog and digital lines) that provide for all necessary switching functions, including features, processor, switch fabric, etc.

By analogy, Qwest purchases its switches very much in the same manner that we buy computers. Typically, the computer is assembled by the computer maker and delivered in one functional unit ready for use. The computer will have a set of components that are designed and installed by the manufacturer to function together and to deliver a certain level of capacity. Customers do not have to purchase each individual component of the computer (though, of course, that is available on an individual basis.) This is approximately how Qwest purchases its switches -- on per unit basis without the need for Qwest to purchase each individual component

Q. PLEASE PROVIDE ANY OTHER COMMENTS YOU HAVE ON QWEST'S SWITCHING CONTRACTS.

A. In both this case as well as in the State of New Mexico I have reviewed Qwest's switching contracts. Those contracts cover multiple generations of agreements, each agreement

superseding parts of the previous agreements and incorporating other parts. Throughout Qwest's switch vendor contracts, however, there is language going back as far as 1996 that demonstrates the fact that Qwest (and at the time U S WEST) is purchasing switching facilities on a per line and per trunk basis and continues do so under its current contracts.

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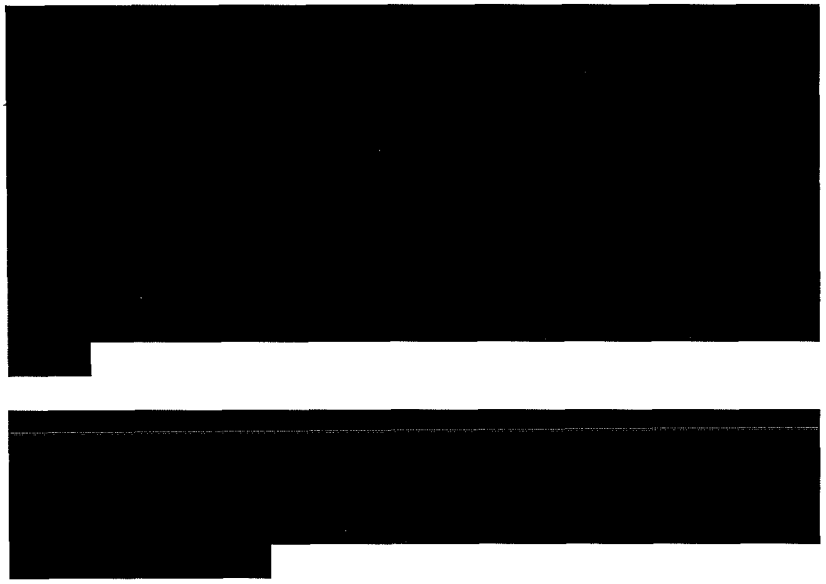
For example, based on paper copies of the switching contracts provided in New Mexico a portion of the contract language stated the following:[32]



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Hence, all the historic switching components utilized by the SCM as usage sensitive are in fact not usage sensitive but included in the *fixed per line price*. To be sure, it is simply not true that Qwest incurs costs when end-users use the switch and it is not true that if end-users increase their use of the switch that Qwest has to order more facilities. To the contrary, once the line is purchased it can accommodate all reasonable levels of end user calling. In fact, once the line is purchased, the costs are incurred *whether or not* the switch is used.

Q. PLEASE SUMMARIZE THE CONCLUSIONS THAT SHOULD BE DRAWN FROM THE AFOREMENTIONED LANGUAGE FROM THE SWITCH CONTRACTS.

A. The conclusions to be drawn from the switch vendor contracts are the following:

**

[redacted]

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32 Agreement No. RPHCR42292, Appendix 2, Attachment A, 1.0 New Systems.

33 CCS stands for 100 call seconds. One could use "one minute" (60 seconds) as a measure of time, but since it is easier to work with a decimal system, the unit of time is selected to be CCS (100 seconds). The issue here is the number of CCS that an end-user line uses the switch *at the peak hour.*

34 See response to Staff discovery request number 177.

[redacted]

**

Q. HOW SHOULD QWEST RECOVER THE ADDED COST OF LINES WITH EXTREMELY HIGH USAGE IF NOT THROUGH A USAGE FACTOR?

A. To the extent that there are a miniscule number of high volume lines (with CSS levels significantly in excess of ** [redacted] **), those high volume lines can be averaged into a flat monthly recurring charge for switching by some weighing procedure that reflect the relative percentages of these lines in the network. However, as a practical matter, given the miniscule percentage of high volume lines (for ordinary voice grade residential single line business customers) and the relatively small price differential between ** [redacted] **, the results of such a averaging procedure would probably be immaterial.

Q. IN ANY EVENT IS THE COST DIFFERENTIAL BETWEEN AVERAGE USAGE LINES AND HIGH USAGE LINES -- AS OPPOSED TO EXTREMELY HIGH USAGE -- ONLY MINIMAL?

**

A. [redacted]

**

Q. IS THERE ANY EVIDENCE THAT QWEST INCURS SIGNIFICANT USAGE BASED COSTS?

A. No. Again, as demonstrated, Qwest's switch vendor contracts apply charges on a per line port and per trunk port basis.[37] There is no usage or centum call second ("CCS") based charges in those switch vendor contracts. Therefore, to construct a model as if those costs are in fact incurred -- as Qwest's SCM does -- is misleading.

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35 Agreement No. RPHCR42292, Appendix 2, Attachment A, Section 2.1 Lines.
36 Id.

Q. ARE THERE OTHER PROVISIONS IN THOSE VENDOR CONTRACTS THAT WOULD CAUSE QWEST TO INCUR USAGE SENSITIVE COSTS FOR AVERAGE LINES?

A. No. As discussed, under the switch vendor contracts, facilities are installed with more than sufficient capacity to accommodate usage at the peak hour.

Q. DO THE CONTRACTS DIFFERENTIATE BETWEEN BUSINESS AND RESIDENTIAL LINES?

A. No. Qwest may assert that there is a difference between high volume business customers and low volume residential customers. It is important for the Commission to know, however, that the per-line prices in the switch vendor contracts do not differentiate between business customers and residential customers. Any difference in the volume of calls placed and received by these two customer classes has no ramification for switching costs as far as the vendors are concerned.

Q. DO THE SWITCH CONTRACTS DIFFERENTIATE BETWEEN URBAN AND RURAL LINES?

A. No. It is important for the Commission to know, however, that the per-line prices in the switch vendor contracts do not differentiate between urban customers and rural customers. Any difference in the volume of calls placed and received by urban or rural customers has no ramification for switching costs as far as the vendors are concerned.

[37] There are other charges, such as for software, and specific components of the switch can be purchased on an individual basis. Nevertheless, the unit of purchase for switching facilities is line ports and trunk ports.

