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

TERESA K. MILLION

ON BEHALF OF

QWEST CORPORATION

OCTOBER 15, 2002

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I. IDENTIFICATION OF WITNESS

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

A. My name is Teresa K. (Terri) Million. My business address is 1801 California Street, Room 2050, Denver, Colorado 80202. I am employed by Qwest Services Corporation as a Director, Service Costs, in the Policy and Law Department. In this position, I am responsible for preparing testimony and testifying about Qwest's cost studies in a variety of regulatory proceedings.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE?

A. I received a Juris Doctor from the University of Denver, College of Law in 1994 and am licensed to practice law in Colorado. I also have a Master of Business Administration from Creighton University and a degree in Animal Science from the University of Arizona.

I have more than 19 years experience in the telecommunications industry with an emphasis in tax and regulatory compliance. I began my career with Qwest, (formerly Northwestern Bell Telephone Company and U S WEST, Inc.) in 1983. Between 1983 and 1986, I administered Shared Network Facilities Agreements between Northwestern Bell and AT&T that emanated from divestiture. I held a variety of positions within the U S WEST, Inc. tax department over the next ten years, including tax accounting, audit, and state and federal tax

research and planning. In 1997, I assumed a position that had responsibility for affiliate transactions compliance, specifically compliance with section 272 of the Telecommunications Act of 1996 (the "Act"). 47 U.S.C. § 272. In September 1999, I began my current assignment as a cost witness. In this position, I am responsible for managing cost issues, developing cost methods and representing Qwest in proceedings before regulatory commissions.

Q. HAVE YOU PREVIOUSLY APPEARED BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION?

A. Yes. I submitted testimony and appeared before this Commission in Docket No. TC99-106 on the issue of unbundled network element ("UNE") deaveraging.

Q. HAVE YOU TESTIFIED BEFORE OTHER STATE REGULATORY COMMISSIONS?

A. Yes. I have presented cost testimony before the commission in Arizona on the issue of UNE deaveraging, I have filed cost testimony on the issue of Operational Support Systems ("OSS") in Montana and Washington, and have addressed a variety of UNE issues in Arizona, Montana, Washington and Wyoming. I have filed cost testimony in New Mexico related to OSS, collocation and various other UNEs, as well. In addition, I have submitted testimony related to section 272 of the Telecommunications Act in Arizona, Colorado and Nebraska. Recently, I filed cost testimony in Colorado related to Operator Services.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present Qwest's South Dakota recurring incremental cost data for unbundled network elements and interconnection services. These data are utilized as the basis for the pricing recommendations outlined in the testimony of Ms. Kathy Malone and Mr. Bill Easton and are presented in my Exhibit TKM-01.

My testimony introduces and describes the Qwest Integrated Cost Model ("ICM"). The ICM is an integrated cost model that calculates the recurring Total Element Long Run Incremental Cost ("TELRIC") for the major unbundled network elements and interconnection services. Additionally, I introduce the Qwest Collocation Model and Line Sharing study, and discuss other recurring cost studies that are not part of the ICM. The Collocation Model is an integrated model that calculates both recurring and nonrecurring TELRIC for collocation services.

I also introduce and describe the Qwest Enhanced Nonrecurring Cost Studies ("ENRC") and present Qwest's South Dakota nonrecurring costs. The ENRC calculates the nonrecurring TELRIC for all UNEs and interconnection services, except collocation and the OSS costs related to development and enhancement, and on-going maintenance. I present separate, stand-alone studies that support Qwest's OSS costs. These data are also utilized as the basis for pricing recommendations outlined in the testimony of Ms. Malone and Mr. Easton and are contained in my Exhibit TKM-01.

Q. ARE OTHER QWEST WITNESSES PROVIDING TESTIMONY REGARDING COST ISSUES?

A. Yes. Dick Buckley provides testimony that describes in detail the methodology and assumptions included in the Loop Module of the ICM. The testimonies of Georganne Weidenbach, Dennis Pappas, and Joe Craig provide support for the engineering and network inputs used in the ICM Loop Module, the Collocation Model and the Line Sharing study. Renee Albersheim provides testimony describing Qwest's OSS expenditures associated with the development and enhancement of electronic interfaces for use by the competitive local exchange carriers ("CLECs"), the ongoing maintenance of the OSS, and development of OSS for use in Line Sharing. Finally, Ms. D. M. (Marti) Gude presents the cost studies and testimony supporting Qwest's proposed resale discount rates.

Q. HAS QWEST FILED COPIES OF EACH TELRIC STUDY, ALONG WITH DETAILED STUDY DOCUMENTATION?

A. Yes. The non-confidential cost study workpapers were filed on June 28, 2002, and include both paper and electronic copies of each cost study. The electronic documentation (provided on compact disc) includes all cost study calculations (e.g., excel spreadsheets) and methodology descriptions. In addition, the electronic workpapers include all of the supporting investment and expense cost models (along with user manuals) used to calculate investments and expenses in the studies. Using the workpapers, interested parties will be

able to follow the cost study calculations in each TELRIC study, and replicate the Qwest TELRIC results if desired.

Q. ARE YOU FILING ANY UPDATED COST STUDIES AT THIS TIME?

A. Yes. I am filing one updated cost study at this time: the OSS Development and Enhancement study. This study has been updated to reflect Qwest's actual OSS expenditures made on behalf of the CLECs during 2000 as described in Ms. Albersheim's testimony. This OSS study, also known as the OSS Start-up study (Study ID# 6550) replaces the study originally filed on June 28, 2002 identified as Study ID# 6550, and is included herein in two exhibits. The first is Exhibit TKM-05A, which is a document file containing the study executive summary; the second is Exhibit TKM-05B, which is a file containing the cost study workpapers.

III. TELRIC PRINCIPLES

A. Summary of TELRIC Principles

Q. PLEASE SUMMARIZE THE OVERALL ECONOMIC PRINCIPLES THAT ARE APPLIED IN QWEST'S TELRIC STUDIES.

A. The Qwest TELRIC studies identify the *forward-looking* direct costs that are caused by the provision of an interconnection service or network element in the *long run*, plus the incremental cost of shared facilities and operations. These studies identify *total element* costs – the average incremental cost of providing the entire quantity of the element. The

assumptions, methods, and procedures used in Qwest cost studies are designed to yield the forward-looking *replacement* costs of reproducing the telecommunications network, considering the most efficient, least-cost technologies that are currently available.

Q. HOW IS THE CONCEPT OF LONG RUN CONSIDERED IN THE QWEST TELRIC STUDIES?

A. The Qwest TELRIC studies consider a time period over which all inputs are variable.[1] In this context, long run does not relate to a specific period of time (e.g., five years, ten years, etc.) but refers to a time period long enough that all inputs, including investments, are variable. From a practical standpoint, this means that in a long run study all investments related to the network element are considered variable, and the costs associated with these investments are included in the TELRIC study results.

Q. PLEASE EXPLAIN HOW THE TELRIC STUDIES IDENTIFY REPLACEMENT COSTS FOR THE TOTAL ELEMENT.

A. The Qwest TELRIC studies consider the costs of a network that is "built from scratch," assuming the existing location of network "nodes" or switches. These long run studies identify the total "replacement" costs of serving all current and anticipated demand, rather than the costs of adding equipment to an existing network to meet a small increment in

[1] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, FCC 96-325, CC Docket Nos. 96-98, 95-185, First Report and Order at ¶ 692 (Rel. August 6, 1996) ("First Report and Order").

demand. Thus, the studies consider the efficiencies associated with building a network to serve total demand, assuming a single carrier.

In the Qwest TELRIC studies, the increment studied is the total quantity of the network element. Therefore, the studies calculate the average cost for all units of output, rather than the marginal cost of the next or last unit of output.

Q. PLEASE EXPLAIN HOW THE FORWARD-LOOKING CONCEPT IS CONSIDERED IN THE QWEST TELRIC STUDIES.

A. The Qwest TELRIC studies identify the forward-looking costs that are likely to be incurred in the future. These studies consider the least-cost, forward-looking technologies and methods of operations that are currently available and practical to deploy in the network, given current and anticipated demand for the total element. Thus, in calculating appropriate TELRIC costs it is important to consider, as Qwest has, what is currently being deployed in the system, as well as, what will be used by the competitor on a forward-looking basis.

Q. IS IT IMPORTANT THAT TELRIC STUDIES CONTAIN REALISTIC FORWARD-LOOKING ASSUMPTIONS?

A. Yes. A TELRIC study must provide a realistic estimate of forward-looking costs. Thus, a TELRIC study must provide an estimate of the forward-looking costs that Qwest *would be likely to incur* in the future. Consistent with this standard, the Qwest TELRIC studies use the latest technologies and methods of operations that are currently available. Only

technologies that are commercially available and that are currently being deployed in the industry today are included in the studies. The studies do not rely on technologies that might be available in the future. There is too much uncertainty about unproven, potential technologies to permit their use in cost studies, including uncertainty about whether the technologies will actually become available, the potential cost of the technologies, and the potential uses of the technologies. Nor do the studies rely exclusively on "state-of-the-art" technologies that may be available, but are impractical to deploy in every situation.

For example, fiber-based DS1 technologies are considered to be "state-of-the-art." However, in circumstances where utilization is low (e.g., there is demand for only 1 or 2 DS1s at an end-user location) and is not likely to increase in the foreseeable future, it is impractical to deploy fiber rather than copper-based DS1s. This is because a fiber-based DS1 technology, such as OC3, provides capacity for 84 DS1s at only one location unless appropriate additional electronics and fiber are deployed in multiple end-user locations. The cost of fiber and these electronics causes fiber-based architectures to be far more costly than copper on a per-DS1 basis in low demand situations.

Some parties may advocate the use of a theoretical, least-cost TELRIC methodology that employs unrealistic assumptions to produce low cost estimates, such as assuming unrealistic high demand for DS1s at each end-user location to justify an all-fiber network. The Commission should reject these "fantasy cost" estimates, because pricing based on these studies would prevent Qwest from recovering its legitimate, realistic costs (e.g., by either not assuming enough cost for necessary electronics or by overstating system utilization). No

firm could continue to invest in infrastructure if it were forced to sell its services based on "fantasy" costs that are below the real-world costs the firm incurs to build the infrastructure.

In its TELRIC studies, Qwest uses current market prices to determine the costs for equipment and materials. Placement costs are based on the expenditures that the network organization currently incurs to perform the relevant functions, based on actual contracts with vendors that work with Qwest in South Dakota. Expense factors are based on currently incurred costs adjusted for known or anticipated changes. Each assumption is designed to reflect the forward-looking cost of placing the network.

Q. CAN YOU PROVIDE SOME EXAMPLES OF HOW APPROPRIATE FORWARD-LOOKING TECHNOLOGIES ARE CONSIDERED IN QWEST'S TELRIC STUDIES?

A. Yes. In developing investment costs, Qwest models forward-looking, least-cost network designs. For example, the ICM Loop Module described by Mr. Buckley considers the least-cost, forward-looking mix of copper, fiber and integrated pair gain equipment. Thus, the model considers not just "state-of-the-art" technology (e.g., fiber), but also the "least-cost" way of providing the element in varying network applications. For unbundled loops, copper facilities represent the least-cost technology for shorter loops and where demand is relatively low, while fiber and electronics represent the least-cost technology for longer loops and where demand is relatively high.

The Switching Module of ICM develops switching investment for each service, using only digital switch technology. The switching module does not use older, less efficient technologies, such as analog switching equipment. In the Transport Module, interoffice facilities are modeled assuming 100% fiber and Synchronous Optical Network ("SONET") based equipment. Signaling costs are developed based on the forward-looking equipment in a Signaling System 7 ("SS7") network.

The Qwest TELRIC studies also consider forward-looking operating expenses. Qwest adjusts its recent expense information to develop annual cost factors that estimate forward-looking costs. Using historical information as a starting point, Qwest adjusts its expense factors to account for future efficiencies and expected inflationary/deflationary price impacts.[2]

Q. YOU MENTIONED THAT TELRIC STUDIES IDENTIFY DIRECT COSTS AND THE COST OF SHARED FACILITIES AND OPERATIONS. PLEASE DEFINE EACH OF THESE TERMS.

A. Direct costs are the costs that would be avoided if the network element or service were not offered. Direct costs include both volume sensitive costs (i.e., costs that vary with the volume of a network element or service) and volume-insensitive costs (i.e., costs that are caused by a network element or service, but do not vary with volume). Shared costs are the costs that are caused by the provision of a group of services. Both direct and shared costs

[2] This is accomplished via the "estimated cost savings" and "inflation" inputs in the Expense Factor Module.

are included in a TELRIC study, consistent with the FCC's definition of TELRIC in the First Report and Order.[3]

Q. DO THE QWEST TELRIC STUDIES IDENTIFY COMMON COSTS?

A. Yes. As discussed above, Qwest's studies identify the TELRIC for each element, which includes the direct and shared costs. In addition, these studies separately identify an allocation of forward-looking common overhead costs. These costs (e.g., legal, planning, executive, etc.) are not associated with a specific network element, but represent general costs of doing business. These are *real* costs that Qwest will efficiently incur on a forward-looking basis, and that must be recovered in UNE prices. In fact, the FCC's First Report and Order states specifically that "under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs."[4]

[3] The FCC stated "We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs. . . . Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible. For example, the costs of conduits shared by both transport and local loops, and the costs of central office facilities shared by both local switching and tandem switching, shall be attributed to specific elements in reasonable proportions. More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible." First Report and Order ¶ 682.

[4] First Report and Order ¶ 682.

Q. HOW SHOULD THE QWEST TELRIC STUDIES BE UTILIZED IN THIS PROCEEDING?

A. The Commission should use the TELRIC-based rates presented in my pricing exhibit, Exhibit TKM-01, to set prices for UNEs and interconnection services. These rates result from the TELRIC data contained in the Qwest's cost studies and models filed with the Commission on June 28, 2002. That is, this data, including an allocation of common costs, should be used as the basis for the UNE and interconnection service prices outlined in the testimony of Ms. Malone and Mr. Easton.

B. The Telecommunications Act and FCC Order

Q. WHAT DOES THE TELECOMMUNICATIONS ACT OF 1996 SAY ABOUT COSTS AND PRICES?

A. The Act states that prices for network elements shall be "nondiscriminatory," "based on costs" and "may include a reasonable profit".[5]

Q. IS QWEST'S TELRIC METHODOLOGY IN COMPLIANCE WITH THE ACT?

A. Yes.

Q. DID THE FCC ESTABLISH COSTING AND PRICING RULES IN ITS FIRST REPORT AND ORDER?

[5] 47 USC §252(d)(1).

A. Yes. The FCC proposed costing and pricing rules in its First Report and Order, released on August 8, 1996. In these rules, the FCC established overall TELRIC principles and specified a TELRIC methodology.

Q. DO QWEST'S TELRIC STUDIES FOLLOW A METHODOLOGY THAT IS CONSISTENT WITH THE FCC'S TELRIC RULES?

A. Yes. The South Dakota TELRIC studies filed by Qwest on June 28, 2002, in this proceeding are consistent with the FCC's TELRIC principles, as defined in the FCC's First Report and Order. For example, the TELRIC studies are consistent with the following principles:

- "Under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs." (First Report and Order ¶ 682)

- "Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element." (*Id.*)

- "Directly attributable . . . costs shall be attributed to specific elements to the greatest extent possible. . . . More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible." (*Id.*)

- "The forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements." (*Id.* ¶ 685)

- "In a TELRIC methodology, the "long run" used shall be a period long enough that all costs are treated as variable and avoidable." (*Id.* ¶ 692)

- "An appropriate calculation of TELRIC will include a depreciation rate that reflects the true changes in economic value of an asset and a cost of capital that appropriately reflects the risks incurred by an investor." (*Id.* ¶ 703)

IV. THE TELRIC STUDIES IN GENERAL

Q. YOU SAID THAT THE TELRIC STUDIES FORM THE BASIS FOR RECURRING AND NONRECURRING COSTS. PLEASE DEFINE THESE COSTS.

A. Recurring costs are the ongoing costs associated with providing a service or network element. Recurring costs are generally investment-related and include both capital costs and operating expenses. These costs are often presented as a cost per-month or per-unit of usage (e.g., minute of use) and are incurred throughout the time-period the service or network element is provided to a customer.

Nonrecurring costs are the one-time costs associated with establishing a service or network element. Nonrecurring costs are generally activity or transaction-related and are calculated by multiplying the length of time necessary to perform an activity by a specified labor rate.

Q. PLEASE EXPLAIN HOW RECURRING COSTS ARE CALCULATED IN THE TELRIC STUDIES PRESENTED IN SOUTH DAKOTA.

A. All Qwest cost studies in South Dakota employ the same basic procedures to arrive at a monthly recurring TELRIC cost estimate:

1. **Define the Network Element or Service.** While Qwest's cost studies anticipate replacement of the entire network, the cost analyst works with product management and technical staff to define each of the elements or services to be studied. This step includes identification of all the network components that are needed to provide particular elements or services, and an estimation of total demand for the element or service, including Qwest's own demand.

2. **Development of Investment.** The investment required to provide the service or element includes the actual vendor prices for material and equipment, plus the cost to place the equipment, including capitalized labor costs. Determination of the correct amount of investment is key to the accuracy of any predictive cost model. Therefore, in addition to utilizing actual vendor information, and contractor or internal placement costs, Qwest relies on sound engineering practices to model the amount of investment necessary to provide a given service at a particular level of usage or demand.

3. **Estimation of Investment-related Capital Costs.** Capital costs comprise a large portion of total service cost, and the level of capital cost is impacted by the depreciation lives for the relevant plant accounts and the weighted cost of debt and equity capital. Investment-related capital costs (depreciation and cost of money) in South Dakota are based on state prescribed values. For example, Qwest uses 10.14% for cost of money as approved by the Commission in Docket No. TC96-184 (Interconnection Contract between AT&T and U S WEST, August 13, 1997).

4. **Estimation of Operating Costs.** Operating expenses are estimated, in most cases, utilizing annual cost factors. Investment-related operating expenses (e.g., maintenance expense) are calculated based on annual cost factors that are applied to investment, while other operating expenses (e.g., marketing expenses) are normally calculated based on factors that are applied to the investment-related costs. These cost factors consider the historic relationships between expenses and investment that Qwest has experienced in

the past, adjusted for inflation/deflation and productivity increases. These operating expenses are added to the capital costs to provide the TELRIC for the network element.

An appropriate share of common costs is allocated to the TELRIC costs to yield the total cost (TELRIC plus Common).

5. **Validation of Results.** After costs have been estimated, this data is reviewed and cross-checked with other cost data to assure reasonableness. Results are compared across states and across services. TELRIC results may also be compared with cost results derived from other cost models.

Q. HOW DOES THE DEVELOPMENT OF NONRECURRING COSTS DIFFER FROM DEVELOPMENT OF RECURRING COSTS?

A. Nonrecurring costs are generally expense-based, and result from the development of direct costs associated with the tasks necessary to perform a one-time activity. Similar to the process described above, the tasks associated with establishing a particular service or element are identified by product management. Time required to perform tasks are modeled, probabilities are assigned to reflect the likelihood that an activity will take place, and the result is multiplied by appropriate labor rates to develop the direct costs of the activity. Operating expenses are added to the direct expenses to provide the TELRIC for the network element. Finally, a share of common costs is applied to produce "TELRIC plus Common" nonrecurring costs.

A. The Qwest Integrated Cost Model

Q. PLEASE BRIEFLY DESCRIBE THE INTEGRATED COST MODEL (ICM).

A. The ICM is a cost model developed by Qwest that is designed to estimate the *recurring* TELRIC for UNEs and interconnection services. The ICM study results (Study ID# 6466) are displayed in my pricing exhibit, Exhibit TKM-01. The ICM produces recurring costs for the major UNEs and interconnection services, including the unbundled loop, switching, transport elements, as well as other elements listed below in Section V.A of my testimony.

Q. PLEASE DESCRIBE THE KEY DESIGN FEATURES OF THE ICM.

A. The ICM calculates the costs for UNEs using the same basic methodological approach that is used for all of Qwest's TELRIC models and studies. However, the ICM addresses past criticisms of Qwest's TELRIC models and incorporates several stand-alone modules into a single model that is:

- **simple** and **user friendly.** The model can be run on most windows-based personal computers.[6] It contains a "point and click" interface that is easily navigated by the user. The user can view results, study assumptions, study inputs, etc., and make changes when desired. A user can run a new TELRIC study, based on the user's specifications, in a relatively short period of time. In sum, the ICM is an easy to use model that does not

[6] See documentation for specific computer requirements.

require users to be trained as model "experts." Any interested party can run the model by following the user guide instructions.

- The ICM is an **open model.** The model makes it easy for the user to view the study inputs, calculation processes, and output results. All aspects of the model are open to investigation by the user – eliminating any "black box" concerns.

- The ICM is **integrated.** In the past, costs for different UNEs had to be calculated in separate models. For example, switching costs were calculated via the Switching Cost Model ("SCM") and Windows Personal Computer Cost Calculator ("WINPC3") models. Loop costs were calculated using the Regional Loop Cost Analysis Program ("RLCAP") and WINPC3. Transport costs were calculated in a separate transport model. With ICM, costs for the major UNEs, including the loop, switching and transport, are calculated in the same easy to use integrated model. ICM replaces WINPC3 and performs the functions previously provided through separate runs of WINPC3. The integrated nature of the ICM assures that all annual cost factors are applied consistently.

Q. IS QWEST PROVIDING A MANUAL THAT PROVIDES A DETAILED DESCRIPTION OF THE ICM AND ITS MODULES?

A. Yes. Qwest is filing the ICM User Manual, which instructs the user about how ICM operates. The ICM User Manual is included with the workpapers and documentation contained on the CD that was filed June 28, 2002 under the Models folder in the folder labeled ICM. This manual contains detailed instructions for running ICM, including, for

example, how to change inputs to the model. This manual also provides detailed documentation that describes each of the five ICM modules (i.e., switching, loop, transport, capital costs and expense factors).

Q. HOW IS THE ICM DESIGNED TO OPERATE?

A. The ICM runs each of the modules and inserts the results from each module into the Output Workbook. The Output Workbook uses the results of each module, along with special study inputs, to calculate the TELRIC for each UNE and interconnection service. First, investment-related factors are applied to investments to provide the investment-related monthly costs (e.g., depreciation, cost of money, income tax and maintenance) for each UNE and interconnection service. Second, the expense-related factors are applied to the investment-related costs to yield the monthly cost for operating expenses, such as product management and network operations and support. Third, the Output Workbook sums all of the monthly costs to provide the monthly TELRIC for the UNE. Finally, the Output Workbook provides an allocation of common costs (e.g., executive, planning, other general and administrative expenses) to each UNE and interconnection service.

Q. DOES THE ICM ALLOW THE USER TO MODIFY INPUTS?

A. Yes. The ICM provides input forms for each of the modules, which allow the user to change key input assumptions. The input forms display the default value for each input item and allow the user to override these values if desired. For example, the Loop Module provides input forms that allow the user to view the default values that are used to reflect how often

different placement methods are used to place buried cable and, if desired, to change those values to reflect different assumptions about placement methods.[7] After all desired changes are made to the inputs, the user can easily rerun the ICM to produce UNE cost results based on the new user assumptions.

Q. PLEASE DESCRIBE THE PROCESS QWEST USES TO VALIDATE THE ASSUMPTIONS AND INPUTS USED IN ITS MODELS.

A. Qwest utilizes a variety of approaches to ensure the reasonableness of its TELRIC estimates and assumptions. For example, component prices are taken directly from vendor quotes with South Dakota specific loadings (e.g., sales tax) applied. Placement costs contained in Qwest's loop costing model are developed from actual network contracts with South Dakota vendors. Assumptions are verified through discussions with internal experts about actual construction experiences and vendor bid responses, along with other relevant data. Since TELRIC, by its very nature, represents a rebuild of the total network, it is critical that all relevant available information be used to confirm model assumptions, inputs and logic. Qwest's cost analysts also spend extensive time reviewing cost data for related UNEs and for the same UNEs in other states to ensure that each model's results are within a range of reasonableness. As described by Mr. Buckley, Qwest has compared its TELRIC loop costs with loop cost data from other sources to assure that the results of the TELRIC study for the unbundled loop are reasonable.

[7] Mr. Buckley provides a thorough discussion of Loop Module inputs in his testimony.

Q. DOES ICM PROVIDE UNE COST RESULTS THAT REFLECT THE PROPER APPLICATION OF TELRIC PRINCIPLES?

A. Yes. The ICM and its modules contain recommended default inputs. For example, as described below in Section IV.C.1 of my testimony, the ICM utilizes fill factors that are designed to provide a "reasonable projection of actual total usage of the element," as required by the FCC.[8] In addition, my discussion of the ICM modules, in this section, explains how the key inputs are determined. If the model is run with these inputs, it produces results, as delineated in Exhibit TKM-01, that properly reflect the TELRIC principles mentioned earlier in my testimony. The ICM model, using the default inputs, provides a reasonable estimate of the recurring TELRIC for UNEs in South Dakota. These results should be used by the Commission to set recurring prices for UNEs and interconnection services.

B. The ICM Modules

1. The Loop Module

Q. WHERE CAN A DESCRIPTION OF THE ICM LOOP MODULE BE FOUND?

A. Mr. Buckley provides a detailed description of the ICM Loop Module in his testimony.

[8] First Report and Order ¶ 682.