Q. ARE THERE DIFFERENCES BETWEEN THE PRICES FOR HOST AND REMOTE SWITCHES?

A. Yes. There are different prices for host and remote switches. The contracts, however, do not differentiate between hosts placed in urban or in rural locations. Neither do the contracts differentiate between remotes placed in urban or rural locations. The vendors do not care whether the switch serves high volume urban customers or low volume rural customers -- the per line switching prices are the same.

Q. CONCEPTUALLY, ARE SWITCHING COSTS USAGE SENSITIVE?

A. No, my review of the vendor contracts confirms my earlier opinion that switching costs are not usage sensitive.

An analogy may further clarify why conceptually switching costs should not be considered usage sensitive. The Commission should consider a car rental company and the manner that it incurs costs and how it seeks to recover those costs.

Specifically, car rental companies do typically not charge based on the number of passengers that may travel in the rental car.[38] The reason is that the costs of the car -- once it is purchased by the car rental company -- does not vary with the number of passengers. Whether the rental car transports one, two, three, or more passengers, the costs to the rental car company do not go up. For this reason, the rental car company will not charge any extra for additional passengers. In fact, they do not even inquire about the number of passengers. By contrast, Qwest might contend that switching is usage sensitive and that the costs of the car do vary implicitly with the number of passengers. Qwest might also suggest that engineers take into account the number of passengers expected per car -- just as with switching facilities they take into account usage

patterns in engineering the switch. Based on this type of reasoning, Qwest would then conclude that the cost of cars is sensitive to the number of passengers just as it claims that switching costs are sensitive to usage. Qwest's reasoning is wrong. While it is true that for situations where a large number of passengers need to be transported, engineers will build a van, SUV, or a bus, that can conveniently transport six or more passengers, this does not mean that the cost of any particular rental car varies with the number of passengers. It just means that if someone knows that he/she is going to transport a large number of passengers, then a larger vehicle is needed. To be sure, the costs of the car to the rental car company do not vary with the number of passengers. Surely, we would all be surprised if a rental car were to charge for each additional passenger and consider it irrational.

Qwest's claim that switching is usage sensitive is no different than a rental car company claiming that it incurs -- in a long run sense -- higher cost if people begin to transport more passengers per car. Qwest argues that if end-users use the switch more intensely, then the switch vendors have to engineer switches with increased capacity and the next time Qwest negotiates contracts they will face higher prices. This is analogous to a rental car company claiming that if consistently people transport more passengers, then the rental car company has to order larger vehicles from their vendors and the vendors may begin to design larger vehicles and in the end the rental car company will be charged more per vehicle.

A primary difference between rental car companies and Qwest is that rental car companies must live by the rationality of competitive markets and Qwest is a monopolist that is able -- absent regulation -- to dictate terms and conditions to its customers, such as CLECs.

[38] Rental car companies may charge more for additional drivers. This is, however, an insurance issue and not one of

Q. IF FACILITIES WERE CONSTRAINED SO THAT SIMULTANEOUS USAGE BY VARIOUS ENTITIES WOULD CAUSE A SWITCH EXPANSION, THEN COULD ONE ARGUE THAT THE SWITCH WAS USAGE SENSITIVE?

A. This appears to be Qwest's rationale for imposing switch usage charges. The rationale, however, is not applicable to modern digital switches. The only usage that matters in terms of determining the size of the switch is usage at the peak hour. Again, this peak usage is expressed in CCS at the peak. As previously noted, switches are being installed and engineered by the vendors with more than sufficient capacity to accommodate all usage at the peak,

Q. HAS QWEST MADE ANY DEMONSTRATION THAT A SIGNIFICANT AND UNANTICIPATED INCREASE IN SWITCH USAGE IS IMMINENT THAT WOULD CAUSE THE PER LINE PRICE STRUCTURE UNDER THE SWITCH VENDOR CONTRACTS TO BE OUTDATED?

A. No. Again, part of the vendor contracts is that switches are engineered to specific performance standards, such as line-to-trunk blockage, trunk-to-trunk blockage, etc. Based on these pre-specified performance standards and known and anticipated traffic and usage patterns, switch vendors such as Lucent and Nortel engineer/design the switches with more than sufficient capacity to ensure that the performance standards are met. If peak usage were to increase dramatically – as implicitly assumed but unsupported by Qwest – then, obviously, the vendors may have to expand parts of the switch. However, as previously discussed, Qwest's own data show that per-line CCS levels are stable and if anything are decreasing and not increasing.

car expenses. For purposes of the analogy, it is assumed that there is only one driver.

Q. HAS QWEST PRESENTED ANY EVIDENCE THAT SHOULD CAUSE THE COMMISSION TO FIND THAT SWITCHING COSTS ARE INCURRED ON A PER MOU BASIS?

A. No, the Commission should order Qwest to recalculate and recover all of its switching costs on a flat monthly switch port basis. I describe these recalculations in greater detail later in this testimony.

Q. UNDER QWEST'S SWITCHING PROPOSAL COULD CLECS FIND THEMSELVES CROSS-SUBSIDIZING QWEST IN CERTAIN CIRCUMSTANCES?

A. Yes. Under Qwest's proposals, a number of undesirable cross-subsidies would occur, and, under certain circumstances, CLECs may actually end up subsidizing Qwest, their main competitor. Whenever a CLEC, using Qwest's ULS offering, happens to serve a high volume customer, Qwest will over-recover its actual switching costs. This means that the CLEC is, in effect, forced to cross-subsidize other Qwest-switch users (or Qwest itself) without a proper policy justification for such a cross-subsidization. So, while I do not believe that all CLECs will necessarily target only high margin customers, according to Qwest itself, this scenario and the ensuing cross-subsidization of Qwest by CLECs is highly probable. While such cross-subsidies may be advantages to Qwest, they are bad public policy.

Q. WOULD IT BE HARDER FOR CLECS TO COMPETE WITH ARTIFICIAL USAGE BASED RATES?

A. Yes. As discussed, Qwest's proposed usage charges will almost certainly lead to over-recovery of Qwest's costs at the expense of the CLECs. Further, to the extent that CLECs may want to compete for customers that have flat-rated calling plans, they will have a hard time doing so if

they themselves are incurring usage based charges. In these instances, Qwest's proposals would cause a complete mismatch between the competitive retail environment and the wholesale prices that CLECs face.

Q. IF QWEST IS PERMITTED TO IMPOSE PER MOU SWITCHING CHARGES ON CLECS, WILL CLECS BE IMPAIRED IN OFFERING FLAT-RATED SERVICE?

A. Yes. Flat-rated service is an appropriate retail pricing structure particularly when companies incur costs themselves on a flat-rated basis. One sound policy rationale for flat-rated retail service is that if use of the public switched network does not cause significant costs to come about, then use of the public switched network should not be penalized by means of usage charges.

The ability of CLECs to offer flat-rated retail service is seriously impaired, however, under Qwest's proposal. Given that CLECs will be competing against Qwest, they will almost certainly price their services comparable to Qwest's. However, unlike Qwest, the CLECs that use UNE-P will incur switch usage costs for customers' calling. For customers that have above average calling patterns, the flat-rated price may not be high enough to recover all those usage charges. In those instances, CLECs will artificially be precluded from competing for flat-rated services, or will have to impose artificial limitations on their offerings to limit the effects of usage-based pricing. Given that Qwest's usage based switching rates are artificial (since Qwest incurs no usage based costs), Qwest's proposal should be rejected as anticompetitive and inconsistent with the public interest.

Q. DID THE ILLINOIS COMMISSION FIND IN ITS TELRIC ORDER THAT AMERITECH INCURS ITS SWITCHING COSTS ON A PER LINE BASIS AND NOT ON A USAGE SENSITIVE BASIS?

A. Yes. The issue of whether or not switching costs are usage sensitive was extensively litigated in Consolidated ICC Docket Nos. 96-0486 and 96-0569. Having reviewed the evidence, the ICC found that Ameritech – as claimed by intervenors – incurs switching costs on *per line basis and not on a usage sensitive basis*. Specifically, the ICC found:

> Based on a review of Ameritech's switching contracts, it is clear that the primary basis used by switch vendors to charge Ameritech for its switches is a price per line. Because Ameritech incurs switching costs on a predominantly per-line basis, we find it consistent with the fundamental principles of cost causation that the ULS [unbundled local switching] subscriber should also pay the ULS element primarily on a per line basis, *without a usage charge*.[39]

The ICC then went on to mandate the following:

> Therefore, we require Ameritech to file a new ULS cost study which establishes prices ***primarily based on the flat-rate terms of its vendor contracts***.[40] (Emphasis added.)

Q. DID THE INDIANA COMMISSION JUST RECENTLY REJECT THE CLAIM THAT SWITCHING COSTS ARE USAGE SENSITIVE AND DID IT MANDATE A FLAT-RATED SWITCHING CHARGE INSTEAD?

A. Yes. The Indiana Commission just recently completed a proceeding in which it faced the same issues as this Commission does. Ameritech's switch vendor contracts are structured very much the same as Qwest's switch vendor contracts. Yet, Ameritech -- like Qwest -- was proposing to

[39] ICC Docket Nos. 96-0486 and 96-0569, Order, Page 59.
[40] ICC Docket Nos. 96-0486 and 96-0569, Order, Page 59.

charge CLECs usage based switching charges as if they in fact incurred usage based switching costs. Having reviewed a record that included all of Ameritech's switching contracts and an examination of switching costs, the Indiana Commission concluded the following:[41]

> Ameritech Indiana's assertion that without a usage-sensitive rate element for ULS it will be unable to recover its usage-related switching costs and will be forced to subsidize the switch usage of the CLECs and their customers ***is misleading, at best.*** Ameritech Indiana's claim that "the CLECs' customers, in general, are business and institutional customers who use the switch much more during peak times than do residential customers, who are primarily the customers of Ameritech Indiana" may be true; however it does not come close to telling the whole story of who uses its switches and in what proportions.
>
> Accordingly, we find that Ameritech's request to assess a usage-sensitive switching charge for ULS-ST should be denied and that the switching costs (including usage costs, if any) for the ULS-ST offering should be recovered from CLECs on a flat-rate basis.

Q. DID THE WISCONSIN COMMISSION LIKEWISE REJECT THE CLAIM THAT SWITCHING COSTS ARE USAGE SENSITIVE AND DID IT ALSO MANDATE FLAT-RATED SWITCHING CHARGES INSTEAD?

A. Yes. The Commission faced the same issues as the Indiana Commission and the South Dakota Commission in the current proceeding. The Wisconsin Commission found the following:[42]

> Digital switches are essentially large computers, and as the cost of computer memory has declined, so has the cost of extra capacity on the switch. The net result is that switch manufacturers design ***enough switching fabric and processor capacity*** into their switches to serve the maximum lines that can be installed on the switch ***without blockage***, based upon the expected use per line. In its own contracts with its switch vendors, Ameritech agreed to pay for its switches on a per-line basis without any usage fees, but there are provisions that assess extra charges when Ameritech needs to order additional equipment to accommodate usage growth.
>
> Ameritech provided testimony that internet growth is causing average usage per line to increase and asked its vendors to explain what portion of their

[41] Indiana Utility Regulatory Commission, Cause 40611-S1, Pages 41-42.
[42] Wisconsin Public Service Commission, Docket 6720-TI-161, pages 80-82.

switches vary with usage and to estimate how much the cost would increase if usage per line were to double. The general response was that additional investment would be needed for the analog to digital conversion, but otherwise the switches were not capacity restricted up to a very high level. The CLECs responded that Internet growth is not unexpected and that during the life of its switch contracts, Ameritech's Project Pronto plans call for moving the bulk of its Internet traffic off of its circuit switches. ***Ameritech did not provide any evidence that the requirement to provide unbundled switching caused it to add more capacity per line to its switches or otherwise increased its contract costs.*** It also did not provide any evidence that customers would significantly increase their minutes of use merely because they became CLEC customers through the use of unbundled switching.

The Commission finds that there would be some additional costs to Ameritech if it were to face a large increase in usage per line. The Commission also finds it reasonable to assume that the current switches were engineered with sufficient capacity so that the likelihood that Ameritech will actually incur significant additional costs because of increased usage per line ***is quite small.*** Because of the way the switches are engineered and the way Ameritech pays for its switches, ***there is no compelling cost or engineering rationale for requiring a rate design that includes a minute-of-use charge.***

The Commission, while reluctant to go against the traditional rate structure for unbundled switching, finds that there are compelling policy reasons for the use of a flat per-line-port charge, and that the cost-based rationale for a per-minute charge is not strong enough to overcome these policy goals. The primary policy concern is that in order to compete with Ameritech, the CLECs need to pay for their unbundled switching in the same way that Ameritech pays for its switching.

While the compliance studies have not yet been filed, the flat-rated switch port in Wisconsin should be below $3.00 and will include all usage and features, just like the flat-rated switch offering in Indiana.

Q. ARE COMMISSION ORDERS IN NON-QWEST STATES RELEVANT TO THE CURRENT PROCEEDING?

A. Yes. These orders are directly relevant since the arguments regarding the alleged usage sensitivity of switching costs made by SBC/Ameritech in those proceedings are the same as those made by Qwest in the current proceeding and they were rejected in the face of record evidence

on switch vendor contracts. Given that Qwest purchases from the same switch vendors as SBC/Ameritech and has contracts that are structured very much in the same manner, the other state commissions' arguments for rejecting SBC/Ameritech's claims that switching is usage sensitive apply with equal force here in South Dakota with respect to Qwest's claims.