2. The Switching Module

Q. PLEASE BRIEFLY DESCRIBE THE SWITCHING MODULE OF ICM THAT IS USED TO CALCULATE SWITCHING COSTS.

A. The Switching Module of the ICM calculates costs utilizing the SCM program. SCM is the switching cost model that has been incorporated into the ICM for ease of use. The purpose of SCM is to provide per-unit switching investments for various services, features and functions. In the past, the SCM was a separate model that developed the switching investments, and worked in conjunction with WINPC3 to calculate monthly recurring costs for switching. As an integrated part of ICM, SCM, along with the other modules calculate the investments, which in turn result in monthly recurring costs generated by ICM.

SCM contains four major modules. **SCM Core** calculates busy hour investments by switching function. SCM Core uses engineering information, along with the discounted vendor price for various equipment components, to develop a cost for each function performed by the switch. SCM Core produces costs for functions such as:

- Investment per analog line
- Investment per processor millisecond
- Investment per network hundred call seconds ("CCS")
- Investment per 3-port conference circuit

SCM Features develops unit investments for vertical features, such as custom calling services.[9] SCM Features uses SCM Core outputs, along with feature usage data, to calculate the cost of a feature, usually on an investment per line basis. For example, Three Way Calling investment is developed by using the SCM Core outputs for "Investment per Millisecond" and "Investment per 3 Port Conference Circuit CCS," along with usage data (e.g., average Three Way Calling busy hour CCS and calls) to derive the Three Way Calling investment per line.

SCM Calls develops the switching cost per line, and the switching cost for various types of calls:

- Line to line
- Line to trunk
- Trunk to line
- Trunk to trunk

SCM Calls develops these costs on a per busy hour attempt and per busy hour conversation minute basis, utilizing SCM Core outputs along with data regarding how much of these outputs are consumed, for example, to set up a call.

The **SCM Usage** module converts busy hour unit investments from SCM Calls into an investment per call setup and per minute of use for various types of calls.

[9] The costs for individual vertical features are included in one of the additional cost studies, and are not included in the ICM output. However, the investments are calculated in the SCM.

Q. WHAT ARE THE PRIMARY COST DRIVERS THAT IMPACT THE SCM RESULTS?

A. The primary cost drivers for switching equipment include:

- The price charged to Qwest by vendors such as Lucent Technologies
- The busy-hour demand per line and per trunk within a switch
- The number of lines served by the switch
- The trunk to line ratio required to meet the demand on the switch

Q. HOW IS THE DATA FROM THE SWITCHING MODULE USED IN THE ICM?

A. The Switching Module calculates switching investments for local switching, tandem switching, end office analog ports, digital ports, and vertical features.[10] These investments are converted to monthly or per minute-of-use costs in the ICM Output Workbook.

Q. DOES THE QWEST ICM MANUAL CONTAIN A MORE DETAILED DESCRIPTION OF THE SWITCHING MODULE?

A. Yes.

Q. WHAT ARE THE KEY INPUTS TO THE SWITCHING MODULE?

A. The key inputs in the Switch Module of ICM are: the growth rate, administrative and other fill factors, and the average business day equivalents per year. In addition, the user can

make changes to the vendor discount rates that are applied in the ICM to the types of switches that Qwest models. Descriptions of these discounts are provided in the ICM user manual.

Q. PLEASE EXPLAIN WHAT YOU MEAN BY A "FILL FACTOR."

A. As described in more detail in Section IV.C.1 below, "fill" is an industry term for the *assumed* utilization to be placed on a piece of investment (e.g., loop plant or a switch) when determining the unit cost.

Q. HOW DOES QWEST DEVELOP THE RECOMMENDED DEFAULT FILL FACTORS FOR ANALOG LINES, INTEGRATED DIGITAL LINES AND DIGITAL TRUNKS IN THE SWITCH?

A. Administrative spare capacity for analog and digital lines in the switch is used to account for:

- Malfunctioning equipment (e.g., ports)
- Lines set aside for testing
- Lines used for administrative purposes (e.g., lines to Switching Control Center, Network Administration Center, etc.)
- Lines reserved for special events, e.g., once a year events such as state fairs (wire center dependent)
- Lines set aside in case the line forecast is exceeded prior to a scheduled line growth job

[10] As noted earlier, the costs for individual vertical features are included in one of the additional cost studies, and are not included in the ICM output. However, the investments are calculated in the SCM.

Based on an analysis of these various administrative needs, Qwest estimates that the administrative line fill factor for both analog and digital lines is 95%, or 5% administrative spare capacity.

Digital trunk spare capacity occurs because of the unused capacity due to the modularity of trunk ports. The term "modularity" refers to the minimum amount of capacity that must be added to meet the next increment of demand once current capacity reaches exhaustion. Thus, as each new trunk group is added to meet demand, a certain amount of spare capacity will exist until demand "catches up with" available capacity. The average number of trunks per trunk group is 64, of which Qwest estimates an average of 12 trunks (half of a DS1) will not be in use at any given time because of the effect of modularity. Accordingly, the fill factor due to modularity equals 52 / 64, or 81%.

Finally, the fill factors are impacted by churn of dedicated inside plant (lines that are disconnected but left in place for a limited time period awaiting a reconnect at the same location). This is also known as dedicated idle plant and is the percent of plant that occupies space on the switch but is not in service at any given time as it waits to be reconnected. The percentage of dedicated idle plant decreases the overall fill in the switching model.

Q. HOW ARE THE VENDOR DISCOUNTS IN THE SWITCHING MODULE DETERMINED?

A. The vendor discounts are based on actual vendor contracts that Qwest has negotiated with switch vendors, such as Lucent, Ericsson, or Nortel. The vendor discounts are entered into

the ICM as default values. The default discount values are developed by, first, running the SCM model for the various switch types with list price inputs to develop an investment per line. Next, in a separate worksheet, the latest contract investments per line are calculated based on the vendor contracts. In addition, ratios of the latest contract-price-per-line to the list price-per-line are developed. Finally, the ratios, which reflect the vendor discounts, are applied to all of the list price data in the SCM in the development of the investments for each switch component.

3. The Transport Module

Q. PLEASE DESCRIBE THE TRANSPORT MODULE.

A. The Transport Module is used to estimate the investment in transmission and channel termination equipment needed to provide transport between two switching offices. The Transport Module calculates dedicated and switched transport costs.

Q. WHAT IS INCLUDED IN THE TRANSMISSION (MILEAGE SENSITIVE) INVESTMENT?

A. The transmission investment includes the cost of fiber facilities and intermediate multiplexing equipment.

Q. WHAT IS INCLUDED IN THE TERMINATION (FIXED) INVESTMENT?

A. Channel termination investment includes the electronic equipment located at the switch location (where the route originates and terminates) that converts electronic signals into optical signals, as well as the equipment used to multiplex or de-multiplex a signal.

Q. WHAT DATA DOES THE TRANSPORT MODULE USE TO ESTIMATE TRANSPORT COSTS?

A. The Transport Module calculates costs using the following files and data:

- Point pair files – These files include all combinations of routes between any two wire centers in South Dakota. These data include originating and terminating wire centers, and the number of circuits connecting them.
- The SONET transport model contains three forward-looking transport configurations: point-to point, linear, and ring.
- Investments – This file contains material costs for equipment used in the network. This information is based on Qwest's current vendor contracts.
- Investment Profiles – This file contains the distribution of transport configurations used in the model. These profiles vary by the size of the wire centers where the point pairs terminate.

These data are described in more detail in the Transport Module of the ICM user manual included on the compact disc.

Q. PLEASE EXPLAIN THE GENERAL METHODOLOGY USED TO CALCULATE TRANSPORT MODEL INVESTMENTS.

A. For every point pair (i.e., any combination of connections between two wire centers) in South Dakota, the transport model calculates investment per circuit for channel termination equipment, fiber optic facilities, and intermediate multiplexing equipment. The investments

associated with each point pair are sorted into mileage bands. For each mileage band, the model calculates fixed (termination) and distance sensitive (transmission) investments. These investments are converted into costs in the ICM Output Workbook.

Q. WHAT ARE THE KEY INPUTS IN THE TRANSPORT MODULE?

A. The key inputs in the Transport Module are the utilization, or fill factors, and the vendor costs for various types of equipment (e.g., the cost per foot for fiber or the cost of a fiber distribution panel).

Q. HOW ARE THE RECOMMENDED DEFAULT UTILIZATION FACTORS DEVELOPED?

A. The utilization factors for D4 channel banks, M1/3 multiplexers (multiplexers that change signals from DS1 to DS3 or vice versa), and fiber terminals are developed from data in the TIRKS (Trunk Integrated Record Keeping System) database. TIRKS is a system Qwest uses for order control and integrated record keeping, which processes allow for highly mechanized provisioning of complex design services. The TIRKS database is a repository for the inventory, capacity and utilization information related to services such as SONET-based interoffice facilities. The utilization factors are calculated based on the demand for, and capacity of, the equipment tracked in TIRKS. The Transport Module allows different utilization inputs depending on whether the traffic is switched or dedicated. The utilization factors for fiber and conduit are developed using information provided by subject matter experts in Qwest's network organization and are determined on a state- or equipment-

specific basis. These estimates extrapolate Qwest's recent experience forward to reflect the likely utilization of an efficient carrier in the future.

Q. HOW ARE THE INVESTMENT DEFAULTS USED IN THE TRANSPORT MODULE DEVELOPED?

A. The default material investments used in the Transport Module for the equipment and facilities described above are found in vendor contracts or price lists. The material investments for the standard transport configurations are determined by engineers whose job it is to develop the transport configurations currently in use at Qwest. Thus, the material prices used as defaults in the ICM reflect the current prices that Qwest must pay vendors to purchase equipment used to provide transport.

Q. DO YOU RECOMMEND THE USE OF THE DEFAULT INPUT VALUES FOR TRANSPORT?

A. Yes. The default input values in the Transport Module are generated from actual vendor contracts and price lists, using currently deployed transport configurations developed by subject matter experts, and capacity and utilization information from TIRKS. Qwest believes the data obtained from these sources is the most current and forward-looking data available.

4. Capital Cost Module

Q. WHAT ARE THE KEY INPUTS IN THE CAPITAL COST MODULE?

A. The key inputs to the Capital Cost Module are cost of money and depreciation lives. The ICM allows the user to select the economic or state-prescribed cost of capital for Qwest, or to enter a specific cost of equity, cost of debt and debt to capital ratio. The ICM also allows the user to select the economic, state-prescribed or FCC-prescribed depreciation lives and network salvage values, or to change the depreciation lives and net salvage for every plant account. The user can also choose either Equal Life Group or straight-line depreciation.

Q. WHAT COST OF MONEY DOES QWEST UTILIZE IN THE TELRIC STUDIES YOU ARE PROVIDING?

A. As stated above in Section IV, the TELRIC studies that Qwest is submitting utilize the South Dakota approved cost of money, which is 10.14%. This is the cost of money approved by the Commission in Docket No. TC96-184.

Q. DOES QWEST BELIEVE THAT THIS IS THE CORRECT COST OF MONEY TO USE IN PREPARING TELRIC DATA?

A. No. Qwest believes that TELRIC studies should use a forward-looking, economic cost of money. The cost of money should represent the weighted average cost of debt and equity and should be calculated with consideration of the appropriate measure of risk. As

competition enters the market, Qwest's risk increases. The risk borne by a state-sanctioned monopoly is much less than the risk of a competitive firm. This is especially true in the current economic environment facing the entire telecommunications industry, and Qwest in particular. This environment of increased risk should be reflected in Qwest's cost of capital, which will increase as risk increases. It should be noted that the FCC's costing and pricing rules require the use of a forward-looking cost of capital. (See 47 C.F.R. § 51.505(b)(2))

Nonetheless, because the Commission approved the 10.14% cost of money in Docket No. TC96-184, and Qwest continues to want to avoid a protracted debate over this subject, 10.14% is the cost of money reflected in its TELRIC studies filed in this proceeding. Qwest does not advocate this cost of money, nor does it believe that this cost of money is necessarily appropriate for use in cost studies beyond the scope of this application.

Q. WHAT DEPRECIATION LIVES DOES QWEST UTILIZE IN THE TELRIC STUDIES YOU ARE PROVIDING?

A. The TELRIC studies that Qwest is submitting utilize the state-prescribed depreciation lives and salvage values approved by the Commission in Docket No. TC94-121 (Price Regulation Case, January 8, 1996) and ordered in Docket No. TC96-184.

Q. DOES QWEST BELIEVE THAT THESE ARE THE CORRECT DEPRECIATION LIVES TO USE IN A TELRIC STUDY?

A. No. Qwest believes that TELRIC studies should use forward-looking economic depreciation lives. These lives should reflect the length of time the plant and equipment can reasonably be expected to continue to be used and useful on a going-forward basis. Consistent with a forward-looking analysis, the evaluation of the expected lives of plant and equipment should be based on today's competitive environment and should not reflect some measure of past lives developed in the monopoly era. Consistent with the intent of the Telecommunications Act of 1996 ("the Act"), competition has led to diverse and rapid changes in telecommunications technology and equipment. Forward-looking depreciation lives should take into account this rapid pace of change. The use of artificially long equipment lives understates depreciation expense, and thus overstates the actual return on investment. It should be noted that the FCC's costing and pricing rules require the use of forward-looking depreciation lives. (See 47 C.F.R. § 51.505(b)(3))

Nonetheless, because the Commission addressed this issue previously and determined state-prescribed depreciation lives and salvage values, Qwest has used those state-prescribed values in its TELRIC studies in this proceeding. Qwest does not advocate these depreciation lives, nor does it believe that these lives are appropriate for use in cost studies beyond the scope of this application.

5. Expense Factors Module

Q. DOES THE ICM INCORPORATE AN ENHANCED PROCESS FOR THE CALCULATION OF ANNUAL EXPENSE FACTORS?

A. Yes. The Factors Module of ICM includes several enhancements that make it easy to understand the factor application process and to audit the results.

In the enhanced Factors Module:

- Expenses and investments are pulled directly from standard accounting reports;
- User-defined efficiency and inflation inputs can be selected;
- The factor calculation process starts with standard accounting report results (i.e., the books of the firm). Directly assigned costs (i.e., costs that are directly assigned to elements) and costs that are not applicable to TELRIC studies are removed, and these subtractions are explicitly displayed in the Factors Module. This provides the user with a clear understanding of which costs are included and which costs are not included in the factors;
- All calculations are contained in one set of worksheets.

Q. DO THE ENHANCEMENTS TO THE EXPENSE FACTORS MODULE MAKE IT EASIER TO ENSURE THAT DOUBLE COUNTING OF COSTS DOES NOT OCCUR?

A. Yes. The factors model is designed to help the user ensure that double counting (or omission) of expenses does not occur. The cost factors are based on historical cost relationships,[11] and use the books of account as a starting point. All costs on the books of Qwest are accounted for – costs are explicitly removed if directly assigned in another study or if not applicable to TELRIC studies. The user can clearly see the total costs (booked costs), the removed costs, and the costs that remain in the factors. Thus, for example, the

[11] As noted above, factors are adjusted to account for inflation/deflation and efficiency gains.

user can see that the business office costs that are separately identified in a nonrecurring cost study are removed from the factors and not double counted.

Q. DOES THE ICM EXPENSE FACTOR MODULE ASSURE CONSISTENCY OF FACTOR APPLICATION?

A. Yes. Prior to the development of an integrated cost model, cost analysts had to apply cost factors separately in each cost study. While the analysts have always sought to ensure that factors were consistently applied across studies, the ICM makes this process much easier. Since the costs for all UNEs and interconnection services developed in ICM are calculated in the same module, the user can assure that the cost factors are consistently applied to all UNEs and interconnection services.

Q. PLEASE DESCRIBE THE KEY FACTORS MODULE INPUTS.

A. The key inputs to the Factors Module are the efficiency and inflation/deflation factors. In the Factors Module input screen, the user may input a "Cost Savings Value" and an "Inflation Rate." The Cost Savings Value estimates the gains expected in productivity or efficiency, while the Inflation Rate estimates the amount of inflation (or deflation) anticipated. These values can be applied on an account-specific basis, or applied uniformly to all accounts.

Q. PLEASE DESCRIBE HOW THE QWEST DEFAULT FOR THE COST SAVINGS VALUE IS DEVELOPED.

A. The "Cost Savings Value" input is designed to reflect efficiency gains. This input is based on the X-Factor productivity estimates on page 55 of the Price Cap Review Order in CC Docket No. 97-159.[12] The base expenses are at a 2000 level, so this input reflects estimated efficiency gains resulting from increased labor productivity and improved technologies for a two-year period (2000 to 2002). The calculation of Qwest's cost savings value is a weighted average of the X-Factor productivity estimates reported by the FCC, AT&T and the United States Telephone Association (USTA) and results in a two-year efficiency gain of 10.25%. The USTA inputs to this average, provided on behalf of the RBOCs, were 2.9% for the 1990 to 1995 period and 2.7% for 1991 to 1995. The default percentage of 10.25% was selected by Qwest's factor development group as an aggressive estimate of future efficiency, relative to Qwest's historical trends.

Q. WHY IS A COST SAVINGS VALUE BASED ON QWEST'S HISTORICAL TRENDS VALID IN QWEST'S CURRENT POST-MERGER ENVIRONMENT?

A. In years prior to its merger with Qwest, U S WEST underwent several rounds of job cuts. Job cuts and mergers between telecommunications companies are not new to the industry. Such events have occurred before, during, and after the time period used in the calculation of the FCC's X-Factor averages and thus, their effect is already accounted for in the X-Factor data which formed the basis of Qwest's 10.25% cost savings rate. In contrast, the

[12] *In the Matter of: Price Cap Performance Review for LECs, CC Docket No. 94-1,* Fourth Report and Order; *and Access Charge Reform, CC Docket No. 96-262,* Second Report and Order, (Released May 21, 1997).

United States Telephone Association ("USTA") projected an average productivity factor of less than 3% per year as its input to the X-Factor.

U S WEST's pre-merger cuts are already accounted for in the operating data used to develop the Company's expense factors in this proceeding, further demonstrating that the use of a 5% per year on-going productivity gain is an aggressive approach. The publicized three rounds of post-merger job cuts affected more than just the in-region telecommunications operations of the U S WEST portion of the combined entity, they also impacted the operations of the Classic (former) Qwest. Job cuts, which continued after the merger with Qwest only serve as validation for the 5% aggressive on-going productivity assumption used.

At the time of merger, U S WEST had approximately 62,500 employees, and Classic Qwest had approximately 10,300 employees in its in-region, out-of-region and international operations. At the point of merger, the companies announced anticipated synergies and a workforce reduction approximating 12,800 over time. Subsequent to effecting the merger Qwest began implementing synergy plans. It announced and implemented workforce reductions of approximately 5,000 in year 2000, and 4,000 more in year 2001. Qwest also announced, and is in the process of implementing, a third round of workforce reductions (7,000) in 2002. As mentioned above, all of the publicized workforce reduction announcements and implementation statistics have been for "Total" Qwest operations, not just Qwest's in-region telecommunications operations.

Statistically, Qwest's publicized reductions in its workforce of approximately 16,000 (5,000 + 4,000 + 7,000) from the 72,700 point-of-merger "Total Company" workforce level equates to an anticipated reduction of approximately 22% over the 2000 - 2002 time frame. However, only a portion of that total reduction would apply to Qwest's in-region telecommunications operations. Netting the entire merger-related workforce increase with all post-merger announced reductions yields a workforce net reduction of approximately 5,700. This net reduction applied against U S WEST's point-of-merger workforce level of 62,500 approximates the 2002 workforce level of approximately 55,000 that Qwest has anticipated and publicized. A reduction in workforce from 62,500 to 55,000 reflects a two-year net reduction from U S WEST pre-merger levels of approximately 9%. As of March 2002, Qwest employed 59,043 people, down approximately 5% from the 62,500 level.

Q. DOES THE WORKFORCE REDUCTION DISCUSSED IN YOUR RESPONSE ABOVE HAVE ANY IMPACT ON THE DIRECT COSTS REFLECTED IN YOUR FORWARD-LOOKING COST STUDIES FOR THE PLACEMENT OF LOOP PLANT?

A. No. The cost savings that are achieved from such workforce reductions are reflected only in the overhead loadings applied to the direct costs of the loop. The labor costs that are part of those direct costs, and that are necessary for the placement of loop plant in a forward-looking network configuration, are not impacted by such reductions. Regardless of the total number of employees Qwest has on the payroll, there are certain activities, such as facilities placement, that would be required in the construction of the replacement network

hypothesized by TELRIC. These activities do not change, nor are they reduced or made more efficient by a reduction in employees. The efficiencies found in the in the construction of loop plant are reflected in the mix of placement activities, the sharing percentages, and other inputs discussed in Mr. Buckley's testimony. These efficiencies are already included in the development of the direct costs of a loop. Thus, the savings from workforce reductions are not reflected in direct costs, but are found in the overhead loadings applied to the direct costs, if at all.

Q. DOES THE WORKFORCE REDUCTION DISCUSSED IN YOUR RESPONSE ABOVE NECESSARILY IMPACT THE OVERHEAD LOADINGS REFLECTED IN YOUR FORWARD-LOOKING COST STUDIES?

A. It is difficult to predict what impact employee reductions may have on individual unit costs or whether a reduction in costs will (or should) be reflected in the loading factors because the factors are the result of intertwining, existing relationships between investment, direct expense, other direct expense, and overhead expense. For example, if the investment in plant stays constant (considering retirements and additions) but the number of technicians performing plant maintenance is reduced, then the maintenance factors would also be reduced. If, on the other hand, a reduction in maintenance technicians occurs as a result of reducing the plant investment, then the factors that result from the relationship of maintenance expense to investment could remain the same or even increase. For example, in South Dakota where recent reductions in the work force are accompanied by reductions in

product demand it is quite likely that the relationship of maintenance expenses to plant investment has remained constant or reflects such an increase.

Furthermore, forward-looking cost studies typically incorporate lower investment estimates than the actual booked investments used to develop the cost factors. In addition, the factors that are developed from existing relationships are made forward-looking through the application of inflation and productivity factors. As a result, the calculated cost factors, when applied to the lower investment amounts, automatically result in a reduction in costs from currently incurred levels. This modeling result, coupled with Qwest's 5% per year cost savings (productivity) factor, which represents an aggressive estimate of future efficiency already reflective of job cuts related to Qwest's on-going experience with mergers and mechanization, more than adequately accounts for the effect of any publicized changes in employment levels.

Q. PLEASE DESCRIBE HOW THE QWEST DEFAULT FOR THE INFLATION FACTOR IS DEVELOPED.

A. The 8.16% inflation input is based on the Wage & Salary Index prepared by the economic consulting firm, Joel Popkin and Company. The value represents an estimate of inflation between 2000 and 2002, based on Qwest-specific circumstances including Qwest's union labor contract and compensation and benefits practices. This input compares to a Consumer Price Index (CPI) change from 2000 to 2002 of 4.4%, which includes more than wages and salaries and is based on national averages. The Private Industry Wages & Salaries change

for the same period is 7.0% and also reflects national averages. Qwest's inflation rate is a reasonable input because it appropriately represents the environment in which Qwest must operate.

Q. DO YOU RECOMMEND USE OF THE DEFAULT INPUTS FOR EFFICIENCY AND INFLATION?

A. Yes. I believe that these inputs reasonably reflect anticipated gains in efficiency and an inflation value appropriate for use in forward-looking cost models and studies that take into effect the environment in which Qwest operates. By trending these recent experiences forward with the cost saving and inflation factors, Qwest has correctly estimated the likely future expense factors of an efficient carrier.

C. Other Cost Methodology Issues

1. Fill Factors

Q. PLEASE DESCRIBE THE TYPES OF FILL FACTORS THAT COULD BE USED TO MODEL COSTS.

A. As I explained earlier in my testimony, "fill" is an industry term for the assumed utilization to be placed on a piece of investment (e.g., loop plant or a switch) when determining the unit cost. There are two types of "fill" that have been widely discussed in arbitration and cost proceedings: objective and actual fill.

"Objective" fill has historically been used to refer to the *maximum* utilization of a facility that can be achieved before reinforcement becomes necessary. The percentage for objective fill is usually something less than 100% because some capacity is set aside for maintenance and administrative purposes.

Forward-looking "actual fill" is the utilization that is actually projected to be experienced for the investment and is typically lower than the objective fill because of practical realities of network management and expected usage.

Q. WHY IS THE PROPER USE OF FILL FACTORS AN IMPORTANT ISSUE?

A. If fill factors are improperly applied in a TELRIC study, the results may be significantly over- or understated. That is, the study results are highly sensitive to the fill factors that are used.

Q. WHAT TYPE OF FILL FACTORS ARE UTILIZED IN QWEST'S TELRIC STUDIES?

A. The feeder fills developed in LoopMod, and used to create investment inputs for other cost models and studies, reflect the scrutiny of various regulatory reviews in Qwest's 14-state region regarding the appropriate levels of fills. In addition, the switching and transport investments that are utilized as inputs in Qwest's cost studies are calculated using inputs that reflect projected actual fill factors. This same approach is used in Qwest's other cost studies.

Q. COULD THE COMPANY EVER OPERATE AT AN OBJECTIVE FILL LEVEL?

A. Not efficiently. It is important to remember that objective fill represents the fill level at "relief", i.e., the point at which demand for access to the network requires the company to reinforce facilities. If Qwest operated at objective fill, it would need to add facilities each time new demand for the facility arose – a scenario that is clearly impractical. For example, it would be extremely inefficient and expensive to add single or small units of switching capacity on demand. Instead, switching capacity is added in large "lumps," which represents the long-run, least-cost method of provisioning. Thus, the efficient switching network will always function at a level well below objective fill. Because the TELRIC standard assumes efficient operations, any attempt to set fill factors at or near objective fill would violate that standard.