Q. HAS THERE BEEN AN ORDER IN A QWEST TELRIC CASE IN MINNESOTA REGARDING ULS IN WHICH AN ADMINISTRATIVE LAW JUDGE REJECTED QWEST'S USAGE RATES AND SCM MODEL?

A. Yes. In a proceeding dealing with Qwest's switching cost studies, among other issues, an Administrative Law Judge ("ALJ") in Minnesota has just recently issued an order rejecting Qwest's SCM model on the grounds that the model does not adequately reflect the manner in which Qwest incurs its switching costs. The ALJ found the following:[43]

> Even though it is allowable, Qwest has ***not*** presented sufficient evidence or reasoning ***to justify using usage-based pricing*** here. There seems to be an underlying assumption that CLECs and their customers use their lines more than Qwest and its customers. Qwest's usage-based allocation would shift more cost to the CLECs. That might be appropriate if the assumption is correct, but there is no evidence to support it. On the contrary, the CLEC customers were Qwest customers before, so there is little, if any, effect on total traffic volumes. Finally, Qwest's usage-based pricing is not peak sensitive as the FCC preferred in ¶¶ 755 and 757 of the Local Competition Order. As such, it is less usage sensitive and more just a cost-shifting device. (Emphasis added.)

Q. ARE THERE OTHER AREAS OF CONCERN YOU HAVE WITH RESPECT TO THE QWEST SWTICHING MODEL?

A. Yes. The fill factor for analog line ports is set to ** [redacted] ** in the redesigned SCM. This presumes a substantial amount of spare capacity in a long run switching cost study.

[43] ALJ Order, OAH Docket No. 12 - 2500 - 14490 - 2, PUC Docket No. P-421/C1-01-1375, August 2, 2002.

Growth on the switch can be accomplished by acquiring additional inputs from the switch maker if and when growth occurs.

Q. HAVE QWEST'S SWITCHING FILL FACTORS BEEN THE SUBJECT OF FCC REVIEW?

A. Yes they have. In FCC Docket 99-304, Tenth Report and Order, released November 2, 1999, the FCC determined that US West's embedded switching fill factors not reliable because the average fill factor of 78% was based on data that included switches with unreasonably low fill factors. The FCC adopted a switch port fill factor of 94% for U S WEST.[44]

Q. PLEASE COMMENT ON THE INVESTMENT LOADING FACTORS CONTAINED IN THE REDESIGNED SCM.

A. The redesigned SCM contains a composite South Dakota specific investment loading factor of ** [redacted] **. While the power and sales components of this composite figure appear to be state specific, the telecommunications labor component is the same for all states at [redacted]. This number is hard coded and suggests that for every $1 of investment, Qwest expends eleven cents in labor. Applied to all investment, this is a substantial figure that should be well supported rather than hard coded.

Q. PLEASE SUMMARIZE THE SWITCHING PORTION OF YOUR TESTIMONY.

A. My conclusions regarding Qwest's *cost studies* and *proposed rates* are the following:

-- Qwest's SCM fails to properly reflect the manner in which Qwest's incurs its switching costs. As such, the model is inconsistent with the TELRIC cost causation principle.

[44] See paragraph 332 of Tenth Report and Order.

-- Qwest's proposed *usage* based costs and charges are inconsistent with its switch vendor contracts, will cause CLECs to cross-subsidize Qwest and generally will impair the development of local competition

Q. BASED ON YOUR EXPERIENCE NAD OBSERVATIONS, WHAT ARE YOUR RECOMMENDATIONS?

A. I recommend that the South Dakota Public Utilities Commission reject Qwest's proposed *switching* rates. Further, I recommend that the Commission mandate a flat, recurring monthly switching rate for unbundled local switching that provides for the line port, usage and all features provided over the local switch; this rate structure is consistent with the manner in which Qwest incurs its switching costs. Finally I recommend that the Commission require Qwest to submit a revised version of SCM X1.01 that develops costs and prices for a flat rate port. The Commission should require Qwest to utilize the override capability for investments and fill factors. Moreover the revised study should include support for the telecommunications labor component of the investment loadings. Finally for purposes of pricing, the results generated from the revised run of the SCM for a flat rate port should be applied against the factors developed and discussed earlier in this testimony.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Peter J. Gose

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Market Solutions • Litigation Support

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Current Position

Senior Vice President and founding partner, QSI Consulting, Inc.

Education

B.S. Finance / Business Administration, Economics Minor
- Northwest Missouri State University, Maryville, Missouri

B.S. Accounting
- Lincoln University, Jefferson City, Missouri

M.B.A.
- Northwest Missouri State University, Maryville, Missouri

Separations and Settlements Training
- United States Telephone Association

Professional Experience

Competitive Strategies Group, Ltd.
Telecommunications Consulting Group
Partner and Senior Consultant

National Exchange Carrier Association
Industry Relations Division
Manager of Tariffs and Training

Missouri Public Service Commission
Policy and Planning Division
Federal Telecommunications Analyst

Missouri Public Service Commission
Policy and Planning Division
Management Auditing Specialist

Professional Activities

Member of the Kansas, Missouri, Oklahoma, Texas, and Arkansas five state Southwestern Bell Open Network Architecture (ONA) Oversight Conference

Assistant to Federal – State Joint Board on Universal Service. Developed models to quantify effects of proposed changes to universal service programs.

Auditing of RBOC affiliate transactions and state universal service fund programs.

Chairman of the National Exchange Carrier Association Training Council. Responsible for maintaining and updating existing training materials and programs. Additionally responsible for overseeing the development of new training programs focusing on interstate access settlement procedures and new telecommunications technologies.

Team leader in the redesign and update of the local area network and wide area network of the National Exchange Carrier Association.

Team leader in the research, design, procurement, and installation of the local area network and wide area network of the Missouri Public Service Commission.

Adjunct faculty member – Northwest Missouri State University.

Guest lecturer at Washington University – St. Louis, Missouri, speaking on telecommunications regulation, access charge development, and public policy.