Q. WHY DO THE QWEST TELRIC STUDIES UTILIZE PROJECTED ACTUAL FILL, RATHER THAN OBJECTIVE FILL, IN COST CALCULATIONS?

A. For establishing prices that are based on cost, the use of objective fill would prevent a full recovery of costs. For example, assume a company places a 100 pair cable at a cost per pair of $100. The total cost of the cable would be $10,000. Further assume that the projected actual usage of this facility is anticipated to be 65%, or 65 of the 100 lines, and that the objective fill for the facility is 85%. The unit cost calculated using an 85% objective fill per customer and the unit cost calculated using the 65% projected actual fill per customer are illustrated in Table 1 below.

TABLE 1

	TOTAL	PROJECTED USAGE	OBJECTIVE USAGE
1. Fill levels	100%	65%	85%
2. Pairs	100	65	85
3. Cost /Pair	$100	$100	$100
4. Total Cost	$10,000	$10,000	$10,000
5. Projected Cost/Unit (Line 3/Line 1)	$100	$154	$118

		Shortfall
Amount to Be Recovered = $10,000		
Amount Recovered at $118 with 65 Pairs	$ 7,670	$2,330
Amount Recovered at $154 with 65 Pairs	$10,000	$0

In this scenario, service is actually provided to 65 customers. If service is provided to these customers, the entire $10,000 would be recovered only if the price were set at $154. If the price were set at $118, based on costs derived from an objective but inefficient fill, the firm would recover only $7670, leaving a $2330 shortfall. This represents roughly 23% of the original $10,000 investment.

No business could survive if it continued to invest in equipment with no expectation that the costs of the investment would be recovered. That is, no firm could invest $10,000 with the expectation it would only be able to recover $7670. Thus, it is critical that projected actual fill levels be used in TELRIC studies.

Q. DOES THE FCC'S FIRST INTERCONNECTION ORDER REQUIRE THE USE OF PROJECTED ACTUAL FILL FACTORS?

A. Yes. The FCC's First Report and Order stated:

> Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a *reasonable projection of the actual total usage of the element.* (emphasis added)[13]

The use of projected actual fill factors results in a TELRIC that more nearly reflects the cost of actually providing a UNE or an interconnection service in Qwest's operating environment.

2. Cost of Money

Q. WHAT COST OF MONEY DOES QWEST UTILIZE IN THE TELRIC STUDIES YOU ARE PROVIDING?

A. As discussed above in relation to ICM, the Qwest TELRIC studies that I am providing utilize the South Dakota approved cost of money, which is 10.14%. This is the cost of money approved by the Commission in Docket No. TC96-184.

3. Depreciation

Q. WHAT DEPRECIATION LIVES DOES QWEST UTILIZE IN THE TELRIC STUDIES YOU ARE PROVIDING?

[13] First Report and Order ¶ 682.

A. The Qwest TELRIC studies that I am providing utilize the state-prescribed depreciation lives and salvage values approved by the Commission in Docket No. TC94-121.

D. The Enhanced Nonrecurring Cost Studies

Q. PLEASE BRIEFLY DESCRIBE THE ENRC.

A. The ENRC is a collection of cost studies developed by Qwest designed to estimate the *nonrecurring* TELRIC for all UNEs and interconnection services. (See Study ID# 6454) The ENRC calculates nonrecurring costs for provisioning and installation activities based on time estimates and probabilities of occurrence of the tasks performed to accomplish each function. The time estimates and probabilities for each task are presented in detail in the ENRC workpapers.

Q. IS QWEST PROVIDING A MANUAL THAT PROVIDES A DETAILED DESCRIPTION OF THE ENRC?

A. Yes. Qwest is filing the ENRC user manual, which instructs the user about how to make changes to the time and probability inputs contained in the studies.

Q. HOW IS THE ENRC DESIGNED?

A. The ENRC calculates the direct nonrecurring costs for each UNE and interconnection service based on time estimates to perform tasks, probabilities that tasks will be performed, and labor rates associated with each job function. ENRC then applies expense factors to the

direct nonrecurring costs to provide the TELRIC for each UNE and interconnection service. Finally, an allocation of common costs is assigned to each nonrecurring cost element.

Q. DOES THE ENRC ALLOW THE USER TO MODIFY INPUTS?

A. Yes. ENRC allows the user to view the work times, probabilities, and labor rates and to override these values if desired. After all desired changes are made to the inputs, the user can easily recalculate the ENRC to produce cost results based on the new user assumptions.

Q. DOES THE ENRC PROVIDE UNE COST RESULTS THAT REFLECT THE PROPER APPLICATION OF TELRIC PRINCIPLES?

A. Yes. The ENRC contains inputs based on Qwest's current experience in processing orders and provisioning network plant. The Qwest nonrecurring TELRIC studies identify the forward-looking, nonrecurring costs that Qwest is likely to incur in provisioning UNEs. These studies consider the actual processing and provisioning activities that are either in place today or scheduled to be implemented in the near future, rather than theoretical provisioning methods based on future hypothetical technologies or networks that are not currently deployed. It includes changes anticipated by subject matter experts in processing and provisioning. It also includes certain assumptions and expectations for mechanization based on the development of OSS interfaces for use by the CLECs. If the studies use these assumptions, they produce results, as delineated in exhibit TKM-01, that properly reflect the TELRIC principles. These results should be used by the Commission to set nonrecurring prices for UNEs and interconnection services.

V. ANALYSIS OF SELECTED COST DATA

A. The ICM Elements

Q. YOU MENTIONED THAT ICM PRODUCES RECURRING RATES FOR MOST OF THE MAJOR UNES. PLEASE ELABORATE.

A. As described earlier, the ICM produces recurring TELRIC data for the following major elements:

- Unbundled Loops (including the network interface device ("NID") and extension technology)
  - Analog Loops (2-wire and 4-wire)
  - Non-Loaded Loops (2-wire and 4-wire)
- Switching
  - Local Switching (ports and usage)
  - Tandem Switching
- Transport
  - Tandem Switched Transport
  - Direct Trunked Transport
  - Shared Transport
  - Entrance Facilities
  - Multiplexing
  - Unbundled Dedicated Interoffice Transport (UDIT)
  - Extended – UDIT (EUDIT)
- Database Services (8XX Database and line information database ("LIDB"))

- Signaling System 7 ("SS7")

The remaining studies filed with the update on June 28, 2002, were filed as stand-alone studies, and will be discussed in Section V.B below.

1. UNE Loop Deaveraging

Q. WHAT IS QWEST PROPOSING FOR UNE LOOP DEAVERAGING IN THIS DOCKET?

A. Qwest is proposing a three-zone, cost-based, deaveraging scheme based on the wire-center groupings approved by the Commission in Docket No. TC99-106, and using the cost results from the Loop Module of the ICM.

Q. HOW WERE THE COSTS FOR THE THREE ZONES DETERMINED?

A. Qwest used the Loop Module to determine loop investment by wire center. The investments were then converted to loop cost by wire center in ICM. The costs per wire center were grouped according to the three deaveraged zones established by the Commission in the prior cost docket. A weighted average cost was then calculated for each zone using Qwest's current line counts for each wire center. The statewide average loop cost using the ICM is $30.34. The weighted average costs were then grouped by zone to produce an average cost for each zone.

Q. WHAT ARE THE RATES DETERMINED BY THIS INFORMATION?

A. The deaveraged unbundled loop costs/rates are:

Zone 1	$20.18
Zone 2	$29.72
Zone 3	$38.15
Statewide Average	$30.34

Q. IS THERE AN ALTERNATIVE METHOD FOR DETERMINING THE COSTS FOR DEAVERAGED ZONES?

A. Yes. In the deaveraging docket (Docket No. TC99-106) AT&T's witness, Doug Denney, proposed arbitrary groupings of wire centers that were rejected by the Commission. In response to the criticisms of that method AT&T developed an optimization program to determine the appropriate "breakpoints" between zones. The optimization program ranks the wire centers by cost and mathematically calculates wire-center groupings that result in the lowest cost variance among wire centers.

Using the optimizer to group wire centers into zones, based on the costs per wire center produced by Qwest's Loop Module, results in one wire center (27% of lines) falling into Zone 1; eleven wire centers (54% of lines) in Zone 2; and 30 wire centers (19% of lines) in Zone 3. These results are similar to the results obtained using the optimizer in conjunction with the wire-center costs developed in AT&T's HAI model. The deaveraged unbundled loop cost/rates using the optimization program are:

Zone 1	$18.24
Zone 2	$28.26
Zone 3	$53.53
Statewide Average	$30.34

Q. WHICH OF THE DEAVERAGED LOOP RATES DOES QWEST RECOMMEND THAT THE COMMISSION ADOPT IN THIS PROCEEDING?

A. Qwest recommends that the Commission adopt the deaveraged loop rates based on the wire-center groupings that result when the optimization program is applied to the cost results from the Loop Module of the ICM.

2. Switching

Q. DOES QWEST'S ICM PRODUCE TELRIC RESULTS FOR SWITCHING?

A. Yes. ICM produces recurring costs for line and trunk ports and for local and tandem switching usage. Described in more detail in the Summary of Results in ICM, the various types of unbundled ports provide access to the basic functionality of the switch as well as access to interoffice services. The cost produced in ICM for a basic DS0 analog line port without vertical features is $1.59. Local switching costs are determined on a per minute of use (MOU) basis for terminating traffic to an end office switch, and tandem switching costs are determined for switching a call through a local tandem switch. The UNE rates for local and tandem switching are $0.004241 per MOU and $0.002659 per MOU, respectively.

Q. ARE THERE OTHER SWITCHING RELATED RATES PRESENTED BY QWEST IN THIS PROCEEDING?

A. Yes. Qwest also calculates a rate on a per-port basis for capitalized lease costs associated with the right-to-use fees Qwest pays for the additional software needed to provision vertical features in the switch. These right-to-use fees are not included in the costs calculated by Qwest's SCM and are, therefore, contained in a separate study. This study (Study ID# 6416). The capitalized lease cost produced by this study is $0.52. In addition, I present a stand-alone study (Study ID# 6418) that calculates the costs for vertical features on a per-port basis using investments developed in the SCM. As in the case of right-to-use fees, the costs for vertical features are not included in the costs SCM develops for the port and MOU rates, although SCM does produce the investments used to calculate the costs for vertical features. The cost per port for vertical features is $0.43. Therefore, the total cost for a DS0 analog line port (section 9.11.1 in Exhibit TKM-01), including features, is $2.54 (1.59 + .52 + .43). Finally, the costs for premium 6-way ports and certain Centrex features are also provided in a separate, stand-alone study (Study ID# 6417). This cost and the cost for capitalized leases and vertical features are added to the port costs produced by SCM to create the total costs for premium analog and digital ports. See Exhibit TKM-02 for a summary of analog and digital ports, and premium analog and digital ports.

Q. ARE YOU PROPOSING ANY OTHER RATES FOR VERTICAL FEATURES THAT ARE NOT CAPTURED IN SCM?

A. Yes. One additional feature, CLASS Call Trace, is not captured in Qwest's method of determining switching costs using SCM. The SCM does not reflect the primary cost drivers presented in the CLASS Call Trace study (Study ID# 6415). First, the CLASS Call Trace cost is developed on a "per event" basis to perform traces on calls on an as needed basis; it is not a monthly recurring charge. Second, the majority of costs for this service are based on the labor expenses of the people performing the traces, and the cost to store the data needed to complete the trace. Finally, the amount of switching cost included in the study related to recorded announcements is not included in the rates developed in the SCM for switching ports and MOUs. The cost for CLASS Call Trace is $1.48 per attempt.

Q. DO YOU PROPOSE ANY NONRECURRING COSTS ASSOCIATED WITH VERTICAL FEATURES?

A. Yes. Certain of the vertical features require additional activities by Qwest personnel in order to become activated in the switch. Therefore, nonrecurring charges have been developed in ENRC (Study ID# 6454) to reflect the additional costs that result from those activities.

3. Transport

Q. DOES QWEST'S ICM PRODUCE A TELRIC FOR SHARED TRANSPORT?

A. Yes. ICM produces a recurring cost for both direct trunked transport and shared transport. Shared transport, as defined by the FCC, represents access to an ILEC's shared *interoffice*

facilities (i.e., facilities that carry traffic between ILEC central offices) at costs that reflect the efficiencies of the ILEC. Shared transport is available only in conjunction with unbundled switching, due to the fact that switches perform the important gatekeeper function for access to the shared transport network.[14]

The recurring cost for shared transport (section 9.8.1 in Exhibit TKM-01) is $0.002272 per MOU, and is included in the results summary of the ICM. Please refer to the direct testimony of Kathryn Malone for a further description of Qwest's transport services.

4. UDIT and EUDIT

Q. HOW DOES ICM PRODUCE RATES FOR UDIT AND EUDIT?

A. ICM develops the costs for UDIT and EUDIT on the basis of a separate rate structure that accounts for the two distinct network configurations (i.e., direct trunked transport and entrance facilities) involved in each of these elements. The reason for this is that Qwest's transport module in ICM contains location information for Qwest central offices, but similar location information is not resident in the transport module for CLEC offices. The central office locations are used to develop the A to Z information needed by the transport module to calculate the costs that result from the transport configurations. Without similar location information for every CLEC central office or point of presence ("POP") the transport module is incapable of producing similar costs for entrance facilities. Nor does Qwest

[14] Switches include the routing tables that route traffic over the shared transmission network. Without this switch function, shared transport could not be provided.

believe that if the transport module *could* produce costs for entrance facilities that those cost characteristics would be the same as the cost characteristics for direct trunked transport.

Q. WHY ARE THE COST CHARACTERISTICS OF DEDICATED TRANSPORT DIFFERENT FOR FACILITIES BETWEEN TWO QWEST OFFICES THAN THEY ARE FOR FACILITIES BETWEEN A QWEST OFFICE AND A CLEC OFFICE?

A. Dedicated transport can be described as the "pipe" that provides connection between two offices. This definition of dedicated transport includes both entrance facilities and interoffice transport facilities. However, while entrance facilities and interoffice transport facilities fall within that definition, they have very different cost characteristics that cannot be ignored. There are two independent reasons why entrance facilities have different cost characteristics from interoffice facilities, and which explain why entrance facilities are more costly than interoffice transport facilities. First, by definition, the sole purpose of the pipe called an "entrance facility" is to connect a Qwest office with a CLEC office. That connection is typically between the CLEC office and one Qwest office. Small CLECs require small pipes. Larger CLECs require larger pipes, although not usually as large as Qwest's interoffice pipes. In addition, the CLEC (not Qwest) determines the optimally efficient size and fill (degree of utilization) of its entrance facilities on the basis of its own traffic volumes.

In contrast, the pipes known as "interoffice transport" facilities must carry the much heavier call volumes of Qwest's own traffic, are routed in multiple directions through Qwest's

network, connect to multiple Qwest offices, and carry the additional traffic of many CLECs and IXCs. As a result, those pipes are generally much larger than entrance facility pipes, achieve a higher degree of utilization, and therefore present significantly greater economies of scale and scope. All else being equal, any given DS1 capacity costs much less to provide when deployed over a large pipe, containing many other such circuits over which the cost of the pipe can be spread, than when deployed over a small pipe. Similarly, under the prevailing hub-and-spoke architecture for air travel, economies of scale make it less costly to travel between two hubs than between a hub and a remote location. The separate costs in ICM for UDIT and EUDIT reflect these cost differences, and it would be inappropriate to treat Qwest-to-CLEC transport links as though they had the same economies of scale as interoffice transport links within Qwest's network.

The second reason for the difference in cost characteristics between the two types of dedicated transport is that circuits involving entrance facilities are, on average, more costly than ordinary interoffice transport circuits of the same levels of capacity. This is because the former require special electronics much more often than the latter. Most entrance facilities are purchased in conjunction with interoffice transport because call volumes often make it efficient for CLECs to order dedicated, non-switched links – entrance facilities plus interoffice transport – between the CLEC office (of which there is usually only one), and particular Qwest offices within a given local calling area. Three sets of electronics are normally required to connect entrance facilities with interoffice transport facilities: (1) at the CLEC wire center where the signal originates, (2) at the initial Qwest office where the signal is integrated into the Qwest interoffice network, and (3) at the terminating wire center. In

contrast, once inside the Qwest interoffice network, a circuit linking any given two offices within a local calling area usually originates at one office and terminates at another without passing through an intermediate office. This alleviates the need for intervening electronics and allows the transport pipe to remain at the same signaling level between offices because Qwest offices commonly have direct links to most other offices in the local calling area. However, CLEC offices rarely have direct links to more than one or two offices in the area; thus, in most cases, dedicated circuits must pass through an intermediate point (the serving wire center) and must be accompanied by the special electronics described above. This means that in most cases in order for the CLEC's originating signal to traverse to the terminating wire center, it must be multiplexed up or down at the point the signal is integrated into Qwest's interoffice network. For example, if the CLEC uses a DS3 level of entrance facility from its location to the initial Qwest office, but then wishes to terminate signals in multiple wire centers, the signal will often be multiplexed down to a DS1 level for interoffice transport to various terminating locations. Signals traveling from one Qwest wire center to another Qwest wire center over interoffice facilities do so at the same level all the way without a need to be multiplexed until the signals reach the terminating wire center. Thus, these differences in cost characteristics between entrance facilities (EUDIT) and interoffice transport (UDIT) form the basis for Qwest's development of different rate structures for these two elements.

5. UNE Platform

Q. DOES ICM PRODUCE SEPARATE RECURRING RATES FOR THE UNE-PLATFORM ("UNE-P")?

A. No. ICM does not produce unique recurring rates for UNE-P because there are no economies related to recurring rates that result from providing combined elements. Thus, the recurring rates for UNE-P products may be determined by summing the recurring rates for the elements that comprise the UNE platform. The economies that result from providing already-combined elements are reflected in Qwest's nonrecurring cost studies.

Q. PLEASE PROVIDE AN EXAMPLE OF THE UNE-PLATFORM.

A. UNE-P involves the provision of UNE combinations to CLECs. The UNE platform consists of either (1) UNEs already existing in combination to serve existing customers, or (2) combinations of UNEs not previously combined to serve new customers, to the extent facilities are available. For example, UNE-P POTS service includes the aggregation of UNEs that comprise basic exchange service, including the unbundled loop, shared transport and switching. When a CLEC purchases UNE-P POTS, the recurring prices for these UNEs would apply. This is because recurring rates are based on the underlying investment in the facilities that make up the element, and the investment required to provide a loop is the same whether it is provided on a stand-alone or combined basis.

Q. IS QWEST PRESENTING NONRECURRING COST STUDIES FOR THE UNE-PLATFORM?

A. Yes. Qwest has prepared a *nonrecurring* cost study that reflects the economies of providing already combined elements associated with the provision of UNE-P for existing POTS customers (including Centrex, PAL and analog PBX), PBX DID Trunks, ISDN-BRI and ISDN PRI. This is because Qwest performs only a few activities in the Interconnect Service Center ("ISC") to update the customer record in the case of existing UNE-P service. In addition, this study identifies the nonrecurring costs associated with providing combinations of private line service. These costs are summarized in Exhibit TKM-01, and the costs are calculated in the ENRC study (Study ID# 6454) provided in the cost study workpapers.

This cost study also identifies the nonrecurring costs incurred by Qwest to provide *new* UNE-P service.

B. The Separate Cost Studies

Q. WHAT OTHER RECURRING AND/OR NONRECURRING COST STUDIES DO YOU PRESENT?

A. My testimony presents separate cost studies for additional recurring elements not yet integrated into the ICM. In addition, as discussed above in Section IV.D, the ENRC calculates the nonrecurring costs for all UNEs and interconnection services, including the nonrecurring costs for the elements presented in the separate recurring cost studies. With

the exception of the cost for line sharing installation, the ENRC does not calculate costs for collocation or line sharing. The following elements will be presented in this section:

- Digital-capable Loop (DS1 and DS3)
- Distribution Subloop
- DS1 Capable Feeder Loop
- Building Cable
- Unbundled Dark Fiber (loop and interoffice)

Q. ARE ANY OF THE ELEMENTS MENTIONED ABOVE ELEMENTS RESULTING FROM THE FCC'S UNE REMAND ORDER?

A. Yes. A number of the elements that are presented in this filing are considered UNEs that resulted from FCC's UNE Remand order,[15] where the FCC concluded that the list of loop-related UNEs should include digital capable loops, subloops, building cable (inside wire), and dark fiber.

1. The UNE Remand Studies

Q. IS QWEST PRESENTING TELRIC STUDIES FOR HIGH CAPACITY LOOPS?

[15] Third Report and Order and Fourth Further Notice of Proposed Rulemaking, CC Docket No. 96-98, *In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Rel. November 5, 1999.

A. Yes. Qwest is presenting recurring and nonrecurring costs for high capacity loops, including DS1 and DS3 capable loops. A DS1 capable loop provides a digital transmission path from a network interface in a Qwest serving wire center ("SWC") to the network interface at the end user's designated premises within the serving area of the SWC. A DS3 capable loop provides a similar digital transmission path at a higher transmission rate than the DS1. The DS3 capable loop is configured as a channel on a fiber-based system. The recurring costs associated with DS1 and DS3 capable loops are attached as part of Study ID# 6430. The cost studies used to develop these costs develop statewide average rates for DS1 and DS3 capable loops. The studies also develop deaveraged rates for DS1 and DS3 capable loops based on the same Commission-approved zones Qwest is utilizing for the unbundled loop.

The nonrecurring costs for DS1 and DS3 capable loops are included in the results summary of ENRC in Study ID# 6454.

Q. IS QWEST SUBMITTING RECURRING AND NONRECURRING COSTS FOR SUBLOOP UNBUNDLING?

A. Yes. Qwest is submitting recurring and nonrecurring costs for the distribution subloop. Qwest proposes that subloop unbundling also be geographically deaveraged on the same basis as the zones that have been established by the Commission for UNE loops. The proposed prices for deaveraged subloops are based on a calculation of the distribution portion of the loop investment on a "per zone" basis. (See Study ID# 6427) The feeder subloop is calculated as the difference between total loop investment and the distribution

portion of the investment. The nonrecurring costs for subloops are submitted as part of Study ID# 6454.

In addition, because it seems likely that a CLEC would want to purchase larger increments of feeder capacity, Qwest has also developed a cost for DS1 capable feeder. The DS1 capable feeder provides a digital transmission path from a network interface in a Qwest SWC to the Field Connection Point ("FCP"). The cost for DS1 capable feeder is deaveraged, as well. (See Study ID# 6430)

Q. IS QWEST PRESENTING A SEPARATE TELRIC STUDY FOR BUILDING CABLE?

A. Yes. Qwest believes that the building cable subloop is the element CLECs appear most interested in. Thus, Qwest has extracted the cost of building cable as a sub-element of the distribution subloop and has developed the cost for building cable as a separate element. The building cable product will be provided on a "per pair" basis at established Field Connection Point ("FCP") arrangements when the CLEC places outside plant to a building and wants access to building cable through a building terminal. The building cable study assumes that the CLEC or building owner will place, at its expense, a common terminal or cross-connect facility that Qwest will jumper to the Qwest terminal and building cable. The building cable cost study is included as part of the subloop cost study in Study ID# 6427.

The rate for building cable will be an averaged per month, "per pair" rate rather than a deaveraged subloop rate. In other words, Qwest proposes a single rate for building cable

that will apply across all of South Dakota's three zones. This is because the nature of building cable is such that its cost does not vary geographically. The building cable rate does not include the cost of placing jumpers between the CLEC-provided terminal and Qwest's terminal. That cost is a part of the cost of an FCP. As discussed above, Qwest will also offer other types of subloops on a deaveraged basis according to the geographically deaveraged zones.

Q. IS QWEST SUBMITTING TELRIC STUDIES FOR DARK FIBER?

A. Yes. Unbundled dark fiber ("UDF") consists of two types, UDF - Loop and UDF - Interoffice. Qwest has developed separate cost structures for each of these two types of dark fiber. (See Study ID# 6457) Costs for interoffice dark fiber are presented on a per-mile basis similar to the way that dedicated interoffice transport is presented, although UDF is calculated on a route-mile basis, while interoffice transport is based on air miles. In contrast, costs for loop dark fiber are calculated on a per-loop basis consistent with the way that the loop cost is determined. UDF Loop provides a pair of optical fibers (i.e., two fibers) between a wire center and a customer location on which no electronic terminating equipment is provided by Qwest. The fibers are connected to a fiber distribution panel ("FDP") or functional equivalent in the wire centers or customer locations. The average fiber investment per loop is derived from the Loop Model, which is included in my cost study workpapers. The study develops the recurring cost for three elements: the loop facility, termination at the wire center and termination at the customer premise. The termination cost includes the cost to terminate the fibers on an FDP.

The nonrecurring costs for dark fiber are included in the ENRC as part of Study ID# 6454.