Testimony Profile

Before the North Dakota Public Service Commission

Case No. PU-2342-01-296
In the Matter of Qwest Corporation Interconnection / Wholesale Price Investigation
On behalf of The North Dakota CLEC Coalition; US Link, Inc.; VAL-ED Joint Venture LLP d/b/a/702 Communications; McLeodUSA Telecommunications, Inc.; and IdeaOne Telecom Group, LLC
Direct: May 2003

Before the New Mexico Public Regulation Commission

Utility Case No. 3495, Phase B
In the Matter of the Consideration of Costing and Pricing Rules for OSS, Collocation, Shared Transport, Non-recurring Charges, Spot Frames, Combination of Network Elements and Switching
On behalf of the New Mexico Public Regulation Commission Staff
Direct: September 2002

Before the Indiana Utility Regulatory Commission

Cause No. 41100
In the Matter of the Complaint of the Indiana Payphone Association for a Refund of Intrastate End User Common Line Charges
On behalf of the Indiana Payphone Association
Direct: January 2002

Testimony Profile - continued

Before the Washington Utilities and Transportation Commission

Docket No. UT-003013
In the Matter of the Continued Costing and Pricing of Unbundled Network Elements, Transport, and Termination
On behalf of WorldCom Inc.
Direct and Supplemental Direct: December 2001

Before the Federal Communications Commission

In the Matter of the Formal Complaints of AT&T Corp. and Sprint Communications Company, L.P. vs. Business Telecom, Inc.
On behalf of Business Telecom, Inc.
Affidavit: February 2001

Before the North Carolina Utilities Commission

Docket No. P-100, Sub 133d, Phase I
In the Matter of Proceeding to Determine Permanent Pricing for Unbundled Network Elements
On behalf of Adelphia Business Solutions, BlueStar Networks, Inc., Broadslate Networks, Inc., Business Telecom, Inc., Covad Communications, CSTI, DSLnet, Inc., ICG Telecom Group, Inc., Intermedia Communications, Inc., KMC Telecom, Inc., Mpower Communications, Network Telephone, New Edge Networks, TriVergent Communications, and US LEC Inc. of North Carolina
Direct: August 2000

Before the Public Utility Commission of Colorado

Docket No. 99F-248T
In the Matter on a Complaint to Compel Respondents to Comply with Section 276 of the Federal Telecommunications Act
On behalf of MCI Worldcom
Direct: December 1999

Before the Michigan Public Service Commission

Docket No. U-11831
In the Matter on the Commission's Own Motion to Consider the Total Service Long Run Incremental Costs for All Access, Toll, and Local Exchange Services Provided by Ameritech, Michigan
On behalf of CoreComm Newco, Inc.
Affidavits: March 1999; June 1999; May 2000

Before the Public Utility Commission of Ohio

Case No. 96-899-TP-ALT
In the Matter of The Application of Cincinatti Bell Telephone Company for Approval of a Retail Pricing Plan Which May Result in Future Rate Increases and for a New Alternative Regulation Plan
On behalf of CoreComm Newco, Inc.
Direct and Supplemental Direct: December 1998

Before the Michigan Public Service Commission

Docket No. U-11756
In the Matter of a Complaint Pursuant to Sections 203 and 318 of the Michigan Telecommunications Act to Compel Respondents to Comply with Section 276 of the Federal Telecommunications Act.
On behalf of the Michigan Pay Telephone Association
Direct and Rebuttal: September 1998

Testimony Profile - continued

Before the North Carolina Utilities Commission

Docket No. P-100, Sub 133d, Initial Generic Proceeding
In the Matter of Proceeding to Determine Permanent Pricing for Unbundled Network Elements
On behalf of Business Telecom, Inc., CaroNet, LLC, ICG Telecom Group, Inc., and KMC Telecom Group, Inc.
Direct and Rebuttal: March 1998

Before the Washington Utilities and Transportation Commission

Docket No. UT-970658
In the Matter of Formal Complaint and Petition for Declatory Order to Remove Payphone Investment from Access Charges
On behalf of MCI Telecommunications Corporation and AT&T Communications
Direct and Rebuttal: November 1997

Before the Public Service Commission of the State of Nebraska

Docket No. C-1519
In the Matter of the Emergency Petition of MCI Telecommunications Corporation and AT&T Communications of the Midwest, Inc., to Investigate Compliance of Nebraska LECs with FCC Payphone Orders
On behalf of MCI Telecommunications Corporation
Direct: January 1998

Before the Public Service Commission of Utah

Docket No. 97-049-08
In the Matter of the Request of U S West Communications, Inc., for Approval of an Increase in its Rates and Charges
On behalf of MCI Telecommunications Corporation
Direct: September 1997

Before the Wyoming Public Service Commission

Case No. 72000-TC-97-99
In the Matter of Compliance with Federal Regulations of Payphones
On behalf of MCI Telecommunications Corporation
Direct: May 1997

HYPOTHETICAL MAINTENANCE FACTOR EXAMPLE
BASED UPON FCC METHODOLOGY FROM USF INPUTS ORDER

COPPER

STEP 1: DETERMINATION OF CURRENT COST TO BOOK COST RATIO & REPRODUCTION COST		
Line 1	Miles	100
Line 2	Historic Cost of Investment per Mile	$ 10.00
Line 3 = Line 1 * Line 2	Historic Cost of Current Network	$ 1,000
Line 4	Current Cost of Investment per Mile	$ 15.00
Line 5 = Line 4 / Line 2	Current Cost to Book Cost Ratio	1.50
Line 6 = Line 3 * Line 5	Reproduction Cost of Current Network	$ 1,500
STEP 2: DETERMINATION OF MAINTENANCE EXPENSE FACTORS		
Line 7	Current Maintenance Expenses	$ 10.00
Line 8 = Line 7 / Line 3	Maintenance Expense Factor Based Upon Investment at Historic Cost	0.010000
Line 9 = Line 7 / Line 6	Maintenance Expense Factor Based Upon Investment at Current Cost	0.006667
STEP 3: DETERMINATION OF FORWARD-LOOKING NETWORK INVESTMENT		
Line 10	Miles in Forward-Looking Plant Design	60
Line 11 = Line 4	Current Cost of Investment per Mile	$ 15.00
Line 12 = Line 10 * Line 11	Forward-Looking Investment at Replacement Cost	$ 900
STEP 4: COMPARISON OF FORWARD-LOOKING MAINTENANCE EXPENSE DETERMINATION OPTIONS		
Line 13 = Line 12 * Line 8	Forward-Looking Expenses Using Expense Factor Based Upon Investment at Historic Cost	$ 9.00
Line 14 = Line 12 * Line 9	Forward-Looking Expenses Using Expense Factor Based Upon Investment at Current Cost	$ 6.00

Factor Summary - TELRIC

Vintage: 02SD01E

Jurisdiction: South Dakota

Depreciation Group: State Prescribed Lives

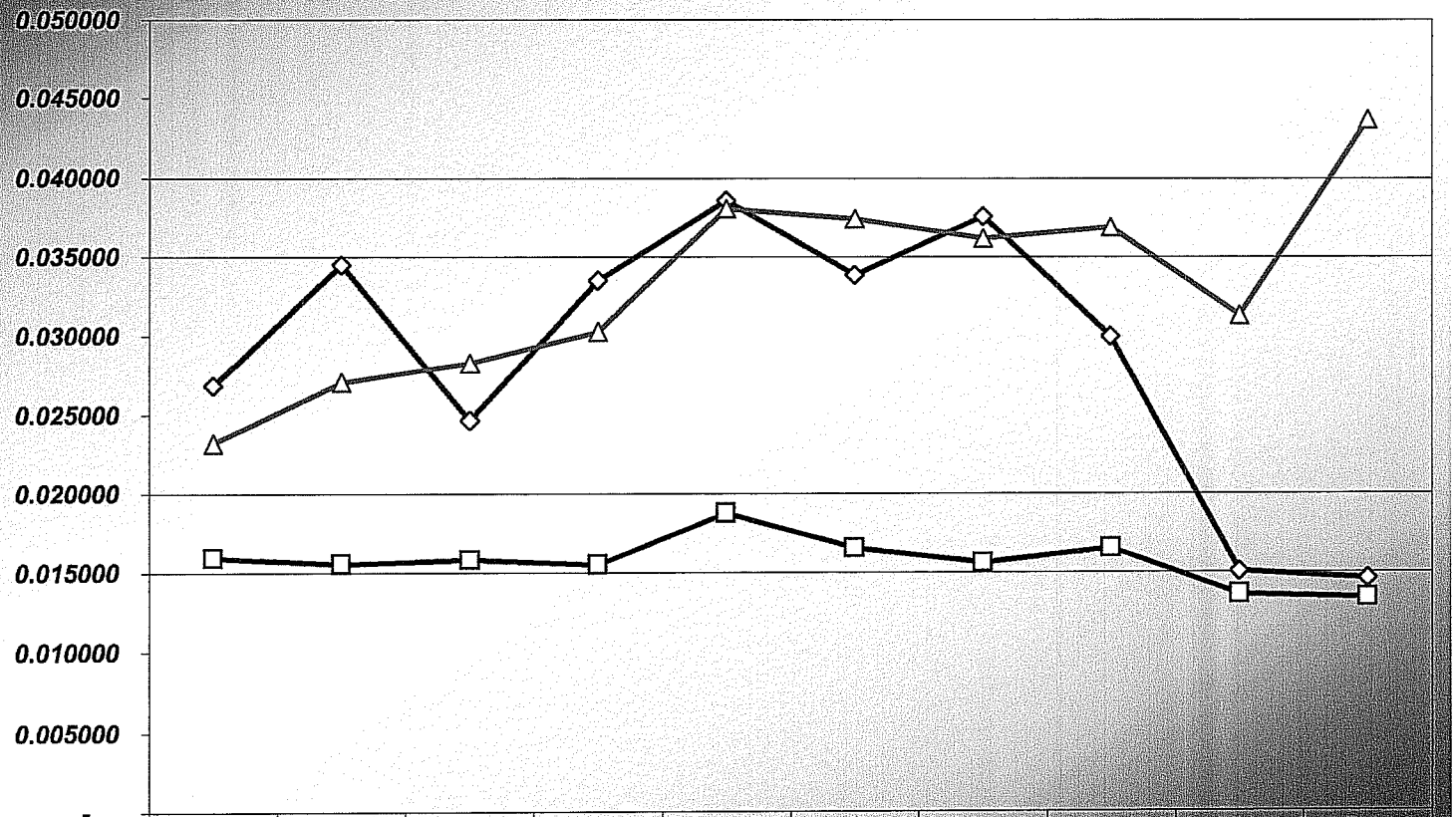
Investment Related Factors

Maintenance Factors	Expense Related Account Code(s)	Investment Related Account Code(s)	Field Reporting Code(s) (FRC)	Qwest Proposed Factor	CC to BC, Inflation, and Productivity Applied
Land & Building	6121	2111/2121	20,110	0.012770	0.011568
Outside Plant					
Poles	6411	2411	1,11	0.002946	0.000451
Aerial Cable					
- Metallic	6421.1	2421	52	0.111075	0.061547
- Nonmetallic	6421.2	2421	852	0.005464	0.006181
Underground Cable					
- Metallic	6422.1	2422	5	0.030615	0.024858
- Nonmetallic	6422.2	2422	85	0.018901	0.017156
Buried Cable					
- Metallic	6423.1	2423	45	0.052623	0.037920
- Nonmetallic	6423.2	2423	845	0.023075	0.020232
Submarine Cable					
- Metallic	6424.1	2424	6	0.017836	0.016157
- Nonmetallic	6424.2	2424	86	0.017836	0.016157
Intrabuilding Network Cable Expense					
- Metallic	6426.1	2426.1	62	0.035119	0.023055
- Nonmetallic	6426.2	2426.2	862	0.017856	0.016172
Aerial Wire	6431	2431	3	0.024483	0.020707
Underground Conduit	6441	2441	4	0.007242	0.002280
Central Office Equipment					
Digital Electronic	6212	2212	377	0.010018	0.009150
Operator Systems	6220	2220	117	0.022890	0.022890
Radio Systems Expense	6231	2231	67	0.005064	0.004527
Circuit Equipment					
- Digital Circuit Equipment	6232.1	2232.1	157	0.006136	0.005642
- Subscriber Pair Gain - Digital	6232.2	2232.2	257	0.010529	0.009740
- Other Digital Equipment	6232.3	2232.3	357	0.025490	0.023747
- Subscriber Pair Gain - Analog	6232.4	2232.4	457	0.035518	0.024870
- Other Analog Equipment	6232.5	2232.5	57	0.014015	0.010355
Station Equipment					
Other Terminal Equipment - Chan Term	6362	2362.3,4,8,9	858	0.018844	0.003347
Ad Valorem	7240.1	2001		0.009546	0.009546