2. Other Stand Alone Cost Studies

Q. ARE THERE OTHER COST DATA THAT YOU ARE FILING?

A. Yes. My testimony presents incremental cost data for the following additional elements:

- Unbundled Packet Switching (Study ID# 6517)
- Daily Usage Record File (Study ID# 6464)
- Low Side Channelization (Study ID# 6429)
- ICNAM (Study ID# 6433)
- Category 11 Records (Study ID# 6432)

Q. PLEASE BRIEFLY DESCRIBE THE UNBUNDLED PACKET SWITCHING OFFERING.

A. In its *Third Report and Order and Fourth Further Notice of Proposed Rulemaking*, CC Docket No. 96-98, released November 5, 1999, at paragraph 313, the FCC required packet switching to be unbundled in certain circumstances when Qwest does not provide CLECs access to remote terminal collocation. These circumstances are discussed in detail in the direct testimony of Ms. Malone.

In the limited situations where Qwest is required to offer packet switching, Qwest provides unbundled packet switch interface ports at either a DS1 or DS3 level in the central office. The ports are the physical entry points into the Asynchronous Transfer Mode ("ATM") Cell

Relay Service Network and include the electronic equipment used in connecting the channel to the ATM Cell Relay Service Network. In addition, the service includes an unbundled packet switch Customer Channel that provides the path from the remote Digital Subscriber Line Access Multiplexer ("DSLAM") to the interface port, including all functionality of the DSLAM. If the CLEC chooses to provide its own facility from the DSLAM to the central office, Qwest offers an alternative to the Customer Channel that only provides the DSLAM functionality. The recurring costs for these elements are calculated in (Study ID# 6517), and the results are summarized in Exhibit TKM-01.

Q. YOU MENTIONED REMOTE TERMINAL COLLOCATION. WILL YOU DISCUSS THE COST STUDY FOR THAT ELEMENT?

A. Yes. I discuss Remote Terminal Collocation in Section VI.B, below, along with other collocation elements.

Q. ARE THERE NONRECURRING COSTS ASSOCIATED WITH UNBUNDLED PACKET SWITCHING?

A. Yes. Nonrecurring costs for the work activities involved in provisioning the DS1/DS3 ATM switch interface port(s) necessary to connect the unbundled packet switch Customer Channel are calculated in cost study #6454. Nonrecurring costs are also calculated in study #6454 for work activities necessary to connect the unbundled packet switch Customer Channel and the distribution subloop at an established FCP arrangement. The nonrecurring charges vary depending on the way the CLEC chooses to purchase the distribution subloop. Ms. Malone

discusses three possible alternatives the CLECs have to purchase distribution plant, either from Qwest or from another CLEC.

Q. HAS QWEST PREPARED A COST STUDY FOR THE DAILY USAGE RECORD FILE OFFERING?

A. Yes. The results of this study are summarized in Study ID# 6464.

Q. PLEASE BRIEFLY DESCRIBE THE DAILY USAGE RECORD FILE STUDY.

A. The Daily Usage Record File offering is defined in the testimony of Ms. Malone. The cost per record includes the cost for assembly and editing, along with end office measurement. In addition, the cost per record includes the costs associated with the development of the service, amortized over five years.

Q. HAS QWEST SUBMITTED A RECURRING STUDY FOR LOW SIDE CHANNELIZATION CHANNEL PERFORMANCE?

A. Yes. "Low Side Channelization" provides transmission facilities between the customer designated premises and either the serving wire center, the wire center where the CLEC is collocated, or multiplexing equipment. As explained in Mr. Easton's testimony, these facilities are available for Channel Performance. (See Study ID# 6429)

Q. HAS QWEST PREPARED A COST STUDY FOR UNBUNDLED INTERCONNECTION CALLING NAME (ICNAM) SERVICE?

A. Yes. ICNAM is a per-query switched access service. ICNAM allows a CLEC to query Qwest's Line Information database and secure the listed name information for the requested telephone number for its end users. (See Study ID# 6433)

Q. PLEASE EXPLAIN WHAT CATEGORY 11 RECORDS ARE.

A. "Category 11 Records" are messages that provide mechanized record formats that can be used to exchange access usage information between Qwest and a CLEC. The Category 11 cost study identifies the data transmission costs, assembly and editing, and labor costs associated with producing each record. (See Study ID# 6432)

Q. HAS QWEST PREPARED ANY OTHER TELRIC STUDIES FOR RECURRING AND NONRECURRING UNE RATES?

A. Yes. Qwest has prepared TELRIC studies for collocation and line sharing as described in more detail below.

VI. COLLOCATION COST STUDIES

A. Collocation

1. Collocation Elements

Q. WHAT COST DATA IS PROVIDED IN THE COLLOCATION MODEL?

A. The Collocation Model provides cost data for caged, cageless and virtual collocation, and includes TELRIC data for the following collocation elements:

Standard Collocation:

- Terminations
- Collocation Entrance Facility
- Cable Splicing
- Power Usage
- Security
- Interconnection Tie Pairs (ITPs)

Cageless Collocation:

- Space Construction
- DC Power Cable
- Space Rent
- Quote Preparation Fee (QPF)

Caged Collocation:

- Space Construction
- DC Power Cable
- Grounding
- Space Rent
- Quote Preparation Fee (QPF)

Virtual Collocation:

- Equipment Bay

- Labor
- Quote Preparation Fee (QPF)

The Collocation Model results are included in the summary of results in section 8 of Exhibit TKM-01. Please refer to the testimony of Mr. Easton for a description of these collocation elements.

Q. HAVE YOU PROVIDED SCHEMATIC DIAGRAMS THAT DEPICT THE VARIOUS COLLOCATION ELEMENTS?

A. Yes. Exhibit TKM-03 contains several schematic diagrams that depict the collocation cost elements. Page 1 of this exhibit provides a diagram that shows the overall collocation configuration, while pages 2 through 6 provide more detailed diagrams for power plant, entrance facility, space construction and terminations.

Q. DOES THE COLLOCATION MODEL CALCULATE RECURRING AND NONRECURRING COSTS?

A. Yes. The Collocation Model calculates the forward-looking recurring and nonrecurring incremental costs for the collocation elements listed above. The nonrecurring costs include the cost of installing equipment on the CLEC side of the demarcation point. This equipment is dedicated to CLECs and is not shared with Qwest. The nonrecurring cost elements include: Terminations, the Entrance Facility, Fiber Cable Splicing, Backup AC Power Cable, Space Construction (including DC power cables), Construction of Additional Bays (Cageless) and Grounding (Caged).

Recurring elements include the small ongoing costs associated with maintaining the collocation equipment dedicated to CLECs (e.g., Terminations, Power Cables, Space Construction), along with the investment-related costs associated with equipment that is shared between CLECs and Qwest. Recurring elements also include: DC Power Plant, AC Power Feed Usage, Security Cards, Central Office Synchronization, Interconnection Tie Pair (ITP), Space Rent, Grounding (Caged), and Equipment Bay (Virtual). These collocation costs are contained in Study ID# 6465. The cost-based rates proposed by Qwest for these services are listed in Exhibit TKM-01.

Q. IS THE TREATMENT OF RECURRING AND NONRECURRING COSTS IN THE COLLOCATION MODEL CONSISTENT WITH THE FCC'S COLLOCATION PRINCIPLES?

A. Yes. In its Second Report and Order in CC Docket No. 93-162 regarding pricing for collocation, the FCC set out principles for determining whether a cost should be recovered through a nonrecurring charge. In paragraph 32 of that order the FCC states:

> While carriers typically recover investment costs through recurring charges, we find that it is not unreasonable for LECs to assess nonrecurring charges to recover the cost of equipment. Inasmuch as physical collocation is a new service, LECs may have difficulty projecting either the length of time that equipment will be used by an interconnector or the useful life of that equipment for depreciation purposes. When a LEC imposes a recurring charge to recover the depreciation of an asset over time, overestimating the life of the equipment or the length of time that an interconnector would use the equipment could prevent the LEC from recovering the total cost of its investment. We will not, however, permit LECs to recover initially an amount greater than the total installed cost of the equipment, plus a reasonable overhead loading.

The FCC went on to say in paragraph 33:

> We do not agree with ALTS' position that nonrecurring charges developed in conformance with these requirements constitute a barrier to entry. To the extent that the equipment needed for expanded interconnection service is dedicated to a particular interconnector, we believe that requiring that interconnector to pay the full cost of the equipment up front is reasonable because LECs should not be forced to underwrite the risk of investing in equipment dedicated to the interconnectors use, regardless of whether the equipment is reusable....

It is clear from these ordering paragraphs that the FCC recognizes that LECs should not be held accountable for underwriting all the risk of building an interconnector's network. The FCC established the costing principle that the cost of facilities constructed solely for the provisioning of collocation (i.e. dedicated to collocation) may be recovered through nonrecurring, up-front charges. In fact, the order goes so far as to imply anything else would result in an unreasonable transfer of the risk of constructing a CLEC network to the ILEC that is providing collocation. The 1996 Telecommunications Act was designed to give competitors access to critical network elements that were currently owned by the ILECs. This access to elements was considered critical to meeting the competitive objectives of the Act. Nowhere in the Act did Congress decide that it was also the ILEC responsibility to finance a co-provider's entry into the market. Such a requirement would be unreasonable and discriminatory.

2. Cost Study Process

Q. PLEASE EXPLAIN HOW THE DIRECT COLLOCATION COSTS ARE DEVELOPED IN THE COLLOCATION MODEL.

A. The direct costs for the bulk of the collocation cost elements are calculated based on inputs derived from an analysis of the cost of *actual collocation jobs* in Qwest central offices. In this analysis, Qwest analyzed every item that was purchased and installed for a representative sample of collocation jobs. The invoices were analyzed through the following multi-step process:

1. Each item of material that was billed to each job was entered into a database;

2. Each item of material was classified into cost categories that represent the various components of collocation (i.e. cable racking, power cable, support structure, etc.);

3. The costs for placing each component of a collocation job were calculated using standard contract labor costs along with the number of units being placed on each job, as determined from the invoices;

4. The calculated labor costs were compared to the actual invoiced labor charges to determine that they were reasonable;

5. The labor costs were added to the material costs to determine the total cost for each component of the job;

6. The cost for each component was assigned to each of the appropriate collocation rate elements;

7. The collocation rate element were designated as being recoverable through a one-time nonrecurring charge or a monthly recurring charge, based on the criteria discussed above;

8. Nonrecurring cost elements that are shared among collocators were prorated based on the anticipated number of CLECs that would participate in the use of those facilities; and

9. The results of the analysis were used as inputs to the Collocation Model to develop the direct costs associated with each collocation element.

Q. WHAT TYPES OF COLLOCATION JOBS WERE INCLUDED IN THE SAMPLE?

A. The sample included only cageless collocation jobs. Once the analysis of cageless costs was completed, the assumptions were revised and the missing elements were added to derive a standard cost for a *caged* collocation job. Wherever possible, actual caged collocation data was used in revising the assumptions or estimating the cost for those components of a caged collocation job (e.g., the cost of the cage) which are not found in cageless collocation jobs.

Q. HOW DID QWEST TAKE INTO ACCOUNT THE COST DIFFERENCES BETWEEN CAGELESS AND CAGED COLLOCATION?

A. A team of experts with experience in the development, construction and cost analysis of collocation activities reviewed the assumptions used in the cageless cost study and agreed upon revisions to distances and other inputs that would more appropriately reflect a standard caged collocation environment. In addition, items such as the cost of the cage and grounding were included in the caged collocation cost study.

Q. HOW DID QWEST IDENTIFY THE JOBS THAT WERE TO BE INCLUDED IN THE COLLOCATION ANALYSIS?

A. Qwest analyzed all cageless collocation jobs that were constructed prior to May 1999. In total, 96 jobs were originally identified as meeting these criteria. Nineteen of the jobs identified were augments of existing jobs and were eliminated from the sample. All the receipts for the remaining 77 collocation jobs were then collected. In certain instances, there is a significant lag between the completion of the job and the receipt of the vendor billing for that job. To determine if the company had received the contractor billing for all the work performed on a specific job, the receipts for each job were compared to the authorized purchase orders for those jobs. If this comparison showed that the billing for virtually all the contracted construction had been received, the job was retained in the sample. Jobs with greater than 10% of the total billing still outstanding were removed from the sample. Of the 77 jobs, the billing on 41 jobs was sufficiently complete to use in the analysis.

Q. IN THE FIRST STEP IDENTIFIED ABOVE, YOU NOTED THAT MATERIAL ITEMS WERE ENTERED INTO A DATABASE. WHAT DATA DID THE COMPANY ENTER INTO THE DATABASE?

A. For each job, the database contains the type of material purchased, the quantity purchased, the purchase price and the standard contracted labor rates for placing the facility. In Step 2, each item or group of items was then categorized into groups that represent the various components of a collocation installation. For example, all the material items, such as cable, fuses, and lugs used to connect various sizes of power cable were grouped into the Power Plant category. Similarly, cable racking, cable horns and the components used to connect the racking were placed in a Cable Racking category.

Q. IN STEP 3, WHY DID YOU USE STANDARD CONTRACTED LABOR COSTS AS OPPOSED TO USING THE ACTUAL LABOR THAT WAS BOOKED TO THE JOB?

A. The invoices for labor costs did not contain an itemized list of all the functions that were performed by the contractors. Virtually all the bills only listed the total hours spent on the job along with the total cost for all functions performed. To determine costs for an average collocation job, these labor costs needed to be identified with the same cost components as the material costs. To accomplish this, the study multiplied the standard contract labor rate for each function times the unit volumes obtained from the material receipts to develop costs by category. In Step 4, the total of these costs were then compared to the actual labor receipts to ensure that the calculations produced reasonable results. Also, in Step 4, the labor costs were added to the material costs to determine the total cost for each component of the job.

Q. HOW DO THE COLLOCATION CALCULATIONS ALLOW FOR DIFFERENCES BETWEEN THE COSTS FOR VARIOUS COLLOCATION DESIGNS?

A. Qwest gives collocators many options. For example, a collocator may order several types of terminations and several different sizes of DC power cable based on its specific needs. To account for these variations in the requested facilities, Qwest developed standard costs for terminations and power feeds. These standard costs were modeled based on the characteristics (i.e. material and labor costs and unit quantities and standard distances and

designs) found in the 41 jobs that were studied. These standard designs were then adjusted to account for any incremental cost or savings that would be incurred if the design was altered.

Q. ONCE COSTS FOR COST COMPONENTS WERE IDENTIFIED, WHAT WAS THE NEXT STEP IN THE COST DEVELOPMENT PROCESS?

A. The next step (Step 6) in the cost analysis assigned the individual cost components to collocation rate elements, as listed above and as described in the testimony of Mr. Easton. In some cases, several cost components (e.g. cable racking, support structure, etc) are recovered through a single collocation element (e.g. Space construction).

Q. ARE THE COSTS FOR THESE JOBS ASSIGNED TO BOTH RECURRING AND NONRECURRING COST CATEGORIES?

A. Yes. As I noted earlier, the study develops nonrecurring costs that include the cost of equipment dedicated to CLECs, and recurring costs that include the cost of equipment shared by CLECs and Qwest. In Step 7, the costs of the collocation jobs were assigned to the nonrecurring and recurring categories.

Once the nonrecurring cost of equipment dedicated to CLECs was identified, the next step in the cost study process (Step 8) was to identify those nonrecurring components of a standard collocation that would be used by more than one collocator. Several components of a standard collocation were determined to fall into this category including (but not limited to)

lighting, cable racking, aerial support structure and heating, ventilation and air conditioning (HVAC). The costs for these elements of collocation were prorated over the number of collocators that were anticipated to use the facilities.

At this point in the process, all the costs have been assigned to specific collocation components such as cable racking, power cable, support structure and terminations. The costs have also been identified as being recoverable through recurring or nonrecurring charges.

Q. DOES QWEST'S COLLOCATION COST STUDY COMPLY WITH FCC ORDERS REGARDING COLLOCATION?

A. Yes. Qwest's collocation study complies with FCC Order CC Docket No. 98-147, which is sometimes referred to as the "Advanced Services Order" and sometimes the "706" rules. This order primarily approaches collocation from a perspective of determining what collocation elements need to be offered and under what terms and conditions they should be offered, rather than from a cost perspective. However, the FCC does provide some direction regarding cost methodology for site preparation. The FCC states:

> For example, if an incumbent LEC implements cageless collocation arrangements in a particular central office that requires air conditioning and power upgrades, the incumbent may not require the first collocating party to pay the entire cost of site preparation.[16]

[16] Advanced Services Order ¶ 51.

Qwest's cost studies assume an average of three cage collocators and three cageless collocators in each central office. This assumption means that those costs related to construction are divided by three in cases where a facility (e.g., a cable rack) is used only by cage collocating CLECs. Where facilities are assumed to be shared by CLECs and Qwest, the costs are assumed to be limited to only recurring charges, and are determined on a shared basis with all users. This cost methodology is consistent with the FCC's direction in its 706 rules.

B. Other Collocation Studies

Q. IS QWEST FILING ADDITIONAL COST INFORMATION AT THIS TIME THAT IS NOT INCLUDED IN THE COLLOCATION MODEL?

A. Yes. At this time, Qwest is filing cost data for several elements that are related to collocation. These elements are included in the following TELRIC studies:

- Space Inquiry Report and Space Availability Report (Study ID# 6508)
- Direct CLEC to CLEC Interconnection (Study ID# 6505)
- Space Optioning (Study ID# 6509)
- Remote Terminal Collocation (Study ID# 6503)

Exhibit TKM-01 contains a summary of the results for these cost studies. The studies, including calculations and documentation, are included in the cost study workpapers. I will briefly describe these studies below.

Q. QWEST ALSO FILED A COST STUDY FOR CHANNEL REGENERATION (STUDY ID# 6504) ON JUNE 28, 2002, WHY IS THAT STUDY NOT INCLUDED IN THE LIST OF STUDIES ABOVE?

A. I am not discussing the development of the Channel Regeneration study (Study ID# 6504) because Qwest no longer charges CLECs for channel regeneration, except in the circumstance of a special request pursuant to the bona fide request ("BRF") process. Therefore, Qwest withdraws Study ID# 6504 from consideration by the Commission in this proceeding.

Q. PLEASE DESCRIBE THE SPACE INQUIRY REPORT.

A. The Space Inquiry Report is a report that provides CLECs with information regarding the existing collocation conditions within an office. The report provides the CLEC with (1) the number of collocators in an office, (2) the amount of collocation space available in an office, (3) a description of the measures under way to make additional space available for collocation, and (4) the modifications in the use of space since the last report. The charge for the space inquiry report applies on a "per office" basis each time a report is requested.

Q. PLEASE DESCRIBE THE SPACE AVAILABILITY REPORT COST STUDY.

A. The nonrecurring costs for the space availability report are based on costs Qwest incurs to determine if collocation space is available. The study (Study ID# 6508) identifies the costs associated with work performed in the Common Systems Planning Engineering Center (CSPEC) and the Infrastructure Availability Center (IAC). The tasks that are involved in developing and preparing these reports include verifying existing conditions in the central office, identifying available space and processing the report.

Q. PLEASE DESCRIBE DIRECT CLEC TO CLEC INTERCONNECTION.

A. CLEC to CLEC Interconnection allows one CLEC to directly interconnect with another CLEC within the same Qwest central office.[17] CLEC to CLEC connections are also available when a CLEC with multiple collocations in the same office wishes to connect those collocations. CLEC to CLEC Interconnection may involve physical to physical, physical to virtual, or virtual to virtual collocation. The types of CLEC to CLEC connections are described in the testimony of Mr. Easton. The differences between physical and virtual collocation arrangements are also described in more detail in Mr. Easton's testimony.

Q. HAS QWEST PREPARED A COST STUDY FOR DIRECT CLEC TO CLEC INTERCONNECTION?

[17] As described in the testimony of Mr. Easton, a CLEC can also order CLEC to CLEC cross connections, using an intermediate distribution frame. This arrangement utilizes Interconnection Tie Pairs (ITPs), the costs of which are part of the Collocation study.

A. Yes. Direct CLEC to CLEC Interconnections include both recurring and nonrecurring costs. The cost study that I am sponsoring develops costs for the following elements:

- Design Engineering and Installation (nonrecurring)
- Cable Racking (recurring)
- Virtual Connections (nonrecurring, if applicable)
- Cable Hole – (nonrecurring, if applicable)

Exhibit TKM-01 summarizes the results of the Direct CLEC to CLEC Interconnection study. Study ID# 6505 is included in the cost study workpapers contained on the CD filed June 28, 2002.

Q. PLEASE DESCRIBE SPACE OPTIONING.

A. Collocation Space Optioning will permit CLECs, Qwest and Qwest affiliates to option space for future collocation needs. Space reservation options are subject to first right of refusal requests by other parties with firm collocation orders.

Q. PLEASE DESCRIBE THE SPACE OPTIONING COST STUDY.

A. The nonrecurring costs for space optioning are based on costs Qwest incurs to administer collocation space option requests. The study (Study ID# 6509) identifies costs associated

with application processing, feasibility determination, common space engineering, records management, and administration of the first right of refusal process.

Q. PLEASE BRIEFLY DESCRIBE THE REMOTE TERMINAL COLLOCATION OFFERING.

A. Remote Terminal Collocation offers space in available remote cabinets on a Standard Mounting Unit ("SMU") level. The Remote Terminal Collocation cost study (Study ID# 6503) includes two cost elements: collocation space and the feeder distribution interface ("FDI") terminations.

The nonrecurring collocation space element includes the cost of the cabinet space, the cost of the cabinet and all of the work and materials associated with placement of the cabinet and providing access to power. The cost study identifies the cost of materials, engineering, splicing, installation and rights of way. The recurring cost includes maintenance costs associated with this equipment, plus a small portion of the power pedestal.

The nonrecurring FDI terminations (per 25 pair) element includes the costs associated with augmenting the FDI to provide the requested terminations. This includes the material, engineering and splicing costs associated with installing a Serving Area Interface ("SAI") 25 pair block, and the material, engineering, splicing and installation costs associated with the cable, conduit and innerduct required to connect the FDI to the remote collocation cabinet. The recurring FDI termination cost includes the maintenance costs associated with this equipment.

Q. HOW ARE THE REMOTE TERMINAL COLLOCATION COSTS DEVELOPED?

A. The Remote Terminal Collocation cost study identifies the material, engineering and installation labor costs associated with various equipment components (e.g., the cabinet, remote DSL pad, power pedestal, etc.) needed to provide the remote terminal collocation elements. Annual cost factors are applied to the direct costs to derive the TELRIC and TELRIC plus common cost.

Q. IS THERE A CHARGE FOR REMOTE TERMINAL COLLOCATION POWER USAGE?

A. Yes. However, the Remote Terminal Collocation cost study does not identify a cost for power consumption, since these costs/rates are identified in the Qwest Collocation Model described above. (Study ID# 6465)

VII. LINE SHARING

Q. WHAT IS LINE SHARING?

A. Line sharing involves the separate provisioning of the high frequency portion of the unbundled loop. In its "Line Sharing Order"[18] the FCC adopted "a requirement that incumbent LECs unbundle the high frequency portion of the loop to permit competitive

[18] *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996,* CC Docket Nos. 98-147 and 98-98, Third Report and Order in CC Docket No. 98-147, and Fourth Report and Order in CC Docket No. 98-98, (Rel. December 9, 1999) ("Line Sharing Order").

LECs to provide xDSL-based services by sharing lines with the incumbent's voiceband services."[19] The FCC has thus defined line sharing as a UNE.

Line sharing is explained further in the testimony of Ms. Malone.

A. TELRIC and Line Sharing

Q. WHAT TYPES OF COSTS ARE ASSOCIATED WITH LINE SHARING?

A. In its Line Sharing Order, the FCC identified "5 types of direct costs that an incumbent LEC potentially could incur to provide access to line sharing: 1) loops; 2) OSS; 3) cross connects; 4) splitters; and 5) line conditioning."[20]

Q. HAS QWEST ESTIMATED THE COST TO INSTALL A SHARED LOOP?

A. Yes. The nonrecurring costs associated with the installation of a shared loop are calculated in the ENRC, the results of which are summarized in Exhibit TKM-01. The costs for installing a shared loop include order-processing costs at the ISC, along with the cost to connect jumpers in the central office.

Q. IS THE TELRIC METHODOLOGY HELPFUL IN DETERMINING A "COST" FOR THE HIGH FREQUENCY PORTION OF THE LOOP?

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[19] *Id.* ¶ 136.

[20] *Id.*

A. No. The high frequency portion of the loop is significantly different than other UNEs in several respects. As noted by the FCC, "the TELRIC methodology that the Commission adopted in the Local Competition First Report and Order does not directly address this issue (line sharing)."[21] The FCC's original definition of TELRIC did not contemplate the idea that two separate unbundled network elements would share a single physical item of the telephone network – i.e., that a loop would be divided into two pieces based on the frequency spectrum used. TELRIC provides no guidance as to how costs can be determined between the low and high frequencies of the loop.

Q. FROM A COST PERSPECTIVE, WHAT IS THE NATURE OF LINE SHARING?

A. The loop is a dedicated link to a customer. Line sharing creates two links that are dedicated to a customer – a high frequency and low frequency link. There is no TELRIC basis for determining the cost of the loop for these dedicated links because there are not separate and distinct causes on which to base the costs of the different frequency levels. Thus, we are left with the issue of how to determine the cost of the high and low frequency portions of the loop.

Q. IF TELRIC CANNOT PROVIDE AN ANSWER, HOW SHOULD THE HIGH FREQUENCY PORTION OF THE LOOP BE PRICED?

[21] *Id.* ¶ 138.

A. Because the TELRIC rules do not provide a roadmap for determining an appropriate cost for the high frequency portion of the loop, Qwest has taken a common sense business approach to pricing this element. First, it is important to remember that TELRIC pricing is intended to simulate market conditions in a competitive market for purposes of pricing UNEs. In a competitive market, a business in possession of a productive asset that has value will assign a price to that asset, regardless of the incremental cost of the asset. The high frequency portion of the loop is an asset that has value and, thus, it is appropriate to assign a price to that asset.

Second, it has been Qwest's experience in negotiating with the CLECs that they have agreed there should be a price for the high frequency portion of the loop. In coming to agreement with a number of the CLECs, prior to the issue being addressed in cost dockets, it was evident that the CLECs assigned value to the high frequency portion of the loop.

Finally, both the Washington Utilities and Transportation Commission and the Colorado Public Utilities Commission addressed line sharing in their cost dockets and assigned a price to the high frequency portion of the loop in spite of several of the CLECs arguing that the price should be zero. In addition, in recent cost dockets the state staffs or consumer agencies in some of Qwest's states have agreed that a price should be assigned for this UNE.

B. Line Sharing Price and Imputation

Q. DID THE FCC ADOPT A METHOD OF DIVIDING THE SHARED LOOP COSTS?

A. No. However, the FCC discussed principles for pricing the high frequency portion of the loop in its Line Sharing Order. The FCC stated that "we must extend the TELRIC methodology to this situation and adopt a reasonable method for *dividing the shared loop costs.*"[22] (Emphasis added). Nevertheless, the FCC did nothing to "extend the TELRIC methodology" in the remainder of its order and, in fact, TELRIC provides no method for such division of costs. The FCC also concluded that state commissions may "require that incumbent LECs *charge* no more to Competitive Local Exchange Carriers (CLECs) for access to shared local loops than the amount of loop costs the incumbent LEC allocated to ADSL services when it established its interstate retail rates for those services."[23] (Emphasis added). The FCC noted that this is a "straightforward and practical approach for establishing rates" and that "this approach was recently approved by the Minnesota PUC."[24] The FCC Line Sharing Order, at footnote 326, quotes the Minnesota Commission:

> Specifically, the Minnesota PUC held that it was 'not presently concerned with how [Qwest] resolves the pricing issue, so long as the Company charges data CLECs the same loop rate that the Company presently *imputes* to its own DSL services'.

The intent of the FCC is not entirely clear. The FCC did not define a "method for dividing the shared loop costs". Rather, the FCC provided "guidance to assist in pricing". Paragraph 139 says nothing about "a reasonable method for dividing the shared loop costs"; it talks about the amount that can be "charged". This implies guidance by the FCC, not on dividing ***cost***, but on ***price***. Thus, the FCC's guidance suggests that the proper line sharing price

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[22] *Id.*

[23] *Id.* ¶ 139.

could be an amount no more than the loop cost that was "*imputed*" by the incumbent LEC in its interstate xDSL service cost filing.

Qwest interprets the FCC's order as suggesting that an *imputation* analysis should be performed to prevent the possibility of a price squeeze for xDSL offerings. As I will describe below, the charges proposed by Qwest for the high frequency portion of the loop are consistent with the "imputation" standard referenced by the FCC for Qwest's own DSL service.

Q. DID QWEST CALCULATE THE COST OF ITS INTERSTATE DSL SERVICE IN A MANNER CONSISTENT WITH THE FCC'S PRICING GUIDELINES?

A. Yes. The FCC states in its Line Sharing Order,

> Under the price cap rules for new access services, the recurring charges for such services may not be set below the direct costs of providing the service, which are comparable to incremental costs.

Qwest complied with the FCC rules in this regard and filed only the direct costs of its DSL service. The direct costs of the DSL service do not include costs for the loop because the loop is not a direct cost of the service.[25]

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[24] *Id.*

[25] The FCC's rules do not allow the incumbent LECs to file allocations of purported joint or shared costs in their cost filings. Thus, the FCC knew that no loop costs were contained in the interstate DSL filings, but it also knew that to make any allocation of the loop would violate its rules and therefore the filing would be rejected. This provides additional support for the conclusion that the FCC was providing pricing guidance based on price, not a "dividing of cost."

Q. HAS QWEST EMPLOYED A METHOD TO IMPUTE THE PROPOSED PRICE OF THE HIGH FREQUENCY PORTION OF THE LOOP TO ITS INTERSTATE DSL SERVICE?

A. Yes. The direct costs for interstate DSL service do not include any allocation of loop costs. However, Qwest's $31.95 price for DSL service accommodates an imputation of the *price* for the high frequency portion of the loop. As I discuss later in my testimony, imputations are normally accomplished in a secondary computation, independent of the direct cost price floor demonstration.

Q. WHAT IS THE PURPOSE OF AN IMPUTATION?

A. Imputation is often used as a mechanism to prevent a "price squeeze." For example, in some state jurisdictions Qwest has occasionally been required to impute access charges into its price floor for toll service to preclude the possibility of toll prices that would result in what has been termed a "price squeeze". In that instance, the imputation study is performed in order to demonstrate that the proposed toll price exceeds a combination of "bottleneck" access charge rates that Qwest's toll competitors could be required to purchase from Qwest, plus the total service long run incremental cost ("TSLRIC") for other elements. The separate imputation study results are used as a price floor for "price squeeze" purposes.[26]

[26] Of course, Qwest must still assure that its proposed toll prices also exceed direct costs (TSLRIC) in order to avoid the service being subsidized.

While states have sometimes required imputation, the FCC has never required imputation studies to be filed under its Price Cap rules for new service offerings. For this reason, Qwest did not file an imputation study with its interstate DSL filing.[27]

Q. DID THE FCC DISCUSS THE ISSUE OF A "PRICE SQUEEZE" IN THE CONTEXT OF LINE SHARING?

A. Yes. The FCC provided a guideline for charges associated with the use of the loop in line sharing. The FCC stated that any charge should not be greater than the amount attributed to the xDSL service, which would help eliminate the potential for a price squeeze. The FCC discussed the potential for a price squeeze if the price of an incumbent LEC's xDSL service was less than the amount a competitor would pay the incumbent LEC for the data spectrum of the loop plus the costs the competitor incurs to provide the service. By restricting the UNE amount charged for the higher spectrum of the loop to the level of loop cost implicit in the ILEC's retail DSL rate, the FCC concluded that any potential price squeeze is avoided. With the FCC's reference to both the direct cost rule and the issue of a price squeeze, it is clear that an approach of using two independent calculations is consistent with standard regulatory practice and the Line Sharing Order.

Q. IS QWEST PROPOSING A RATE FOR THE LINE SHARING UNE?

A. Yes. The proposed charge for the high frequency portion of the unbundled loop is $5.

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[27] Evidence of the secondary "price squeeze" calculation is found in the FCC's Order in CC Docket No. 98-79, Rel. Oct. 30, 1998, at 30-32, (ordering that GTE's DSL service was an interstate service).

Q. IF QWEST WERE TO PERFORM AN IMPUTATION CALCULATION RELATED TO ITS DSL SERVICE OFFERING, WOULD IT PASS AN IMPUTATION TEST THAT INCLUDES THE IMPUTED PRICE FOR THE HIGH FREQUENCY PORTION OF THE LOOP?

A. Yes. The $31.95 retail price for Qwest's DSL offering is at a level that exceeds the service's direct costs plus an imputation of the proposed line sharing UNE rate.[28] This demonstrates that the line sharing UNE charge proposed by Qwest for the use of the high-frequency portion of the loop meets the FCC's guideline.

C. Line Sharing and Collocation

Q. HAS QWEST PREPARED A COST STUDY THAT IDENTIFIES THE COLLOCATION COSTS ASSOCIATED WITH LINE SHARING?

A. Yes. The Qwest Line Sharing Collocation cost study results are contained in Study ID# 6506 and are summarized in Exhibit TKM-01. This study identifies the costs associated with three basic line sharing collocation options.[29] These options relate to the configuration of the splitter and associated cabling (cross connects). Briefly, these configurations are:

- Splitter in a common area relay rack or bay;
- Splitter mounted on an intermediate distribution frame;

[28] While the $31.95 service is used in the example, the $21.95 rate would also pass the same imputation test.

[29] A fourth alternative exists where the CLEC locates the splitter in its collocation area. With this alternative the CLEC would utilize ITPs to and from its collocation area and Qwest would not incur additional collocation costs.

- Splitter mounted on a main distribution frame.

In the Qwest Line Sharing Collocation study, the costs for each configuration include the cost of engineering, plus the applicable block and cabling costs. In each case, the costs do *not* include the costs for the splitter itself. Costs for the block and cabling are presented as a cost per 100 lines, while the engineering costs are presented on a per order basis.

I will briefly describe the collocation cost study below. Please refer to the testimony of Ms. Weidenbach for a detailed description from an engineering standpoint of the line sharing collocation elements.

Q. PLEASE BRIEFLY DESCRIBE THE ENGINEERING COSTS.

A. The engineering costs include the cost to engineer a collocation job. These costs are based on 20 hours of engineering time, as described in the testimony of Ms. Weidenbach, and are the same regardless of the line sharing option chosen. That is, each CLEC ordering collocation for line sharing would be charged for the recovery of this cost, regardless of which of the three options are chosen.

Q. PLEASE BRIEFLY DESCRIBE THE FIRST COLLOCATION OPTION.

A. The first option assumes that the splitter is located in a common area on a splitter bay. This option requires costs with three principal cost components:

1. Splitter bay shelf – This includes the network bay, aerial support and cable racking at the common splitter location.

2. Cable from splitter to CLEC – There are two sub-options, based on the CLEC's cabling (cross-connect) needs. The splitter can be connected via a data cable directly to the CLEC's collocation area, or it may be connected to the 410 block on the intermediate distribution frame ("IDF"). This option may be chosen if the CLEC has existing, but unutilized, tie cabling (terminations) between the intermediate frame and the collocation area. In this case, those connections can be used for the line sharing connections without the ordering of additional connections from Qwest. If the splitter is connected to the 410 block, the costs include the costs associated with tying the cable to the block. These arrangements are depicted in the diagrams on page 2 of Exhibit TKM-04.

3. Cable from splitter to IDF – This includes the cost of the two cables (voice and voice/data) connecting the splitter with the IDF. It includes cable and block expenses, as depicted in the diagram on page 3 of Exhibit TKM-04.

With either version of this option, the CLEC would also need to purchase Interconnection Tie Pairs ("ITPs") to connect the IDF to the Main Distribution Frame ("MDF"), as depicted in all of the diagrams on pages 1 through 3 in Exhibit TKM-04.

Q. PLEASE BRIEFLY DESCRIBE THE SECOND COLLOCATION OPTION.

A. With the second option, the splitter is located on the IDF. The CLEC may either connect via a data cable directly between the splitter and the CLEC collocation area or it may connect via a data cable to the 410 block on the IDF. The connection direct to the collocation area includes costs to mount the splitter block and the cost of the cable between the splitter and the CLEC collocation area. The connection to the IDF includes costs to mount the splitter block, the cost of the cable between the splitter and the 410 block, and the cost to tie the cable to the 410 block. This option is depicted on page 5 of Exhibit TKM-04.

With Option 2, the CLEC would also need to purchase ITPs to connect the IDF to the MDF, as depicted in the diagrams on pages 4 and 5 of Exhibit TKM-04.

Q. PLEASE BRIEFLY DESCRIBE THE THIRD COLLOCATION OPTION.

A. With the third option, the splitter is located on the MDF. This option is subject to limitations, as mentioned in Ms. Malone's testimony. The CLEC may either connect via a data cable directly between the splitter and the CLEC collocation area or it may connect via a data cable to the 410 block on the MDF. The connection direct to the collocation area includes costs to mount the splitter block and the cost of the cable between the splitter and the CLEC collocation area. The alternative includes costs to mount the splitter block, the cost of the cable between the splitter and the 410 block, and the cost to tie the cable to the 410 block. This option is depicted on page 7 of Exhibit TKM-04.

With either of these options, the CLEC would not need to purchase ITPs, since there is no connection between the MDF and the IDF.

Q. DOES THE FCC DISCUSS THE TYPES OF SPLITTER CONNECTIONS DESCRIBED ABOVE IN ITS LINE SHARING ORDER?

A. Yes. The FCC discusses the architecture for the connections to, and from, the splitters. The FCC described two common approaches:

> The first approach is to cable the high frequency band directly to the DSLAM, and the second is to cable it to another MDF location (or to an intermediate distribution frame (IDF) location), and then on to the DSLAM. The second approach facilitates easy customer moves and changes as well as changes in the customer's service providers and services. In this situation, the splitter has three connections to the MDF – one to terminate the loop, a second to terminate the voiceband signal and a third to terminate the high frequency loop spectrum....[30]

Q. PLEASE DESCRIBE THE FCC'S GUIDELINES FOR COSTS RELATED TO THE VOICE/DSL SPLITTERS.

A. The FCC determined that ILECs must either provide splitters on behalf of the CLECs or allow CLECs to purchase comparable splitters. Thus, when Qwest constructs the splitter bay for the CLEC, the FCC allows Qwest to acquire the splitter on behalf of the CLEC and pass-through a charge to the CLEC equal to the cost of the splitter, plus the cost to construct the bay and supporting structure. The costs developed in Study ID# 6506 and the corresponding rates displayed in Exhibit TKM-01, for the three options discussed above, *do not* include the cost of the splitter. The charge for the splitter is determined separately, if and only if, Qwest acquires the splitter on behalf of the CLEC. If it desires, the CLEC can

[30] Line Sharing Order ¶¶ 104 and 105.

choose to purchase the splitter itself, and provide it to Qwest for installation. Where the splitter is in the CLEC's collocation space (the fourth alternative), the CLEC purchases and installs the splitter itself.

Q. ARE THE DESIGNS PROPOSED BY QWEST CONSISTENT WITH THESE FCC REQUIREMENTS?

A. Yes. The Qwest proposal provides CLECs with several options and is consistent with the FCC's description of how splitter connections should be treated in a line sharing environment.

D. Line Sharing and Operational Support Systems

Q. WHAT OPERATIONAL SUPPORT SYSTEMS (OSS) COSTS RELATED TO LINE SHARING DOES QWEST SEEK TO RECOVER IN THIS PROCEEDING?

A. As a component of the monthly charge for the line sharing UNE, Qwest seeks to recover the OSS costs related to implementing line sharing, as authorized by the FCC in its Line Sharing Order.[31] The total line-sharing OSS costs Qwest seeks to recover are captured at a corporate level and have two components. The first component is $870,720 for modifications Qwest personnel made to internal systems maintained by Qwest. The second component is the direct expense of $11.9 million Qwest paid Telcordia to modify the many Telcordia-owned

[31] The FCC stated, "We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element." (Line Sharing Order ¶ 144).

legacy systems impacted by the requirement to provide line sharing. The activities related to these costs are described more fully in the testimony of Ms. Albersheim. Because Qwest's OSS function on a company-wide basis and support the entire 14-state region, these costs are incurred at a corporate level rather than a state level. Therefore, the OSS study for line sharing and the resulting OSS rate is determined on a total company basis using total company demand for shared lines. CLECs competing in South Dakota will pay their share of these costs on the basis of the number of lines actually shared in the state.

Please see the line sharing OSS cost study (Study ID# 6536) for documentation of the calculation of the proposed OSS rate associated with line sharing.

Q. IS QWEST ENTITLED TO RECOVER OSS COSTS RELATED TO THE LINE SHARING UNE?

A. Yes. The FCC has stated that ILECs must modify their operating support systems that are required for reordering, ordering, provisioning, repair and maintenance, and billing. The FCC also stated:[32]

> There is no dispute either that incumbent LECs will need to modify their OSS systems somewhat in order to implement line sharing, or that they will incur costs in doing so. The question here is what the incumbent LECs should be permitted to charge competitive LECs for those required modifications.

It is clear, therefore, the FCC intended that ILECs be allowed to recover the additional costs for OSS related to the line sharing UNE.

Q. ISN'T IT TRUE THAT THE COST TO MODIFY OSS SHOULD BE RELATIVELY MODEST BECAUSE ILECS HAVE "ALREADY MODIFIED THEIR OSS SYSTEMS TO ACCOMMODATE THEIR OWN XDSL PRODUCTS..."?[33]

A. No. The FCC was incorrect when it concluded that an ILEC's systems modifications for its own xDSL products would lessen the costs to modify its OSS for line sharing. As described in detail in Ms. Albersheim's testimony, line sharing creates very different requirements than those Qwest has for provisioning xDSL service on its own loops. When Qwest provides xDSL to its customer, there are two services being provided, but there is still only one service provider and one end-user customer. In the case of line sharing, there are two unrelated service providers (i.e., Qwest and the CLEC) and two customers (i.e., the end-user customer and the CLEC). Qwest's systems were not designed for multiple local service providers and multiple customers for a single loop. Thus, the OSS modifications necessary for Qwest to be able to accommodate line sharing for the CLECs are independent of modifications it has made to meet its own needs as a single provider of multiple services.

Even when the xDSL services are provided by a Qwest affiliate as part of the corporate family, common systems are used to track the network and provision service for the customer. Qwest then bills the affiliate pursuant to the FCC's Affiliate Transactions rules under Part 32 for the services (including systems) that it provides to the affiliate. If the

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[32] *Id.* ¶ 142.

[33] *Id.* ¶ 127.

affiliate requires any modifications to Qwest systems to meet its own needs it pays for those modifications separately, up front.

Q. WHAT RATE DOES QWEST PROPOSE TO USE FOR RECOVERY OF ITS LINE SHARING OSS COSTS?

A. Qwest proposes that the OSS costs for line sharing be recovered through a recurring monthly rate of $3.21 per line for each line that is shared with a CLEC. This approach to recovery of the OSS costs is based on guidance from the FCC:

> We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element. We believe that this guideline is consistent with the principle set forth in the *Local Competition First Report and Order* and incumbent LECs cannot recover nonrecurring costs twice. We also reaffirm the conclusions in the *Local Competition First Report and Order*, that the states may require incumbent LECs in an arbitrated agreement to recover such nonrecurring costs such as these incremental OSS modification costs through recurring charges over a reasonable period of time, and that nonrecurring charges must be imposed in an equitable manner among entrants. [Footnotes omitted].[34]

Q. WHY DID THE FCC SUGGEST RECURRING RATES TO RECOVER UP-FRONT COSTS FOR THE LINE SHARING OSS?

A. The FCC cited estimates from the ILECs that ranged from three million to hundreds of millions of dollars as the costs to modify OSS for line sharing. It is likely that the FCC recognized that because of the large amount of cost required for such modifications, up-front

[34] *Id.* ¶ 144.

recovery of these costs could discourage line sharing. To remedy the problem, the FCC suggestion allows recurring rates to distribute the cost over "a reasonable period of time."

Q. DOES THE USE OF RECURRING RATES FOR RECOVERY OF AN UP-FRONT COST CREATE ANY SPECIAL ISSUES?

A. Yes. First, the "reasonable period of time" has to be determined. Basic financial tenets would imply a recovery period that corresponds to the estimated life of line sharing. This would mean that a reasonable period would be an estimate of the useful life of line sharing, i.e., the scenario in which Qwest provides the voice service and the CLEC provides the DSL service. Although Qwest has requested such data from the CLECs in other jurisdictions and will attempt to obtain information in this proceeding, it has not received sufficient information to make such a projection based on CLEC input. Therefore, Qwest has estimated the useful life of OSS for line sharing based on the depreciation life of the underlying asset. In this case, the underlying assets are the computers that make up Qwest's OSS. These OSS assets reside in Account 2124, "General Purpose Computers," an account which has an estimated depreciation life of five years. Thus, it is Qwest's position that it is appropriate to use a five-year useful life for calculating the cost of line sharing OSS. In addition, in today's rapidly changing technological environment, it is difficult to envision a useful life for a given technical solution that extends beyond five years.

The second issue is the demand over which the rate will be applied, for example, per line per month. In order to properly develop a recurring rate that will come reasonably close to

recovering the cost, an estimate of the number of lines to be shared is required. This information was also requested from the DSL providers in other jurisdictions, but Qwest has not received this data either. As indicated by the requests for information, Qwest would prefer to have the CLECs' projections to use as inputs for estimating the rate for recovery of the OSS costs. Without alternative data, Qwest used the best information available to estimate demand, including an amount for potential churn. Projections were made of the number of lines to be shared for the first two years and trends were developed from this information for five years. Qwest is willing to consider alternative inputs if the CLECs have information that they would be willing to provide.

VIII. OPERATIONAL SUPPORT SYSTEMS

Q. WHAT OSS COSTS DOES QWEST SEEK TO RECOVER IN THIS PROCEEDING?

A. Qwest seeks recovery of two types of OSS costs in addition to the OSS costs associated with implementing the line sharing UNE. First, Qwest seeks recovery of the costs associated with the start-up or development and enhancement of Qwest's OSS to accommodate CLEC access and processing through OSS. The rates proposed for recovery of its start-up costs are derived from the costs captured by Qwest's Information Technologies organization, by project, for 1997, 1998, 1999 and 2000, as reflected in the testimony of Ms. Albersheim.[35] Adjustments were made in developing the amounts reflected in Ms. Albersheim's testimony to include and allocate only the planning dollars associated with included projects for each

[35] The expenses related to OSS enhancement and development are primarily accounted for in account 6724, Information Management.

category of costs for each year. The resulting total company-wide start-up costs, as adjusted, include $228,560,397 of direct expenses, and $15,263,845 of capital expenditures. The resulting amount on a present value basis is $280.4 million of start-up expenses that Qwest seeks to recover. The capital expenditures have also been calculated on a present value basis (using 10.14% as cost of money and a ten year life), resulting in $19.8 million of start-up capital that Qwest seeks to recover. The total expenditures have been input into the OSS cost study and appropriate directly attributable costs and loadings applied.

Second, Qwest seeks recovery of the ongoing maintenance and operation activities associated with electronic interfaces. Ongoing maintenance costs captured by Information Technologies include $4.7 million of annual expenses. Those expenses have been calculated on a present value basis (using 10.14% as cost of money) and input into the cost study resulting in $28.7 million of ongoing maintenance expenses that Qwest used to calculate a per-order rate for recovering ongoing maintenance costs on a forward-looking basis. Please refer to the OSS start-up cost study (Study ID# 6550) and the ongoing maintenance cost study (Study ID# 6549) for further information related to the costs Qwest seeks to recover for each of these types of OSS costs and the underlying detail used to determine the proposed rates.

Finally, as described above in Section VII.D, Qwest seeks recovery of the OSS expenditures that were necessary in order to implement the line sharing UNE. Please see the OSS line sharing cost study (Study ID# 6536) to review documentation of the calculation of the proposed OSS rate associated with line sharing.

Q. DOES QWEST SEEK TO RECOVER COMMON OR SHARED COSTS?

A. OSS is a UNE. The FCC permits inclusion of common costs in determining the appropriate recovery rates for UNEs. Nevertheless, Qwest does not seek to recover common or shared costs associated with its OSS start-up costs. Qwest does seek recovery for common or shared costs associated with its ongoing maintenance costs and line sharing UNE.

In distinguishing between these three, Qwest recognizes that the OSS start-up costs it seeks to recover are costs incurred since the passage of the Act and are unique. Therefore, Qwest will not seek recovery for start-up beyond its direct and attributable costs for development and enhancement activities. On the other hand, costs for ongoing maintenance are forward-looking and OSS costs for the line sharing UNE are recurring in nature, thus, common costs will be included for recovery for these two types of OSS expenditures.

Q. WHAT COSTS DOES QWEST PROPOSE TO USE FOR RECOVERY OF ITS OSS COSTS?

A. Qwest believes that it is appropriate to recover its OSS costs with two rates on a per order basis, one for start-up costs and one for ongoing maintenance costs. It is important for the Commission to recognize that Qwest seeks to recover only the systems-related costs for OSS, which includes the systems modification costs and interface development associated with the various methods of ordering. However, these costs are not driven by the activities of placing the service orders, rather the orders serve as a mechanism for recovering OSS costs. There are no processing costs, manual or otherwise, included in Qwest's rates for

start-up and ongoing maintenance. The costs Qwest seeks to recover are for the development, enhancement and modification of the CLEC interfaces and underlying systems that support preordering, ordering, provisioning, maintenance and repair, and billing functions for the CLECs. In addition, Qwest seeks to recover the ongoing cost of maintaining those interfaces and systems. Service orders are a surrogate for CLEC access to the underlying systems, partly because the process of placing a service order triggers access to such systems.

Qwest submits as its costs for start-up and ongoing maintenance costs amounts of $12.95 per order for start-up and $1.40 per order for ongoing maintenance. These costs are supported by the studies provided on June 28, 2002 (Study ID # 6550 and 6549) as updated in Exhibit TKM-05B.

Q. DOES QWEST PROPOSE TO CHARGE THE CLECS $12.95 PER ORDER TO RECOVER ITS OSS START-UP COSTS?

A. No. Qwest proposes to charge the CLECs only $5.00 per order for recovery of its OSS start-up costs. Although, Qwest has already incurred the costs that it seeks to recover in this proceeding and the cost evidence supports the higher charge, Qwest recognizes that CLECs entering the market in South Dakota might have difficulty with the higher rate. Of course, the lower rate extends Qwest's recovery period of the start-up costs that have already been incurred from 10 years to more than 25 years based on forecasted demand for UNEs in the Qwest region. Nevertheless, in order to ensure that the rate for recovery of Qwest's costs to

develop OSS for use by the CLECs is perceived as reasonable, Qwest is proposing to limit the rate to $5.00 per order.