Expense Related Factors

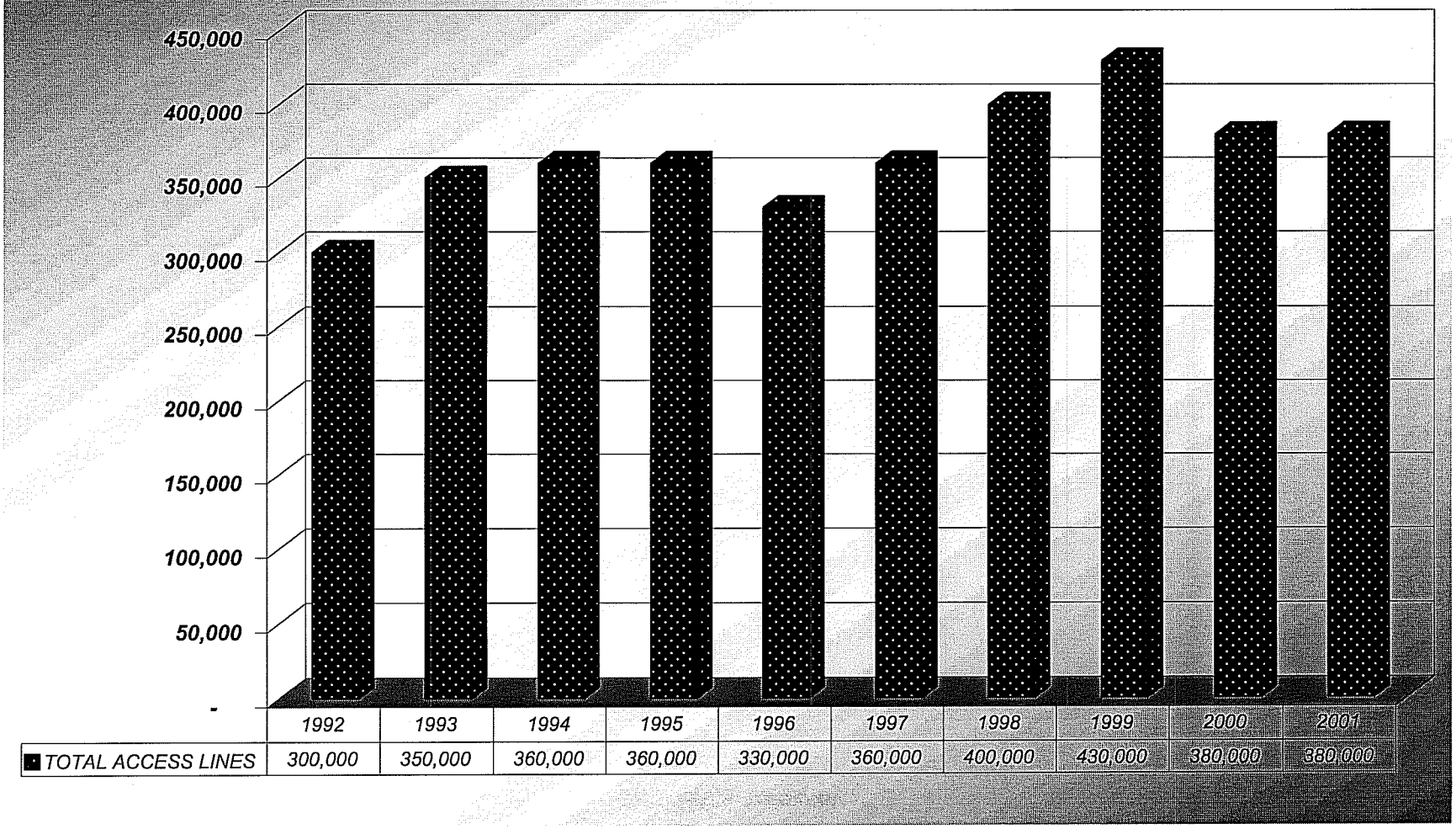
Marketing and Business Fees	Related Account Codes	Factor	Factor
Product Management Expense	6611	0.019957	0.014919
Sales Expense	6612	0.011877	0.008879
Product Advertising Expense	6613	0.000000	0.000000
Business Fees	7240.2-.9	0.001483	0.001241
Other Direct Expenses			
Network Operations	6532, 34, 35	0.034832	0.026418
Network Support Assets	2112 - 2116	0.014703	0.012281
General Support Assets	2111, 21-23, 1220, 2681.1, .9, 2682.1	0.088742	0.072714
Computers	2124,2681.3,2682.2	0.043342	0.034136
Uncollectible	5301.4-.5, .7	0.003786	0.003170
Accounting and Finance Expense	6721	0.007346	0.005571
Human Resources Expense	6723	0.008294	0.006290
Information Management Expense	6724	0.070887	0.053763
Intangibles	2690	0.000000	0.000000
Common			
Executive Expense	6711	0.011267	0.008951
Planning Expense	6712	0.000525	0.000417
External Relations Expense	6722	0.037846	0.030065
Legal Expense	6725	0.004717	0.003748
Other Procurement Expense	6726	0.001860	0.001477
Research and Development Expense	6727	0.000006	0.000005
Other General and Admin Exp	6728	0.015064	0.011967

QWEST - SOUTH DAKOTA TREND OF MAINTENANCE RATIOS
SOURCE: ARMIS 43-03



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Central Office-Switching	0.026836	0.034454	0.024627	0.033480	0.038550	0.033829	0.037560	0.029968	0.015046	0.014573
Central Office-Transmission	0.015903	0.015539	0.015804	0.015489	0.018755	0.016532	0.015595	0.016511	0.013614	0.013396
Cable & Wire	0.023150	0.027071	0.028250	0.030256	0.038063	0.037426	0.036162	0.036878	0.031304	0.043666

QWEST - SOUTH DAKOTA ACCESS LINE TREND
SOURCE: ARMIS 43-08



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
TOTAL ACCESS LINES	300,000	350,000	360,000	360,000	330,000	360,000	400,000	430,000	380,000	380,000

Docket No. TC01-98
Direct Testimony of Peter Gose
Attachment PJG-6

Trends in Telephone Service

Industry Analysis and Technology Division
Wireline Competition Bureau

May 2002

This report is available for reference in the FCC's Information Center at 445 12th Street, S.W., Courtyard Level. Copies may be purchased by calling Qualex International, Portals II, 445 12th Street S.W., Room CY-B402, Washington DC 20554 at (202) 863-2893, facimile (202) 863-2898, or via e-mail qualexint@aol.com. The report can also be downloaded from the **FCC-State Link** Internet site at www.fcc.gov/wcb/stats.

5 Employment and Labor Productivity

The Bureau of Labor Statistics (BLS) publishes monthly data regarding the total number of employed workers in the communications industry. Specifically, BLS compiles employment statistics for the entire telephone communications industry using the Standard Industrial Classification (SIC) 481 and for a subset of this industry, telephone communications minus radiotelephone (SIC 4813). The difference between these two figures yields the number of employees in the radiotelephone industry (SIC 4812).

SIC 4813 includes establishments primarily engaged in furnishing telephone voice and data communications, except radiotelephone and telephone answering services. SIC 4812 includes establishments primarily engaged in providing two-way radiotelephone communication services, such as cellular telephone service. It also includes telephone paging and beeper services. Neither of these categories includes employees from establishments primarily engaged in furnishing telephone answering services, manufacturing equipment, or engineering and research services.

Table 5.1 and the associated graph show the annual average employment figures in the telephone communications industry separately for SIC 4812 and SIC 4813 from 1951 to 2001. Since 1990, employment in the telephone communications industry has grown modestly. Most of the growth in employment over this period is the result of substantial increases in the radiotelephone industry, which grew at an annual average growth rate of approximately 20%.

BLS also calculates an annual telecommunications industry labor productivity index. The BLS index of labor productivity relates output to the employee hours expended in producing that output. This index, presented in Table 5.2, rose an average 6.0% per year from 1951 to 1999, with 1999 being the most recent data available. This average labor productivity factor is higher than the average in other industries (typically somewhere around 3 to 4%). This higher than average annual growth rate may be the result of telephone companies utilizing more efficient, advanced technology and increases in human capital. Table 5.2 and the associated graph illustrate the rising trend in telecommunications labor productivity since 1951.

Table 5.3 presents estimates of the number of telecommunications service providers that are small businesses as defined by the Small Business Administration's Office of Size Standards (i.e., 1,500 or fewer employees, including all affiliates).

Table 5.1
Annual Average Number of Employees in the Telephone Communications Industry
(In Thousands)

Year	Radiotelephone	All Other Telephone	Year	Radiotelephone	All Other Telephone	Year	Radiotelephone	All Other Telephone
1951	15.2	628.8	1969	20.5	849.5	1987	21.1	880.8
1952	16.0	662.4	1970	22.2	919.9	1988	23.2	877.9
1953	16.6	685.6	1971	22.4	929.2	1989 1/	29.9	856.0
1954	16.5	682.3	1972	22.5	933.6	1990	38.2	874.8
1955	16.6	690.1	1973	23.2	958.0	1991	45.6	863.6
1956	17.7	733.5	1974	23.6	977.2	1992	53.1	832.1
1957	18.1	750.1	1975	22.8	943.8	1993	63.1	815.9
1958	17.2	714.9	1976	22.5	930.7	1994	81.0	812.4
1959	16.7	690.4	1977	22.6	934.7	1995	102.5	797.2
1960	16.6	689.4	1978	23.4	971.4	1996	124.9	786.1
1961	16.3	677.0	1979	24.8	1,023.4	1997	150.7	820.3
1962	16.2	671.3	1980	25.3	1,046.9	1998	164.3	848.5
1963	16.2	669.3	1981	25.3	1,052.0	1999	182.7	892.4
1964	16.6	689.5	1982	25.3	1,046.5	2000	204.4	929.5
1965	17.3	717.9	1983 1/	23.8	986.5	2001	208.1	958.6
1966	18.3	755.1	1984	22.4	931.0			
1967	19.0	787.5	1985	21.6	899.1			
1968	19.2	793.2	1986 1/	20.7	862.7			

1/ Due to Bell operating company employee strikes in 1983, 1986, and 1989, which lasted one month each, the reported annual av of workers for those particular years is an average of the eleven months in which workers did not strike.

Source: Bureau of Labor Statistics.

Chart 5.1
Annual Average Number of Employees in the Telephone Communications Industry
1951 - 2001

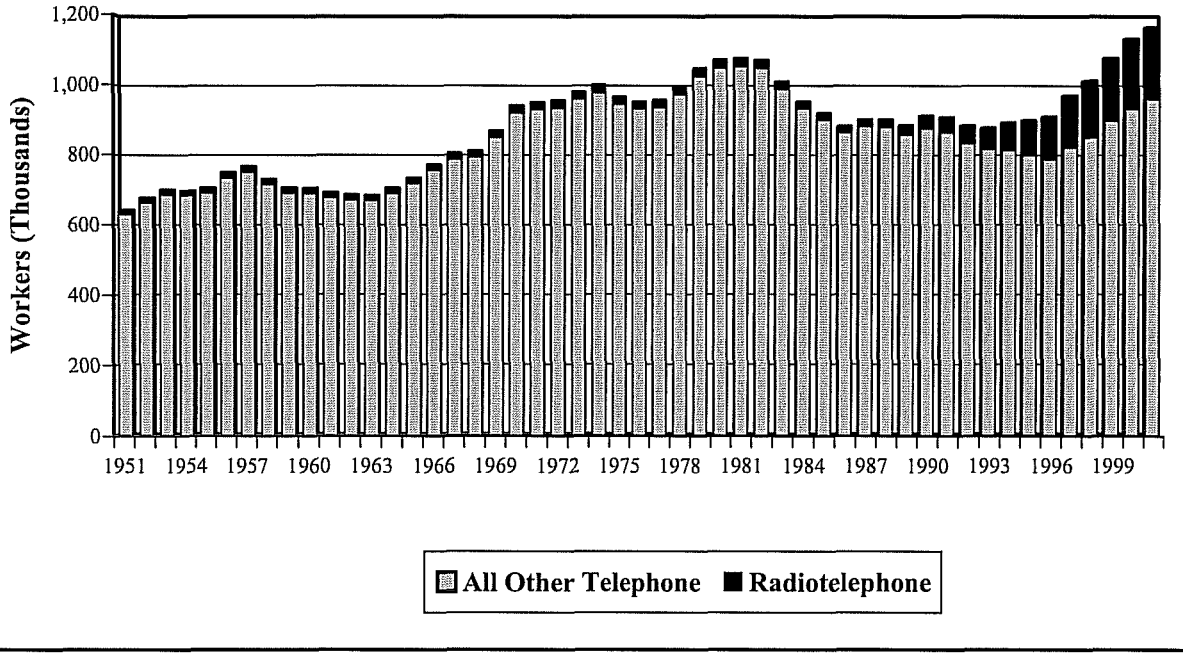


Table 5.2
Labor Productivity Index for the Telephone Communications Industry Measured in Output per Hour (OPH)
(Base Year 1987=100)

Year	OPH Index	Year	OPH Index	Year	OPH Index
1951	12.0	1968	34.7	1985	88.9
1952	12.4	1969	35.3	1986	95.0
1953	12.6	1970	35.6	1987	100.0
1954	13.2	1971	38.3	1988	105.9
1955	14.3	1972	40.1	1989	110.3
1956	14.6	1973	42.7	1990	111.9
1957	16.1	1974	45.0	1991	117.5
1958	18.2	1975	49.3	1992	126.1
1959	20.3	1976	53.6	1993	134.5
1960	21.4	1977	57.3	1994	141.5
1961	23.3	1978	60.6	1995	148.1
1962	24.8	1979	63.5	1996	162.5
1963	26.6	1980	67.6	1997	162.5
1964	27.8	1981	71.1	1998	174.4
1965	28.9	1982	73.8	1999	187.2
1966	30.3	1983	84.6	2000	200.8
1967	32.6	1984	84.5		

Source: Bureau of Labor Statistics.

Chart 5.2
Telephone Communications Industry
(SIC 481) Labor Productivity Index