Q. IS QWEST ENTITLED TO RECOVER START-UP OSS COSTS?

A. Yes, for several reasons.

OSS is a UNE.

The FCC confirmed in its Third Report and Order[36] that OSS is considered a UNE under Section 251 of the 1996 Act. In their comments, parties "argue[d] that OSS qualifies as an independent unbundled network element..."[37] Therefore, Qwest is entitled to seek recovery for its OSS UNE costs as permitted under the Act.

System Modifications are Required.

In discussing OSS as a UNE, the FCC confirmed that it "also *required* incumbent LECs to make *modifications* to their OSS as necessary in order to offer nondiscriminatory access to these functions, including access to interface design systems."[38] The FCC described interface design systems as "an electronic gateway used to electronically access OSS

[36] Third Report and Order and Fourth Further Notice of Proposed Rulemaking, CC Docket No. 96-98 (released November 5, 1999), confirming ¶ 516 of the First Report and Order, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98 (released August 8, 1996).

[37] *Id.* ¶ 423.

[38] *Id.* ¶ 421 (Emphasis added).

information such as telephone number, address validation, order receipt notice, etc."[39] By identifying OSS as a UNE, then obligating Incumbent Local Exchange Carriers (ILECs) to provide electronic interfaces and modify their OSS to accommodate the CLECs, the FCC placed start-up costs for OSS development and enhancement into the category of an ILEC's recoverable UNE costs. In addition, as discussed below, the FCC in its recently released Line Sharing Order supports this position.[40] Qwest is also seeking to recover the costs it will incur to modify its OSS in support of line sharing in this proceeding.

OSS Costs Relate Solely to UNEs.

In addition to modifying and enhancing its existing OSS, Qwest has provided electronic interfaces for preordering, ordering, provisioning, maintenance and repair, and billing for the sole purpose of enabling CLECs to enter the local market. As explained in detail in the testimony of Ms. Albersheim, but for the provisioning of the OSS UNE, the start-up costs that Qwest seeks to recover would not have been incurred. Therefore, Qwest is entitled to seek recovery of the start-up costs related to the OSS UNE.

Q. DOES QWEST PROPOSE TO CHARGE THE CLECS $1.40 PER ORDER TO RECOVER ITS ONGOING MAINTENANCE COSTS?

[39] *Id.* ¶ 421, see footnote 823.

[40] The FCC states "We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element." (Emphasis added). (Line Sharing Order ¶ 144).

A. Yes. Qwest believes that $1.40 per order is an appropriate charge for the cost of ongoing expenditures that Qwest will incur in order to maintain the OSS interfaces and systems used by the CLECs.

Q. IS QWEST ENTITLED TO RECOVER ONGOING OSS COSTS?

A. Yes. The ongoing costs Qwest seeks to recover are another facet of the OSS UNE. As discussed above, the FCC has confirmed that Qwest is entitled to recover the cost of providing UNEs. These are the costs of running electronic interfaces, developed for the CLECs, on a daily basis and updating or making minor changes to those electronic interfaces' software programs. Qwest is obligated to provide these electronic interfaces that are used solely by the CLECs, are not used by Qwest or its affiliates, and therefore, are properly recoverable from the CLECs.

Costs for maintaining and operating the electronic interfaces include the forward-looking costs of salaries and expenses for people involved in making table updates, resolving error conditions, initializing application software, and other related tasks. Ms. Albersheim explains in detail in her testimony how these costs benefit the CLECs.

Q. CAN QWEST ILLUSTRATE HOW OSS COSTS ARE ATTRIBUTABLE TO PROVIDING CAPACITY AND CAPABILITIES ONLY TO THE CLECS, AND HOW THESE CAPABILITIES ARE REQUIRED BY THE TELECOM ACT OR BY FCC DECISIONS?

A. Yes. The testimony of Ms. Albersheim provides information about each project undertaken by Qwest to meet the requirements for the OSS UNE. The information includes a description of the capability developed for the CLECs by each project, and the specific connection between the projects and the requirements of the Act or FCC rules with which Qwest must comply. In addition, Ms. Albersheim explains why each project does not provide benefit to Qwest, thereby evidencing that the cost was not caused by Qwest, nor would it have been undertaken but for the provisioning of the OSS UNE.

Ms. Albersheim's testimony provides a detailed description of each OSS start-up project for which Qwest seeks recovery, including the method for tracking expenses and the dollar amount related to each project. She also describes how each project relates to the five functions of OSS enumerated by the FCC:[41] pre-ordering, ordering, provisioning, repair and maintenance, and billing. In addition, Ms. Albersheim describes how these project costs are caused only by the CLECs and not Qwest.

Qwest's OSS costs can be related directly to the development and enhancement of its OSS, and include training and testing associated with those activities. In addition, Qwest provides the assumptions upon which it bases its development of the forecasted number of orders used to determine its per-order rate. Qwest believes that this submission will provide the Commission with the information it needs to determine the appropriateness of the OSS start-up rate.

[41] Third Report and Order at ¶ 425.

Q. PLEASE DESCRIBE THE ASSUMPTIONS USED TO DEVELOP QWEST'S FORECASTED NUMBER OF ORDERS USED TO DETERMINE ITS PER-ORDER COSTS.

A. I requested the development of Qwest's forecasted number of orders from the CLECs on the basis of three separate components. The first component is a linear trend, over the ten-year recovery period, of actual service orders placed by the CLECs beginning in 1999. The second component of the forecast is based on trending estimates of service orders generated as a result of Access Service Requests. Finally, the forecast is based on CLEC demand, to the extent that information is available, considering the expected migration of CLEC services to the UNE Combination, or UNE C, platform and line sharing resulting from the FCC's order requiring Qwest to provide those UNEs. This migration was determined using Qwest's experience with CLEC penetration of the resale market and a projection of continued penetration into Qwest's retail markets. As explained above, by lowering the OSS start-up rate from $12.95 per order, based on Qwest's forecasted demand, to $5.00 per order Qwest has extended the recovery period for OSS start-up costs from 10 years to more than 25 years.

Q. ARE OSS TRANSITION OR START-UP COSTS RECOVERED THROUGH EXPENSE FACTORS?

A. No. The expense factors currently in use in South Dakota are based on post-1999 data. Qwest began making an adjustment to the expense factors used in its cost studies to develop

recurring and nonrecurring UNE rates in 1999 to specifically remove the OSS costs from the calculation. Therefore, the fact that Qwest charges the CLECs on a per-order basis does not result in double recovery of OSS costs because it is not recovering these costs elsewhere through expense factors.

Q. ARE ONGOING OSS COSTS RECOVERED THROUGH EXPENSE FACTORS?

A. No. Recovery rates for ongoing costs are forward looking costs based on 1999 expenses pertaining to operating and maintaining the electronic interfaces (both the IMA GUI and EDI GUI) that have been developed for use by the CLECs. Again, the OSS expenses have been specifically removed from the calculation of expense factors. Additionally, these forward-looking costs would not be included in the expense factors because they are based on the incremental activities Qwest expects to perform in the future. For the same reason, neither would the incremental OSS costs associated with the line sharing UNE be included in the expense factors. As explained above, the factors in the cost studies are based on post-1999 data, and the level of expense recovery generated from those factors does not reflect this type of additional expenditure.

IX. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Qwest has a right under the Act to seek recovery of the costs for the UNEs that it is required to provide to the CLECs. Qwest's TELRIC studies properly apply the FCC's TELRIC

principles. For the UNEs and interconnection services included in this docket, I have submitted recurring and nonrecurring TELRIC cost studies. The Commission should set prices for unbundled network elements based on the TELRIC data summarized in Exhibit TKM-01 and detailed in the cost study workpapers.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

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

EXHIBITS OF

TERESA K. MILLION

QWEST CORPORATION

OCTOBER 15, 2002

INDEX OF EXHIBITS

EXHIBIT	DESCRIPTION
TKM-01	Summary of Results
TKM-02	Switch Port Development Worksheet
TKM-03	Collocation Diagrams
TKM-04	Line Sharing Collocation Diagrams
TKM-05A	OSS Start-up Executive Summary
TKM-05B	OSS Start-up Cost Study (Study ID# 6550)

SD Cost Study Summary

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
6.0 Resale						
6.1 Wholesale Discount Rates						
6.1.1	Basic Exchange Residential Line Service		4.62%			Gude
6.1.2	Basic Exchange Business Line Service		7.63%			Gude
6.1.3	IntraLATA Toll		6.65%			Gude
6.1.4	Package/Special Services (e.g., Centrex, ISDN, PBX, DSS, ISDN, Frame Relay Service, & other ACS)		8.88%			Gude
6.1.5	Listings, CO Features & Information Services		39.93%			Gude
6.1.6	Private Line		5.26%			Gude
6.1.7	Operator and DA Services		8.21%			Gude
6.1.8	Public Access Line (PAL)		0.00%			Gude
6.2 Customer Transfer Charge (CTC)						
6.2.1	CTC for POTS Service					
	First Line (Mechanized)			$0.69	6454	Malone
	Each Additional Line (Mechanized)			$0.14	6454	Malone
	First Line (Manual)			$16.54	6454	Malone
	Each Additional Line (Manual)			$2.76	6454	Malone
6.2.2	CTC for Private Line Transport Services					
	First Circuit			$35.26	6454	Malone
	Additional Circuit, per circuit, same CSR			$35.26	6454	Malone
6.2.3	CTC for Advanced Communications Services, per circuit			$52.38	6454	Malone
			Recurring	Nonrecurring		
7.0 Interconnection						
7.1 Entrance Facilities						
7.1.1	DS1		$129.87	$223.28	6466 / 6454	Easton
7.1.2	DS3		$518.00	$301.15	6466 / 6454	Easton
7.2 LIS EICT						
7.2.1	Per DS1		$0.00	$0.00		
7.2.2	Per DS3		$0.00	$0.00		
		Recurring Fixed	Recurring Per Mile	Nonrecurring		
7.3 Direct Trunked Transport						
7.3.1	DS1 Over 0 to 8 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 8 to 25 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 25 to 50 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 50 Miles	$69.25	$2.14		6466	Easton
7.3.2	DS3 Over 0 to 8 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 8 to 25 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 25 to 50 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 50 Miles	$378.85	$18.52		6466	Easton
			Recurring	Nonrecurring		
7.4 Multiplexing						
7.4.1	DS3 to DS1		$340.00	$208.90	6466 / 6454	Easton
7.4.2	DS1 to DS0		$298.66	$208.90	6466 / 6454	Easton
7.5 Trunk Nonrecurring Charges						
7.5.1	DS1 Interface, First Trunk			$248.59	6454	Easton
7.5.2	DS1 Interface, Each Additional Trunk			$6.02	6454	Easton
7.5.3	DS3 Interface, First Trunk			$255.51	6454	Easton
7.5.4	DS3 Interface, Each Additional Trunk			$12.95	6454	Easton
7.6 Local Traffic						
7.6.1	End office call termination, per Minute of Use		$0.002724		6466	Easton
7.6.2	Tandem Switched Transport					
	Tandem Switching, per Minute of Use		$0.001486		6466	Easton
		Recurring Fixed	Recurring Per Mile	Nonrecurring		
7.6.3	Tandem Transmission, per Minute of Use					
	0 to 8 Miles	$0.001290	$0.000028		6466	Easton
	8 to 25 Miles	$0.001290	$0.000028		6466	Easton
	25 to 50 Miles	$0.001290	$0.000028		6466	Easton
	Over 50 Miles	$0.001152	$0.000018		6466	Easton
			Recurring	Nonrecurring		
7.7 Local Traffic - FCC - ISP Rate Caps						
7.7.1	MOU for 6 mo. June 14 - Dec. 13, 2001		N/A			
7.7.2	MOU for 18 mo. Dec. 14 - June 13, 2003		$0.0010			
7.7.3	MOU for 36 mo. June 14, 2003 - June 13, 2006		$0.0007			
7.8 Misecellaneous Charges						

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
7.8.1	Expedited Charges (LIS Trunk)	Qwest's South Dakota Access Service Tariff				
7.8.2	Canellation Charge (LIS Trunk)	Qwest's South Dakota Access Service Tariff				
7.8.3	Additional Testing (LIS Trunk)	Qwest's South Dakota Access Service Tariff				
7.8.4	Contstruction Charges		ICB	ICB		
7.9 Transit Traffic						
7.9.1	Local Transit	See Tandem Switching and Tandem Transmission Rates Above				
	Local Transit Assumed Mileage	7	MILES			
7.9.2	IntraLATA Toll	Qwest's South Dakota Access Service Tariff				
	IntraLATA Toll Assumed Mileage	7	MILES			
7.9.3	Jointly Provided Switched Access	Qwest's South Dakota Access Service Tariff				
7.9.4	Category 11 Mechanized Record Charge, per Record		$0.001604		6432	Easton
8.0 Collocation						
8.1 All Collocation						
8.1.1	Collocation Entrance Facility, per Fiber Pair					
	Standard Shared, per Fiber		$6.81	$666.68	6465	Easton
	Cross Connect, Per Fiber		$7.02	$781.94	6465	Easton
	Express, per Cable		$109.11	$9,741.28	6465	Easton
8.1.2	Cable Splicing					
	Fiber - Per Set-Up			$511.69	6465	Easton
	Per Fiber Spliced			$38.72	6465	Easton
8.1.3	-48 Volt DC Power Usage, per Ampere, per Month					
	Power Plant, Less than 60 Amps		$12.53		6465	Easton
	Power Plant, Equal to or Greater than 60 Amps		$9.76		6465	Easton
	Power Usage, Less Than 60 Amps, per Amp		$2.27		6465	Easton
	Power Usage, More Than 60 Amps, per Amp		$4.54		6465	Easton
8.1.4	AC Power Feed - per Amp per Month					
	120 V		$20.27		6465	Easton
	208 V, Single Phase		$35.14		6465	Easton
	208 V, Three Phase		$60.80		6465	Easton
	240 V, Single Phase		$40.55		6465	Easton
	240 V, Three Phase		$70.15		6465	Easton
	480 V, Three Phase		$140.30		6465	Easton
	AC Power Feed – per Foot, per Month					
	20 Amp, Single Phase		$0.0151	$8.14	6465	Easton
	20 Amp, Three Phase		$0.0187	$10.10	6465	Easton
	30 Amp, Single Phase		$0.0163	$8.78	6465	Easton
	30 Amp, Three Phase		$0.0223	$12.06	6465	Easton
	40 Amp, Single Phase		$0.0191	$10.33	6465	Easton
	40 Amp, Three Phase		$0.0263	$14.21	6465	Easton
	50 Amp, Single Phase		$0.0227	$12.25	6465	Easton
	50 Amp, Three Phase		$0.0317	$17.10	6465	Easton
	60 Amp, Single Phase		$0.0257	$13.85	6465	Easton
	60 Amp, Three Phase		$0.0365	$19.69	6465	Easton
	100 Amp, Single Phase		$0.0318	$17.15	6465	Easton
	100 Amp, Three Phase		$0.0496	$26.78	6465	Easton
8.1.5	Inspector Labor, per Half Hour					
	Regular Hours Rate			$32.54	6465	Easton
	After Hours Rate, minimum 3 hours			$41.90	6465	Easton
8.1.6	Collocation Terminations					
	8.1.6.1 DS0					
	Cable Placement per 100 Pair Block		$0.1254	$222.83	6465	Easton
	Cable Placement per Termination		$0.0024	$4.18	6465	Easton
	Cable per 100 Pair Block		$0.1899	$337.43	6465	Easton
	Cable per Termination		$0.0026	$4.62	6465	Easton
	Blocks per 100 Pair Block		$0.3288	$584.42	6465	Easton
	Blocks per Termination		$0.0045	$8.01	6465	Easton
	Block Placement per 100 Pair Block		$0.1313	$233.30	6465	Easton
	Block Placement per Termination		$0.0018	$3.20	6465	Easton
	8.1.6.2 DS1					
	Cable Placement per 28 DS1s		$0.7189	$388.16	6465	Easton
	Cable Placement per Termination		$0.0773	$41.74	6465	Easton
	Cable per 28 DS1s		$0.7214	$389.51	6465	Easton
	Cable per Termination		$0.0776	$41.88	6465	Easton
	Panel per 28 DS1s		$0.4948	$267.20	6465	Easton
	Panel per Termination		$0.0594	$32.09	6465	Easton
	Panel Placement per 28 DS1s		$0.1470	$79.35	6465	Easton
	Panel Placement per Termination		$0.0158	$8.53	6465	Easton
	8.1.6.3 DS3					
	Cable per Termination		$0.2663	$143.78	6465	Easton
	Cable Placement per Termination		$0.4658	$251.53	6465	Easton
	Connector per Termination		$0.4736	$255.73	6465	Easton

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
	Connector Placement per Termination		$0.0367	$19.82	6465	Easton
8.1.6.4	OCn Termination					
	OCn Terminations, Per 12 Fibers		$28.99	$1,658.35	6507	Easton
	OCn Additional Connector (if applicable)		$0.84	$450.93	6507	Easton
	OCn Cable Racking Shared (per 12 Fibers)		$26.85		6507	Easton
	OCn Cable Racking Dedicated		$2.79	$1,507.33	6507	Easton
8.1.7	Security					
	Per Employee, per Card		$0.85		6465	Easton
	Card Access per Employee, per Office		$7.04		6465	Easton
	Central Office Security Infrastructure		ICB	ICB		Easton
8.1.8	Central Office Clock Synchronization					
	Synchronization – Composite Clock, per Port		$8.49		6465	Easton
8.1.9	Space Availability Charge			$340.32	6508	Easton
8.1.10	Collocation Space Reservation Fee	The charge will be 25% of the Non-Recurring Fee				
8.1.11	Collocation Space Option Administration Fee			$1,146.74	6509	Easton
8.1.12	Collocation Space Option Fee - per sq. foot		$2.00			Easton
8.1.13	Collocation Cable Augment QPF			$1,409.96	6551	Easton
8.2 Virtual Collocation						
8.2.1	Quote Preparation Fee			$4,469.55	6465	Easton
8.2.2	Maintenance Labor, per Half Hour					
	Regular Hours Rate			$28.54	6465	Easton
	After Hours Rate			$38.19	6465	Easton
8.2.3	Training Labor, per Half Hour					
	Regular Hours Rate			$28.54	6465	Easton
8.2.4	Equipment Bay -recurring, per Shelf		$4.37		6465	Easton
8.2.5	Engineering Labor, per Half Hour					
	Regular Hours Rate			$30.79	6465	Easton
	After Hours Rate			$39.75	6465	Easton
8.2.6	Installation Labor, per Half Hour					
	Regular Hours Rate			$32.54	6465	Easton
	After Hours Rate			$41.90	6465	Easton
8.2.7	Floor Space Lease, per Square Foot		$3.03		6465	Easton
8.2.8	DC Power Cable - per Feed					
	20 Amp		$8.37	$4,521.83	6465	Easton
	30 Amp		$9.53	$5,148.43	6465	Easton
	40 Amp		$11.52	$6,218.08	6465	Easton
	60 Amp		$20.39	$11,012.44	6465	Easton
	100 Amp		$34.40	$18,573.95	6465	Easton
	200 Amp		$64.03	$34,575.21	6465	Easton
	300 Amp		$100.69	$54,367.53	6465	Easton
	400 Amp		$142.96	$77,194.68	6465	Easton
8.3 Cageless Physical Collocation						
8.3.1	Quote Preparation Fee, Per Collocation Ordered			$4,469.55	6465	Easton
8.3.2	Site Preparation Fee			ICB		
8.3.3	Space Construction					
	2 Bays		$39.45	$21,299.26	6465	Easton
	Each Additional Bay, Per Bay		$0.87	$471.75	6465	Easton
	DC Power Cable					
	20 Amp		$8.37	$4,521.83	6465	Easton
	30 Amp		$9.53	$5,148.43	6465	Easton
	40 Amp		$11.52	$6,218.08	6465	Easton
	60 Amp		$20.39	$11,012.44	6465	Easton
	100 Amp		$34.40	$18,573.95	6465	Easton
	200 Amp		$64.03	$34,575.21	6465	Easton
	300 Amp		$100.69	$54,367.53	6465	Easton
	400 Amp		$142.96	$77,194.68	6465	Easton
8.3.4	Floor Space Lease, per Square Foot		$3.03		6465	Easton
8.4 Caged Physical Collocation						

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
8.4.1	Quote Preparation Fee, Per Collocation			$4,859.69	6465	Easton
8.4.2	Site Preparation Fee			ICB		
8.4.3	Space Construction					
	Cage - Up to 100 sq. ft		$68.56	$37,019.76	6465	Easton
	Cage - 101 to 200 sq. ft		$60.82	$32,842.03	6465	Easton
	Cage - 201 to 300 sq. ft		$75.11	$40,554.00	6465	Easton
	Cage - 301 to 400 sq. ft		$78.69	$42,491.50	6465	Easton
	Fencing Credit - Cage Up to 100 Sq. Ft.		($10.35)	($5,590.02)	6465	Easton
	Fencing Credit - Cage 101 Sq. Ft to 200 Sq. Ft		($12.91)	($6,969.92)	6465	Easton
	Fencing Credit - Cage 201 Sq. Ft to 300 Sq. Ft		($14.50)	($7,828.84)	6465	Easton
	Fencing Credit - Cage 301 Sq. Ft to 400 Sq. Ft		($16.01)	($8,645.52)	6465	Easton
	DC Power Cable					
	20 Amp		$10.41	$5,621.76	6465	Easton
	30 Amp		$11.47	$6,192.23	6465	Easton
	40 Amp		$13.71	$7,404.38	6465	Easton
	60 Amp		$22.64	$12,222.79	6465	Easton
	100 Amp		$36.84	$19,890.97	6465	Easton
	200 Amp		$68.57	$37,026.82	6465	Easton
	300 Amp		$107.33	$58,222.54	6465	Easton
	400 Amp		$153.10	$82,668.28	6465	Easton
8.4.4	Floor Space Lease, per Square Foot		$3.03		6465	Easton
8.4.5	Grounding - Cage					
	2/0 AWG – per foot		$0.0179	$9.68	6465	Easton
	1/0 AWG – per foot		$0.0316	$17.04	6465	Easton
	4/0 AWG – per foot		$0.0371	$20.05	6465	Easton
	350 kcmil – per foot		$0.0479	$25.88	6465	Easton
	500 kcmil – per foot		$0.0555	$29.95	6465	Easton
	750 kcmil – per foot		$0.0846	$45.66	6465	Easton
8.5 Adjacent Collocation				ICB		Easton
8.6 Remote Collocation						
8.6.1	Physical Remote Collocation					
	Quote Preparation Fee			ICB		Malone
	Space (per Standard Mounting Unit)		$0.53	$728.98	6503	Malone
	FDI Terminations - per binder group (25 pr.)		$0.32	$531.18	6503	Malone
	Power			See Collocation Rates		
8.6.2	Adjacent Remote Collocation			ICB		Malone
8.6.3	Virtual Remote Collocation					
	Space		$0.53	$728.98	6503	Malone
	FDI Terminations - per binder group (25 pr.)		$0.32	$531.18	6503	Malone
	Power			See Collocation Rates		Malone
	Flat Charge			$36.96	6503	Malone
	Engineering Rate, Per Half Hour			$36.44	6503	Malone
	Maintenance, per Half Hour			$30.05	6503	Malone
	Installation, per Half Hour			$30.05	6503	Malone
	Training, per Half Hour			$30.05	6503	Malone
8.7 CLEC to CLEC						
8.7.1	Flat Charge (Design Engineering - No Cables)			$815.31	6505	Easton
	Fiber Flat Charge (Design Engineering - No Cables)			$1,458.64	6505	Easton
8.7.2	Cable Racking, Per Foot, per Cable					
	DS0		$0.18445		6505	Easton
	DS1		$0.19724		6505	Easton
	DS3		$0.16761		6505	Easton
	Fiber		$1.52558		6505	Easton
8.7.3	Virtual Connections (if applicable - Connections only No Cables)					
	DS0 (Per 100 Connections)			$195.47	6505	Easton
	DS1 (Per 28 Connections)			$91.54	6505	Easton
	DS3 (Per 1 Connection)			$6.25	6505	Easton
8.7.4	Cable Hole (if Applicable)			$470.49	6505	Easton
8.7.5	CLEC to CLEC Cross-Connection			$223.74	6454	Easton
8.8 ICDF Collocation				ICB		
8.9 Cancellation/Decommission			No Charge			

	Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
8.10 Micrwave Entrance Facility		Under Development	Under Development		
9.0 Unbundled Network Elements (UNEs)					
9.1 Interconnection Tie Pairs					
9.1.1 Interconnection Tie Pairs (ITP)					
DS0 - Per Termination		$0.50		6465	Easton
DS1 - Per Termination		$1.46		6465	Easton
DS3 - PerTermination		$17.42		6465	Easton
9.2 Unbundled Loops					
9.2.1 Analog Loops					
9.2.1.1 2-Wire Voice Grade - *PLEASE SEE FOOTNOTE REGARDING OPTIMIZER PROGRAM RATES*			See Installation options, Section 9.2.4		
Zone 1		$20.18		6466	Easton
Zone 2		$29.72		6466	Easton
Zone 3		$38.15		6466	Easton
9.2.1.2 2-Wire Unbundled Loop Grooming		$1.60		6466	Easton
9.2.1.3 4-Wire Voice Grade			See Installation options, Section 9.2.4		
Zone 1		$40.33		6466	Easton
Zone 2		$59.42		6466	Easton
Zone 3		$76.27		6466	Easton
9.2.1.4 4-Wire Unbundled Loop Grooming		$3.77		6466	Easton
9.2.2 Non-loaded Loops					
9.2.2.1 2-wire Non-loaded Loop		See Section 9.2.1.1	See Installation options, Section 9.2.4 and See also Section 9.2.2.3	6466	Easton
9.2.2.2 4-wire Non-loaded Loop		See Section 9.2.1.3	See Installation options, Section 9.2.4 and See also Section 9.2.2.3	6466	Easton
9.2.2.3 Cable Unloading/Bridge Tap Removal			$663.17	6454	Easton
9.2.3 Digital Capable Loops					
9.2.3.1 Basic Rate ISDN / xDSL - I Capable / ADSL Compatible Loop - *PLEASE SEE FOOTNOTE REGARDING OPTIMIZER PROGRAM RATES*			See Installation options, Section 9.2.4 and See also Section 9.2.2.3		
Zone 1		$20.18		6466	Easton
Zone 2		$29.72		6466	Easton
Zone 3		$38.15		6466	Easton
9.2.3.2 DS1 Capable Loop			See Installation options, Section 9.2.5		
Zone 1		$154.37		6430	Easton
Zone 2		$155.15		6430	Easton
Zone 3		$157.96		6430	Easton
DS3 Capable Loop			See Installation options, Section 9.2.6		
Zone 1		$795.99		6430	Easton
Zone 2		$831.62		6430	Easton
Zone 3		$1,073.70		6430	Easton
9.2.3.3 OC - n Capable Loop			See Installation options, Section 9.2.7		
OC - 3		$936.15		6431	Easton
OC - 12		$1,363.89		6431	Easton
OC - 48		$3,928.32		6431	Easton
2-Wire Extension Technology		$4.76		6466	Easton
2-W Ext. Tech Unbundled Loop Grooming		$2.31		6466	Easton

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
9.2.4	Loop Installation Charges for 2 & 4 wire Analog / Non - Loaded, ISDN BRI Capable, xDSL - I Capable, and ADSL Compatible Loop where conditioning is not required.		See related monthly recurring Loop charges above.			
	9.2.4.1 Basic Installation					
	First			$94.47	6454	Easton
	Each Additional			$78.73	6454	Easton
	9.2.4.2 Basic Installation with Performance Testing					
	First			$200.12	6454	Easton
	Each Additional			$141.60	6454	Easton
	9.2.4.3 Coordinated Installation with Cooperative Testing					
	First			$240.71	6454	Easton
	Each Additional			$141.60	6454	Easton
	9.2.4.4 Coordinated Installation without Cooperative Testing					
	First			$101.67	6454	Easton
	Each Additional			$85.92	6454	Easton
	9.2.4.5 Basic Install with Cooperative Testing					
	First			$200.12	6454	Easton
	Each Additional			$141.60	6454	Easton
9.2.5	DS1 / DS3 / OC-3 / OC - 12 / OC-48 Loop Installation Charges		See related monthly recurring Loop charges above.			
	9.2.5.1 Basic Installation					
	First			$179.80	6454	Easton
	Each Additional			$122.82	6454	Easton
	9.2.5.2 Basic Installation with Performance Testing					
	First			$315.96	6454	Easton
	Each Additional			$217.23	6454	Easton
	9.2.5.3 Coordinated Installation with Cooperative Testing					
	First			$356.55	6454	Easton
	Each Additional			$217.23	6454	Easton
	9.2.5.4 Coordinated Installation without Cooperative Testing					
	First			$189.06	6454	Easton
	Each Additional			$132.07	6454	Easton
	9.2.5.5 Basic Install with Cooperative Testing					
	First			$315.96	6454	Easton
	Each Additional			$217.23	6454	Easton
9.2.6	Private Line to Unbundled Loop Conversions			$37.36	6454	Easton
9.3 Subloop						
9.3.1	2-Wire Analog and Non-Loaded Distribution Loop			$112.61	6454	Easton
	Each Additional 2-Wire Distribution Loop (applies to both analog and non-loaded)			$32.32	6454	Easton
	Zone 1		$11.26		6427	Easton
	Zone 2		$18.86		6427	Easton
	Zone 3		$21.44		6427	Easton
9.3.2	Intra-Building Cable Loop		$0.52		6427	Easton
	Intra-Building Cable No Dispatch First			$58.18	6454	Easton
	Intra-Building Cable No Dispatch Each Additional			$24.27	6454	Easton
	Intra-Building Cable Dispatch First			$103.10	6454	Easton
	Intra-Building Cable Dispatch Each Additional			$34.29	6454	Easton
9.3.3	MTE Terminal Subloop Access					
	Subloop MTE - POI Site Inventory (per request)			$135.07	6454	Easton
	MTE - POI Rearrangement of Facilities			ICB		
	MTE - POI Construction of New SPOI		ICB			
9.3.4	DS1 Capable Feeder Loop			$328.85		Easton
	Each Additional DS1 Capable Feeder Loop			$233.25		Easton
	Zone 1		$107.91		6430	Easton
	Zone 2		$108.69		6430	Easton
	Zone 3		$111.50		6430	Easton
9.3.5	Field Conntection Point					
	Feasibility Fee/Quote Preparation Fee			$1,343.90	6454	Easton

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
	FCP Reclassification			$595.50	6454	Easton
9.3.6	Construction Fee			ICB		
9.4 Line Sharing						
9.4.1	Shared Loop, per Loop		$5.00	$37.27	6454	Malone
9.4.2	OSS - per Line, per Month		$3.21		6536	Albersheim
9.4.3	Reclassification Charge			ICB		
9.4.4	Splitter Shelf Charge		$4.39	$532.56	6506	Malone
9.4.5	Splitter TIE Cable Connections					
	Splitter in the Common Area -- Data to 410 block		$5.19	$2,804.98	6506	Malone
	Splitter in the Common Area -- Data direct to CLEC		$5.52	$2,981.61	6506	Malone
	Splitter on the IDF - Data to 410 block		$1.58	$853.16	6506	Malone
	Splitter on the IDF - Data direct to CLEC		$3.11	$1,679.72	6506	Malone
	Splitter on the MDF - Data to 410 block		$1.63	$882.73	6506	Malone
	Splitter on the MDF - Data direct to CLEC		$3.69	$1,991.96	6506	Malone
9.4.6	Engineering			$1,300.49	6506	Malone
9.5 Network Interface Device (NID)			$1.05	$69.87	6466 / 6454	Easton
		Recurring Fixed	Recurring Per Mile	Nonrecurring		
9.6 Unbundled Dedicated Interoffice Transport (UDIT)						
9.6.1	DS0 UDIT			$276.13	6454	Easton
	DS0 Over 0 to 8 Miles	$34.24	$0.30		6466	Easton
	DS0 Over 8 to 25 Miles	$34.24	$0.30		6466	Easton
	DS0 Over 25 to 50 Miles	$34.24	$0.30		6466	Easton
	DS0 Over 50 Miles	$33.50	$0.22		6466	Easton
9.6.2	DS1 UDIT			$321.82	6454	Easton
	DS1 Over 0 to 8 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 8 to 25 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 25 to 50 Miles	$77.76	$3.15		6466	Easton
	DS1 Over 50 Miles	$69.25	$2.14		6466	Easton
9.6.3	DS3 UDIT			$321.82	6454	Easton
	DS3 Over 0 to 8 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 8 to 25 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 25 to 50 Miles	$442.99	$31.21		6466	Easton
	DS3 Over 50 Miles	$378.85	$18.52		6466	Easton
9.6.4	OC-3 UDIT			$321.82	6454	Easton
	OC-3 Over 0 to 8 Miles	$762.78	$47.86		6466	Easton
	OC-3 Over 8 to 25 Miles	$762.78	$47.86		6466	Easton
	OC-3 Over 25 to 50 Miles	$762.78	$47.86		6466	Easton
	OC-3 Over 50 Miles	$762.78	$68.44		6466	Easton
9.6.5	OC-12 UDIT			$321.82	6454	Easton
	OC-12 Over 0 to 8 Miles	$2,163.94	$95.01		6466	Easton
	OC-12 Over 8 to 25 Miles	$2,163.94	$95.01		6466	Easton
	OC-12 Over 25 to 50 Miles	$2,163.94	$95.01		6466	Easton
	OC-12 Over 50 Miles	$2,163.94	$141.97		6466	Easton
9.6.6	OC-48 UDIT			$321.82	6454	Easton
	OC-48 Over 0 to 8 Miles	$4,418.64	$240.26		6466	Easton
	OC-48 Over 8 to 25 Miles	$4,418.64	$240.26		6466	Easton
	OC-48 Over 25 to 50 Miles	$4,418.64	$240.26		6466	Easton
	OC-48 Over 50 Miles	$4,418.64	$363.55		6466	Easton
			Recurring	Nonrecurring		
9.6.7	UDIT DS0 Channel Performance					
	DS0 UDIT Low Side Channelization		$14.76		6466	Easton
	DS1/DS0 MUX, Low Side Channelization		$8.42	$206.94	6454	Easton
9.6.8	Multiplexing					
	DS1 to DS0		$340.00	$241.32	6466 / 6454	Easton
	DS3 to DS1		$298.66	$3,011.44	6466 / 6454	Easton
9.6.9	Extended Unbundled Dedicated Interoffice Transport					
	DS1 E-UDIT		$129.87	$381.24	6466 / 6454	Easton
	DS3 E-UDIT		$518.00	$381.24	6466 / 6454	Easton
	OC-3 E-UDIT		$936.15	$381.24	6466 / 6454	Easton
	Remote Node		$491.28		6431	Easton
	DS1 Remote Port		$3.77	$213.97	6431 / 6454	Easton
	DS3 Remote Port		$50.89	$213.97	6431 / 6454	Easton

	Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
OC-12 E-UDIT		$1,363.89	$381.24	6466 / 6454	Easton
Remote Node		$924.28		6431	Easton
DS1 Remote Port		$13.07	$213.97	6431 / 6454	Easton
DS3 Remote Port		$34.23	$213.97	6431 / 6454	Easton
OC3 Remote Port		$107.50	$213.97	6431 / 6454	Easton
OC-48 E-UDIT		$3,928.32	$381.24	6466 / 6454	Easton
Remote Node		$3,331.15		6431	Easton
DS3 Remote Port		$23.22	$213.97	6431 / 6454	Easton
OC3 Remote Port		$126.47	$213.97	6431 / 6454	Easton
OC12 Remote Port		$498.41	$213.97	6431 / 6454	Easton
9.6.10 UDIT Rearrangement					
DS0 Single Office			$169.61	6454	Easton
DS0 Dual Office			$213.10	6454	Easton
High Capacity Single Office			$232.73	6454	Easton
High Capacity Dual Office			$260.79	6454	Easton
9.7 Unbundled Dark Fiber (UDF)					
9.7.1 UDF-Interoffice Facility (IOF) - Single Strand					
Order Charge, Per First Strand / Route / Order			$535.86	6454	Easton
Order Charge, Each Additional Strand / Same Route			$276.19	6454	Easton
Termination, Fixed Per Strand / Office		$4.82		6457	Easton
Fiber Transport, Per Mile / Strand		$56.40		6457	Easton
Fiber Cross-Connect Per Strand / Office		$2.59	$21.90	6457 / 6454	Easton
UDF-Loop Charges - Single Strand					
Order Charge, Per First Strand / Route / Order			$535.86	6454	Easton
Order Charge, Each Additional Strand / Same Route			$276.19	6454	Easton
Termination, Fixed Per Strand / Office		$4.82		6457	Easton
Termination, Fixed Per Strand / Prem		$3.63		6457	Easton
Fiber Loop, Per Route / Strand		$158.39		6457	Easton
Fiber Cross-Connect Per Strand / Office		$2.59	$21.90	6457 / 6454	Easton
Extended Unbundled Dark Fiber (E-UDF) - Single Strand					
Order Charge, Per First Strand / Route / Order			$535.86	6454	Easton
Order Charge, Each Additional Strand / Same Route			$276.19	6454	Easton
Termination, Fixed Per Strand / Office		$4.82		6457	Easton
Termination, Fixed Per Strand / Prem		$3.63		6457	Easton
Fiber Loop, Per Route / Strand		$158.39		6457	Easton
Fiber Cross-Connect Per Strand / Office		$2.59	$21.90	6457 / 6454	Easton
9.7.2 Initial Records Inquiry (IRI)					
Simple			$256.27	6454	Easton
Complex			$300.84	6454	Easton
9.7.3 Field Verification and Quote Preparation (FVQP)			$1,025.51	6454	Easton
9.7.4 Field Verification (Engineering Verification)			$352.26	6454	Easton
9.7.5 UDF-IOF Charges					
Order Charge per 1st Pair /Route/Order			$535.86	6454	Easton
Order Charge each. Addl. Pair/Same Route			$276.19	6454	Easton
Termination, Fixed Per Pair/Office		$10.19		6457	Easton
Fiber Transport, per Mile /Pair		$73.32		6457	Easton
Fiber Cross-Connect Per Pair/Office		$5.18	$21.90	6457 / 6454	Easton
9.7.6 UDF-Loop Charges					
Order Charge per 1st Pair /Route/Order			$535.86	6454	Easton
Order Charge each. Addl. Pair/Same Route			$276.19	6454	Easton
Termination, Fixed Per Pair/Office		$9.95		6457	Easton
Termination, Fixed Per Pair/Pre		$7.49		6457	Easton
Fiber Loop, per Route/Per Pair		$205.91		6457	Easton
Fiber Cross-Connect Per Pair/Office		$5.18	$21.90	6457 / 6454	Easton
9.7.7 Extended Unbundled Dark Fiber (E-UDF)					
Order Charge per 1st Pair /Route/Order			$535.86	6454	Easton
Order Charge each. Addl. Pair/Same Route			$276.19	6454	Easton
Termination, Fixed Per Pair/Office		$9.95		6457	Easton
Termination Fixed Per Pair/Prem		$7.49		6457	Easton
Fiber Transport, per Route/Per Pair		$205.91		6457	Easton
Fiber Cross-Connect Per Pair/Office		$5.18	$21.90	6457 / 6454	Easton
9.7.8 Dark Fiber Splice			$673.51	6454	Easton
9.8 Shared Transport					
9.8.1 Per Minute of Use - TELRIC Based Rate		$0.002272		6466	Malone
9.9 Unbundled Customer Controlled Rearrangement Element					
9.9.1 DS1 Port		ICB	ICB		
9.9.2 DS3 Port		ICB	ICB		
9.9.3 Dial Up Access		ICB			

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
9.9.4	Attendant Access		ICB			
9.9.5	Virtual Ports			ICB		
9.10 Local Tandem Switching						
9.10.1	DS1 Local Message Trunk Port			$224.45	6454	Malone
9.10.2	Trunk Group – First Trunk			$219.27	6454	Malone
9.10.3	Message Trunk Group – Each Additional Trunk			$24.88	6454	Malone
9.10.4	Per Minute of Use		$0.002659		6466	Malone
9.11 Local Switching						
9.11.1	**Analog Line Side Port**					
	First Port			$164.13	6454	Malone
	Each Additional Port			$102.04	6454	Malone
	Analog Line Side Port with Features		$2.54 (1)		6418 / 6416 / 646	Malone
	Premium Analog Port with Features		$5.02 (2)		6418 / 6416 / 6466 / 6417	Malone
9.11.2	**Vertical Features**					
Basic Features						
	10XXX Direct Dialed Blocking		$0.0000			
	Account Codes - per system		$0.0000	$81.28	6454	Malone
	Attendant Access Line - per station line		$0.0000	$1.17	6454	Malone
	Audible Message Waiting		$0.0000	$1.03	6454	Malone
	Authorization Codes - per system		$0.0000	$243.08	6454	Malone
	Auto Callback		$0.0000			
	Automatic Line, per station line		$0.0000	$0.35	6454	Malone
	Automatic Route Selection - Common Equip. per syste		$0.0000	$2,132.83	6454	Malone
	Blocking of pay per call services		$0.0000			
	Bridging		$0.0000			
	Call Drop		$0.0000	$0.35	6454	Malone
	Call Exclusion - Automatic		$0.0000	$1.03	6454	Malone
	Call Exclusion - Manual		$0.0000	$0.68	6454	Malone
	Call Forward Don't Answer - All Calls		$0.0000			
	Call Forwarding Incoming Only		$0.0000	$38.52	6454	Malone
	Call Forwarding Intra Group Only		$0.0000			
	Call Forwarding Variable Remote		$0.0000			
	Call Forwarding: Busy Line (Expanded)		$0.0000			
	Call Forwarding: Busy Line (External)		$0.0000			
	Call Forwarding: Busy Line (External) Don't Answer		$0.0000			
	Call Forwarding: Busy Line (Overflow)		$0.0000			
	Call Forwarding: Busy Line (Overflow) Don't Answer		$0.0000			
	Call Forwarding: Busy Line (Programmable)		$0.0000			
	Call Forwarding: Busy Line/Don't Answer			$38.52	6454	Malone
	CF Don't answer/CF busy customer Programmable - per Line			$1.03	6454	Malone
	Call Forwarding: Busy Line/Don't Answer (Expanded)		$0.0000			
	Call Forwarding: Don't Answer		$0.0000			
	Call Forwarding: Don't Answer (Expanded)		$0.0000			
	Call Forwarding: Don't Answer (Programmable)		$0.0000			
	Call Forwarding: Variable		$0.0000			
	Call Forwarding: Variable - no call complete option		$0.0000			
	Call Hold		$0.0000			
	Call Hold/3-Way/Call Transfer		$0.0000			
	Call Park (Basic - Store & Retrieve)		$0.0000			
	Call Pickup		$0.0000			
	Call Transfer		$0.0000			
	Call Waiting Dial Originating		$0.0000			
	Call Waiting Indication - per timing state		$0.0000	$1.03	6454	Malone
	Call Waiting Originating		$0.0000			
	Call Waiting Terminating - All Calls		$0.0000			
	Call Waiting Terminating - Incoming Only		$0.0000			
	Call Waiting/ Cancel Call Waiting		$0.0000			
	CENTREX COMMON EQUIPMENT			$1,225.34	6454	Malone
	Centrex Plus DID numbers per number		$0.0000			
	Centrex Plus to Centrex Plus		$0.0000			
	Centrex Plus to IC Carrier		$0.0000			
	Centrex Plus to PBX/Key Blocked		$0.0000			
	Centrex Plus to PBX/Key Non-Blocked		$0.0000			
	CFBL - All Calls		$0.0000			
	CFBL - Incoming Only		$0.0000			
	CFDA Incoming Only		$0.0000			
	CLASS - Anonymous Call Rejection		$0.0000			
	CLASS - Call Waiting ID		$0.0000			
	CLASS - Calling Name & Number		$0.0000			
	CLASS - Calling Number Delivery		$0.0000			
	CLASS - Calling Number Delivery - Blocking		$0.0000			
	CLASS - Continuous Redial		$0.0000	$1.28	6454	Malone
	CLASS - Last Call Return		$0.0000	$1.29	6454	Malone
	CLASS - Priority Calling		$0.0000	$1.22	6454	Malone
	CLASS - Selective Call Forwarding		$0.0000	$1.28	6454	Malone
	CLASS - Selective Call Rejection		$0.0000	$1.22	6454	Malone

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
	Custom Ringing First Line (Short/Long/Short)		$0.0000			
	Custom Ringing First Line (Short/Short)		$0.0000			
	Custom Ringing First Line (Short/Short/Long)		$0.0000			
	Custom Ringing Second Line (Short/Long/Short)		$0.0000			
	Custom Ringing Second Line (Short/Short)		$0.0000			
	Custom Ringing Second Line (Short/Short/Long)		$0.0000			
	Custom Ringing Third Line (Short/Long/Short)		$0.0000			
	Custom Ringing Third Line (Short/Short)		$0.0000			
	Custom Ringing Third Line (Short/Short/Long)		$0.0000			
	Data Call Protection (DMS 100)		*$0.0000*			
	Dir Sta Sel/Busy Lamp Fld per arrangement		$0.0000	$0.35	6454	Malone
	Directed Call Pickup with Barge-in		$0.0000	$20.48	6454	Malone
	Directed Call Pickup without Barge-in		$0.0000	$20.48	6454	Malone
	Distinctive Ring/Distinctive Call Waiting		$0.0000	$40.95	6454	Malone
	Distinctive Ringing		$0.0000			
	EBS - Set Interface - per station line		$0.0000			
	Executive Busy Override		$0.0000			
	Expensive Route Warning Tone- per system		$0.0000	$73.05	6454	Malone
	Facility Restriction Level - per system		$0.0000	$44.94	6454	Malone
	Feature Display		*$0.0000*			
	Group Intercom- Per Line		$0.0000	$0.46	6454	Malone
	Hot Line - per line		$0.0000	$1.03	6454	Malone
	Hunting: Multiposition Circular Hunting		$0.0000			
	Hunting: Multiposition Hunt Queuing - per group		$0.0000	$39.20	6454	Malone
	Hunting: Multiposition Series Hunting		$0.0000			
	Hunting: Multiposition with Announcement in Queue		$0.0000	$39.20	6454	Malone
	Hunting: Multiposition with Music in Queue		$0.0000	$41.39	6454	Malone
	Incoming Calls Barred		$0.0000			
	International Direct Dial Blocking		$0.0000			
	ISDN Short Hunt		*$0.0000*	$1.73	6454	Malone
	Line Side Answer Supervision		$0.0000			
	Loudspeaker Paging - per trunk group		$0.0000	$179.33	6454	Malone
	Make Busy Arrangements - per group		$0.0000	$0.68	6454	Malone
	Make Busy Arrangements - per line		$0.0000	$0.68	6454	Malone
	Message Center - per main station line		$0.0000	$0.35	6454	Malone
	Message Waiting Indication Audible/Visual		$0.0000			
	Message Waiting Visual, per line		$0.0000	$0.35	6454	Malone
	Music On Hold - per system		$0.0000	$23.50	6454	Malone
	Network Speed Call		$0.0000			
	Night Service Arrangement		*$0.0000*			
	Outgoing Calls Barred		$0.0000			
	Outgoing Trunk Queuing		$0.0000			
	Privacy Release, per station line		$0.0000	$0.48	6454	Malone
	Query Time, per station line		$0.0000	$0.35	6454	Malone
	Speed Calling 1 Digit Controller		$0.0000			
	Speed Calling 1 Digit User		$0.0000			
	Speed Calling 1# List Individual		$0.0000			
	Speed Calling 2 Digit Controller		$0.0000			
	Speed Calling 2 Digit User		$0.0000			
	Speed Calling 2# List Individual		$0.0000			
	Speed Calling 30 Number		$0.0000			
	Speed Calling 8 Number		$0.0000			
	Station Camp-On Service - per main line, per line		$0.0000	$0.35	6454	Malone
	Station Message Detail Recording (SMDR)		$0.0000			
	Three Way Calling		$0.0000			
	Time and Date Display		$0.0000			
	Time of Day Control for ARS - per system		$0.0000	$127.82	6454	Malone
	Time of Day NCOS Update		$0.0000	$0.55	6454	Malone
	Time of Day Routing - per line		$0.0000	$0.52	6454	Malone
	Toll Restriction Service		$0.0000			
	Trunk Answer Any Station		$0.0000			
	Trunk Verification from Designated Station		$0.0000	$0.40	6454	Malone
	UCD in hunt group - per line		$0.0000	$0.68	6454	Malone
	UCD with Music After Delay		$0.0000			
	SMDR-P - SERVICE ESTABLISHMENT CHARGE,		$0.0000	$344.67	6454	Malone
	SMDR-P - ARCHIVED DATA		$0.0000	$180.10	6454	Malone
	Additional Premium Features					
	CMS - SYSTEM ESTABLISHMENT - INITIAL			$987.00	6454	Malone
	CMS - SYSTEM ESTABLISHMENT - SUBSEQUENT			$493.50	6454	Malone
	CMS - PACKET CONTROL CAPABILITY, PER			$493.50	6454	Malone
	Conference Calling - Meet Me			$43.15	6454	Malone
	Conference Calling - Preset			$43.15	6454	Malone
	Conference Calling - Station Dial			$46.36	6454	Malone
	CLASS Call Trace, per attempt		$1.48		6415	Malone
9.11.3	Subsequent Order Charge			$13.78	6454	Malone
9.11.4	Digital Line Side Port (Supporting BRI ISDN)					
	First Port			$237.87	6454	Malone
	Each Additional Port			$237.87	6454	Malone

	Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
Digital Line Side Port with Features		$11.65 (3)		6418 / 6416 / 646	Malone
Premium Port with Features		$14.13 (4)		6418 / 6416 / 6466 / 6417	Malone
9.11.5 Digital Trunk Ports					
DS1 Local Message Trunk Port		$88.32	$224.45	6466 / 6454	Malone
Message Trunk Group, First Trunk			$174.29	6454	Malone
Message Trunk Group, Each Additional			$48.63	6454	Malone
DS1 PRI ISDN Trunk Port		$196.24	$637.09	6466 / 6454	Malone
DID/PBX Trunk Port per DS0		$4.10	$213.24	6466 / 6454	Malone
9.11.6 DS0 Analog Trunk Port					
First Port		$21.97	$127.02	6466 / 6454	Malone
Each Additional			$30.98	6454	Malone
9.11.7 Local Usage, per Minute of Use		$0.004241		6466	Malone
9.12 Local Switching - Market Based Rates	Available in Zone 1 Wire Centers				
9.13 Customized Routing					
9.13.1 Development of Custom Line Class Code – Directory Assistance or Operator Services Routing Only			$320.87	6454	Malone
9.13.2 Installation Charge, per Switch – Directory Assistance			$235.05	6454	Malone
9.13.3 All Other Custom Routing		ICB	ICB		Malone
9.14 Common Channel Signaling/SS7					
9.14.1 CCSAC STP Port		$275.60	$407.00	6466 / 6454	Malone
9.14.2 CCSAC Options Activation Charge					
Basic Translations					
First Activation, per Order			$116.79	6454	Malone
Each Additional Activation, per Order			$9.73	6454	Malone
CCSAC Options Database Translations					
First Activation per order			$136.24	6454	Malone
Each additional Activation per order			$58.36	6454	Malone
9.14.3 Signal Formulation, ISUP, Per Call Set-Up Request		$0.0006722		6466	Malone
9.14.4 Signal Transport, ISUP, Per Call Set-Up Request		$0.0002161		6466	Malone
9.14.5 Signal Transport, TCAP, per Data Request		$0.0000239		6466	Malone
9.14.6 Signal Switching, ISUP, Per Call Set-Up Request		$0.0010794		6466	Malone
9.14.7 Signal Switching, TCAP, Per Data Request		$0.0008921		6466	Malone
9.15 Advanced Intelligent Network (AIN)					
9.15.1 AIN Customized Services (ACS)			ICB		Malone
9.15.2 AIN Platform Access (APA)		ICB	ICB		Malone
9.15.3 AIN Query Processing, per Query		ICB			Malone
9.16 Line Information Database (LIDB)					
9.16.1 LIDB Storage			No Charge		Malone
9.16.2 Line Validation Administration System Access (LVAS)			ICB		Malone
LIDB/ICNAM Line Record Initial Load					
Up to 20,000 Line Records			$2,601.00		Malone
Over 20,000 Line Records			ICB		Malone
Mechanized Service Account Update, per Addition or Update Processed			ICB		Malone
Individual Line Record Audit			ICB		Malone
Account Group Audit			ICB		Malone
Expedited Request Charge for Manual			ICB		Malone
9.16.3 LIDB Query Service, per Query		$0.0009184		6466	Malone
9.16.4 Fraud Alert Notification, per Alert		No Charge			Malone
9.17 8XX Database Query Service					
9.17.1 Basic Query, per Query		$0.02080300		6466	Malone
9.17.2 POTS Translation		$0.00000183		6466	Malone
9.17.3 Call Handling & Destination Feature		$0.00000061		6466	Malone
9.18 ICNAM, Per Query		$0.000826			Malone
9.19 Construction Charges		ICB	ICB		Easton
9.20 Miscellaneous Charge					
* Per 1/2 hour or fraction thereof					
* Additional Engineering – Basic			$32.34	6454	Easton
* Additional Engineering – Overtime			$40.00	6454	Easton
* Additional Labor Installation – Overtime			$9.19	6454	Easton

	Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
* Additional Labor Installation – Premium			$18.39	6454	Easton
* Additional Labor Other – Basic			$28.19	6454	Easton
* Additional Labor Other – Overtime			$37.65	6454	Easton
* Additional Labor Other – Premium			$47.13	6454	Easton
* Testing and Maintenance – Basic			$29.95	6454	Easton
* Testing and Maintenance – Overtime			$40.00	6454	Easton
* Testing and Maintenance – Premium			$50.06	6454	Easton
* Maintenance of Service – Basic			$28.19	6454	Easton
* Maintenance of Service – Overtime			$37.65	6454	Easton
* Maintenance of Service – Premium			$47.13	6454	Easton
* Additional COOP Acceptance Testing – Basic			$29.95	6454	Easton
* Additional COOP Acceptance Testing – Overtime			$40.00	6454	Easton
* Additional COOP Acceptance Testing – Premium			$50.06	6454	Easton
* NonScheduled COOP Testing - Basic			$29.95	6454	Easton
* NonScheduled COOP Testing – Overtime			$40.00	6454	Easton
* NonScheduled COOP Testing – Premium			$50.06	6454	Easton
* NonScheduled Manual Testing – Basic			$29.95	6454	Easton
* NonScheduled Manual Testing – Overtime			$40.00	6454	Easton
* NonScheduled Manual Testing – Premium			$50.06	6454	Easton
COOP Scheduled Testing - Loss (per test/per month)		$0.08		6454	Easton
COOP Scheduled Testing - C Message Noise (per test/per month)		$0.08		6454	Easton
COOP Scheduled Testing - Balance (per test/per month)		$0.34		6454	Easton
COOP Scheduled Testing - Gain Slope (per test/per month)		$0.08		6454	Easton
COOP Scheduled Testing - C-Notched Noise (per test/per month)		$0.08		6454	Easton
MANUAL Scheduled Testing - Loss (per test/per month)		$0.17		6454	Easton
MANUAL Scheduled Testing - C-Message Noise (per test/per month)		$0.17		6454	Easton
MANUAL Scheduled Testing - Balance (per test/per month)		$0.68		6454	Easton
MANUAL Scheduled Testing - Gain Slope (per test/per month)		$0.17		6454	Easton
MANUAL Scheduled Testing - C-Nothched Noise (per test/per month)		$0.17		6454	Easton
Additional Dispatch			$123.51	6454	Easton
Date Change			$48.14	6454	Easton
Design Change			$105.34	6454	Easton
Expedite Charge			ICB		Easton
Cancellation Charge			ICB		Easton
9.23 UNE Combinations					
9.23.1 UNE - P Line Splitting	See Line Sharing Charges - Section 9.4				Malone
9.23.2 UNE-P Conversion Non-Recurring Charges					
UNE-P POTS, CENTREX, Analog PBX Trunks, PAL					
Mechanized -					
First			$0.69	6454	Malone
Each Additional			$0.14	6454	Malone
Manual -					
First			$16.54	6454	Malone
Each Additional			$2.76	6454	Malone
UNE-P PBX DID Trunks					
First			$30.09	6454	Malone
Each Additional			$2.82	6454	Malone
UNE-P ISDN BRI					
First			$31.97	6454	Malone
Each Additional			$2.82	6454	Malone
UNE-P ISDN PRI, DSS per DS1 Facility			$28.15	6454	Malone
UNE-P ISDN PRI, DSS - per Trunk					
First			$30.09	6454	Malone
Each Additional			$2.82	6454	Malone
9.23.3 UNE-P New Connection Non-Recurring Charges					
UNE-P POTS Centrex, Analog PBX Trunks, PAL					
Mechanized -					
First			$56.44	6454	Malone
Each Additional			$16.19	6454	Malone
Manual -					
First			$83.78	6454	Malone
Each Additional			$18.81	6454	Malone
UNE - P PBX DID - per Trunk			$165.26	6454	Malone
UNE - P 2B + D BRI ISDN			$317.33	6454	Malone
UNE-P Trunks					
DSS Basic Trunk - In Only, Out Only, or Two			$80.68	6454	Malone

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
	DSS, ISDN PRI Adv. Trunk - In only w/DID & Hunting, or 2 Way w/DID, Hunting & Answer Supervision			$79.85	6454	Malone
	DSS, ISDN PRI Adv. Trunk - Out Only			$81.10	6454	Malone
	UNE-P PRI Configurations					
	UNE-P PRI Dedicated PRI 23 + D			$699.79	6454	Malone
	UNE-P PRI Dedicated PRI 24B			$675.86	6454	Malone
	UNE-P PRI Dedicated PRI 23B + Back-Up			$674.89	6454	Malone
	DID Trunks					
	UNE-P Complex Translation Digits Outpulsed Change Signaling			$14.59	6454	Malone
	UNE-P DID Complex Translations Signaling Change			$34.05	6454	Malone
	UNE-P DID Block Compromise			$25.69	6454	Malone
	UNE-P DID Group of 20 Numbers			$34.18	6454	Malone
	UNE-P DID Reserve Sequential # Block			$25.54	6454	Malone
	UNE-P DID Reserve Nonsequential TN			$23.84	6454	Malone
	UNE-P DID Trunk Terminations			$52.16	6454	Malone
	UNE-P DID Nonsequential TN			$35.87	6454	Malone
	UNE-P Complex Translation for Trunkside Termination			$143.91	6454	Malone
9.23.4	**UNE Combinations - Loop Mux Combination (LMC)**					
9.23.4.1	ITP DS1/DS3		See Section 9.1			Easton
9.23.4.21	Loop MUX 2/4 Wire Analog, First			$239.60	6454	Easton
	Loop MUX 2/4 Wire Analog, Each Additional			$156.36	6454	Easton
9.23.4.3	DS1 Loop MUX, First			$303.07	6454	Easton
	DS1 Loop MUX, Each Additional			$221.90	6454	Easton
9.23.4.4	Private Line to Loop MUX Conversion			$37.36	6454	Easton
9.23.4.5	LMC DS1 to DS0 Multiplexer			$201.69	6454	Easton
	LMC DS3 to DS1 Multiplexer			$201.69	6454	Easton
	DS1/DSO MUX, Low Side Channelization		8.42		6466	Easton
9.23.5	**Enhanced Extended Loop (EEL)**					
9.23.5.1	**EEL Link**					
	EEL DSO 2 Wire			$260.73	6454	Easton
	EEL DSO 2 Wire Each Additional			$194.28	6454	Easton
	Zone 1		See Section 9.2.1			Easton
	Zone 2					Easton
	Zone 3					Easton
	EEL DSO 4 Wire			$260.73	6454	Easton
	EEL DSO 4 Wire Each Additional			$194.28	6454	Easton
	Zone 1		See Section 9.2.1			Easton
	Zone 2					Easton
	Zone 3					Easton
	EEL DS1			$319.65	6454	Easton
	EEL DS1 Each Additional			$238.47	6454	Easton
	Zone 1		See Section 9.2.3			Easton
	Zone 2					Easton
	Zone 3					Easton
	EEL DS3			$344.51	6454	Easton
	EEL DS3 Each Additional			$263.33	6454	Easton
	Zone 1		See Section 9.2.3			Easton
	Zone 2					Easton
	Zone 3					Easton
	EEL OC-3, OC-12, and OC-48		See Section 9.2.3	$344.51	6454	Easton
	EEL OC-3, Each Additional			$263.33	6454	Easton
9.23.5.2	Private Line to EEL Conversion			$37.36	6454	Easton
		Recurring Fixed	**Recurring Per Mile**	**Nonrecurring**		
9.23.6	**EEL Transport**					
	DS0					Easton
	DS0 Over 0 to 8 Miles					Easton
	DS0 Over 8 to 25 Miles		See Section 9.6.1			Easton
	DS0 Over 25 to 50 Miles					Easton

	Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
DS0 Over 50 Miles					Easton
DS1	See Section 9.6.2				Easton
DS1 Over 0 to 8 Miles					Easton
DS1 Over 8 to 25 Miles					Easton
DS1 Over 25 to 50 Miles					Easton
DS1 Over 50 Miles					Easton
DS3	See Section 9.6.3				Easton
DS3 Over 0 to 8 Miles					Easton
DS3 Over 8 to 25 Miles					Easton
DS3 Over 25 to 50 Miles					Easton
DS3 Over 50 Miles					Easton
OC-3	See Section 9.6.4				Easton
OC-3 Over 0 to 8 Miles					Easton
OC-3 Over 8 to 25 Miles					Easton
OC-3 Over 25 to 50 Miles					Easton
OC-3 Over 50 Miles					Easton
OC-12	See Section 9.6.5				Easton
OC-12 Over 0 to 8 Miles					Easton
OC-12 Over 8 to 25 Miles					Easton
OC-12 Over 25 to 50 Miles					Easton
OC-12 Over 50 Miles					Easton
OC-48	See Section 9.6.6				Easton
OC-48 Over 0 to 8 Miles					Easton
OC-48 Over 8 to 25 Miles					Easton
OC-48 Over 25 to 50 Miles					Easton
OC-48 Over 50 Miles					Easton
		Recurring	Nonrecurring		
9.23.7 EEL Transport MUX					
DS1 to DS0			$268.83	6454	Easton
DS3 to DS1			$268.83	6454	Easton
9.23.8 EEL Multiplexing					
DS1 to DS0		$340.00		6466	Easton
DS3 to DS1		$298.66		6466	Easton
9.23.9 EEL DS0 Channel Performance					
DS0 Low Side Channelization		$14.76		6429	Easton
DS1/DS0 MUX, Low Side Channelization		$8.42		6429	Easton
9.23.10 Concentration Capability		ICB			Easton
9.24 Unbundled Packet Switching					
9.24.1 Unbundled Packet Switch Customer Channel		$24.66		6517	Malone
DSLAM Functionality		$21.20		6517	Malone
9.24.2 Customer Channel and Shared Distribution Subloop			$61.09	6454	Malone
Customer Channel and Unbundled Distribution			$129.19	6454	Malone
Customer Channel and CLEC Provided Loop			$61.09	6454	Malone
9.24.3 Unbundled Packet Switching Interface Port					
DS1		$156.72	$231.10	6517 / 6454	Malone
DS3		$269.30	$231.10	6517 / 6454	Malone
9.25 Loop Splitting	See Line Sharing Section				Malone
10.0 Ancillary Services					
10.1 Local Number Portability					
10.1.1 LNP Queries	See FCC Tariff #1 Section 20.3.1 & 20.3.3				Malone
10.1.2 LNP Managed Cuts					
Standard Managed Cuts per person per 1/2 Hr.			$52.62	6454	Malone
Overtime Managed Cuts per person per 1/2 Hr.			$68.47	6454	Malone
Premium Managed Cuts per person per 1/2 Hr.			$84.34	6454	Malone
10.2 911/E911	No Charge				Malone
10.3 White Pages Directory Listings, Facility Based Providers					
10.3.1 Primary Listing	No Charge				Malone
10.3.2 Premium/Privacy Listings		General Exchange Tariff Rate, less wholesale discount			Malone

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
10.4 Directory Assistance, Facility Based Providers						Malone
10.4.1	Local Directory Assistance, Per Call		$0.34			
10.4.2	National Directory Assistance, per Call		$0.36			
10.4.3	Call Branding, Set- Up and Recording			$10,500.00		
10.4.4	Loading Brand /Per Brand			$175.00		
10.4.5	Call Completion Link, per call		$0.09			
10.5 Directory Assistance List Information						Malone
10.5.1	Initial Database Load, per Listing		$0.025			
10.5.2	Reload of Database, per Listing		$0.020			
10.5.3	Daily Updates, per Listing		$0.050			
10.5.4	One-time Set-Up Fee		$77.44			
10.5.5	Media Charges for File Delivery					
	Electronic Transmission		$0.002			
	Tapes (charges only apply if this is selected		$30.00			
	Shipping Charges (for tape delivery)			ICB		
10.6 Toll and Assistance Operator Services, Facility Based						Malone
10.6.1	**Option A – Per Message**					
	Operator Handled Calling Card		$1.45			
	Machine Handled Calling Card		$0.60			
	Station Call		$1.50			
	Person Call		$3.50			
	Connect to Directory Assistance		$0.75			
	Busy Line Verify, per Call		$1.95			
	Busy Line Interrupt		$2.05			
	Operator Assistance, per Call		$0.50			
10.6.2	**Option B – Per Operator Work Second and Computer**					
	Operator Handled, per Operator Work Second		$0.028			
	Machine Handled, per Call		$0.25			
	Call Branding, Set-Up & Recording			$35,000.00		
	Loading Brand/Per Brand			$175.00		
10.7 Access to Poles, Ducts, Conduits and Rights of Way						
10.7.1	Pole Inquiry Fee, per Inquiry			$443.19	6454	Easton
10.7.2	Innerduct Inquiry Fee, per Inquiry			$308.94	6454	Easton
10.7.3	ROW Inquiry Fee			$491.54	6454	Easton
10.7.4	ROW Doc Prep Fee			$145.76	6454	Easton
10.7.5	Field Verification Fee, Poles per Pole			$24.29	6454	Easton
10.7.6	Field Verification Fee, Manhole per Manhole			$205.30	6454	Easton
10.7.7	Planner Verification, Per Manhole			$16.26	6454	Easton
10.7.8	Manhole Verification Inspector Per Manhole			$109.32	6454	Easton
10.7.9	Manhole Make-Ready Inspector, per Manhole			$291.53	6454	Easton
10.7.10	Transfer of Responsibility			$129.76		Easton
10.7.11	Make Ready			ICB		Easton
10.7.12	Pole Attachment Fee, per Foot, per Year					
	Urban				FCC Mandated Methodology – this section is informational ONLY for State Commissions	
	2002		$3.36			Easton
	2003		$3.64			Easton
	2004		$3.93			Easton
	Non-Urban					
	2002		$4.21			Easton
	2003		$4.93			Easton
	2004		$5.64			Easton
10.7.13	Innerduct Occupancy Fee, per Foot, per Year		$0.28			Easton
10.7.14	Access Agreement Consideration			$10.00		Easton
12.0 Operational Support Systems						
12.1 Development and Enhancements, per Order				$5.00	6550	Albersheim
12.2 Ongoing Maintenance, per Order				$1.40	6549	Albersheim
12.3 Daily Usage Record File, per Record			$0.000441		6464	Malone
12.4 Trouble Isolation Charge				See Misc. Charges		Easton
17.0 Bona Fide Request Process						
17.1 Processing Fee				$2,448.77	6454	Easton

(1) Analog Line Side Port as adjusted = **$1.59** (#6466 Analog Port) + **$0.43** (#6418 Features) + **$0.52** (#6416 Capital Lease) = **$2.54**
(2) Premium Analog Line Side Port = **$2.54** (from above) + **$2.48** (#6417 Premium Port) = **$5.02**
(3) Digital Line Side Port as adjusted = **$10.70** (#6466 Digital Port) + **$0.43** (#6418 Features) + **$0.52** (#6416 Capital Lease) = **$11.65**
(4) Premium Digital Line Side Port = **$11.65** (from above) + **$2.48** (#6417 Premium Port) = **$14.13**

FOOTNOTE: ZONE RATES USING OPTIMIZATION PROGRAM
Rates using the optimzation program to determine zones are:
Zone 1 $18.24

		Wholesale Discount	Recurring	Nonrecurring	Cost Study Number	Witness
	Zone 2	$28.26				
	Zone 3	$53.53				

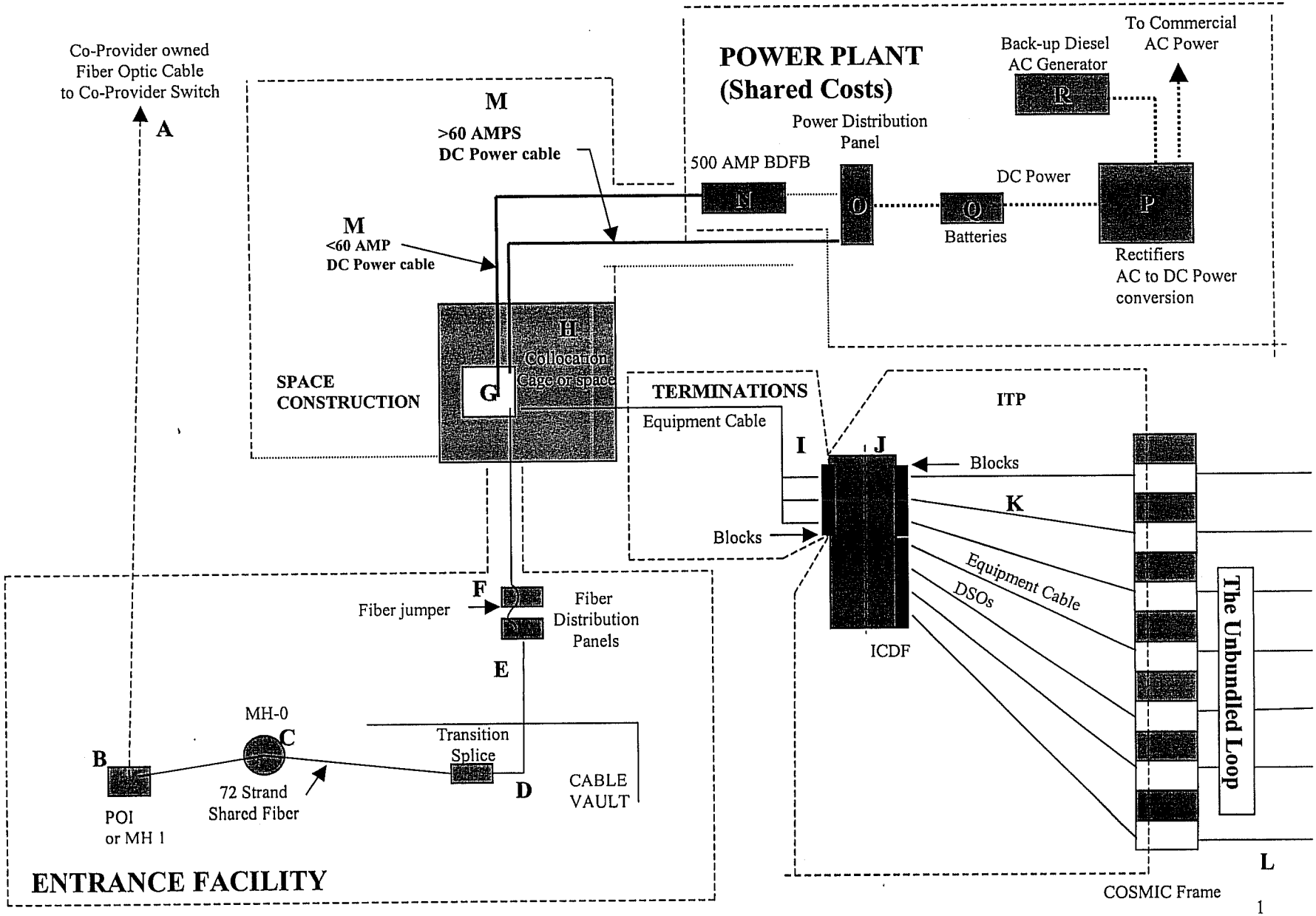
SUMMARIES OF:
(1) Analog Line Side Port Rate Adjustment
(2) Premium Analog Line Side Port Rate Adjustment
(3) Digital Line Side Port Rate Adjustment
(4) Premium Digital Line Side Port Rate Adjustment

Analog Line Side Port Rate Adjustment

Feature Cost Per Port Calculation

Source	Total Feature Costs	Category
Cost from DALPS 152 report January 2001	$93,921.77	CENTRAL OFFICE FEATURES
Cost from DALPS 178 report January 2001	$2,310.58	CENTREX 21 FEATURES
Cost from DALPS 174 report January 2001	$9,656.67	CENTREX PLUS FEATURES
Cost from DALPS 144 report January 2001	$221.23	CENTRON I
Total Cost for South Dakota	$106,110.25	
Total South Dakota Lines from SCM	244,825	
Feature Cost per Port	**$0.43**	(Study 6418)
Cap Lease Port - Monthly	**$0.52**	(Study 6416)
Analog Line Side Port Cost	**$1.59**	(Study 6466)
(1) Analog Line Side Port as Adjusted	**$2.54**	
Add Premium to Adj'd Analog L.S. Port	**$2.48**	(Study 6417))
(2) Premium Analog L.S. Port - as Adjusted	**$5.02**	
ISDN BRI LINE SIDE PORT		
Feature Cost per Port	**$0.43**	(Study 6418)
Cap Lease Port - Monthly	**$0.52**	(Study 6416)
Digital Line Side Port Cost	**$10.69**	(Study 6466)
(3) Digital Line Side Port as Adjusted	**$11.65**	
Add Premium to Adj'd Digital L.S. Port	**$2.48**	(Study 6417))
(4) Premium Digital L.S. Port - as Adjusted	**$14.13**	

COLLOCATION CONFIGURATION



- **ENTRANCE FACILITY**
- "A" - Co-Provider Fiber.
- "B" - POI utility hole or Manhole 1
- "C" - MH-0 - The first utility hole outside the central office. A shared 72 strand fiber cable is placed between the POI and VAULT passing through this utility hole. The 72 strand is broken out into 6 - 12 strand compliments
- "D" - Transition point - The black sheath cable must be spliced within 50 ft of the entrance to fire rated cable prior to entering the central office environment.
- "E & F" - Fiber Distribution Panel is the point in the office where the Qwest shared fiber connects to the fiber that extends into the Co-Provider's collocation space.
- **SPACE CONSTRUCTION**
- "G" - The Co-Provider's telecommunications equipment
- "H" - The Co-Provider's collocation caged structure or cageless space
- "M"- Power Cables
- **TERMINATIONS**
- "I" - The equipment cables and terminating blocks. CLECs have test access at this point
- **ITP**
- "J" - The IDF, COSMIC and DSX frames ,cables and terminating blocks and cable racking. Qwest test point for trouble isolation on a UNE
- "K" - Tie cable connecting the ICDF to the COSMIC.
- "L" - USW COSMIC frame.
- **POWER PLANT**
- "N" - Battery distribution fuse board (BDFB) - Power leads of amperage < 60 AMPS used to power equipment bays.
- "O" - Power Distribution Board - Power leads > 60 AMPS used to power equipment bays and feed for the BDFBs
- "P" - Rectifiers -AC TO DC power conversion
- "Q" - Batteries used for dc backup power
- "R" - Diesel AC generator - Used to back-up the batteries if the commercial power should fail

POWER PLANT

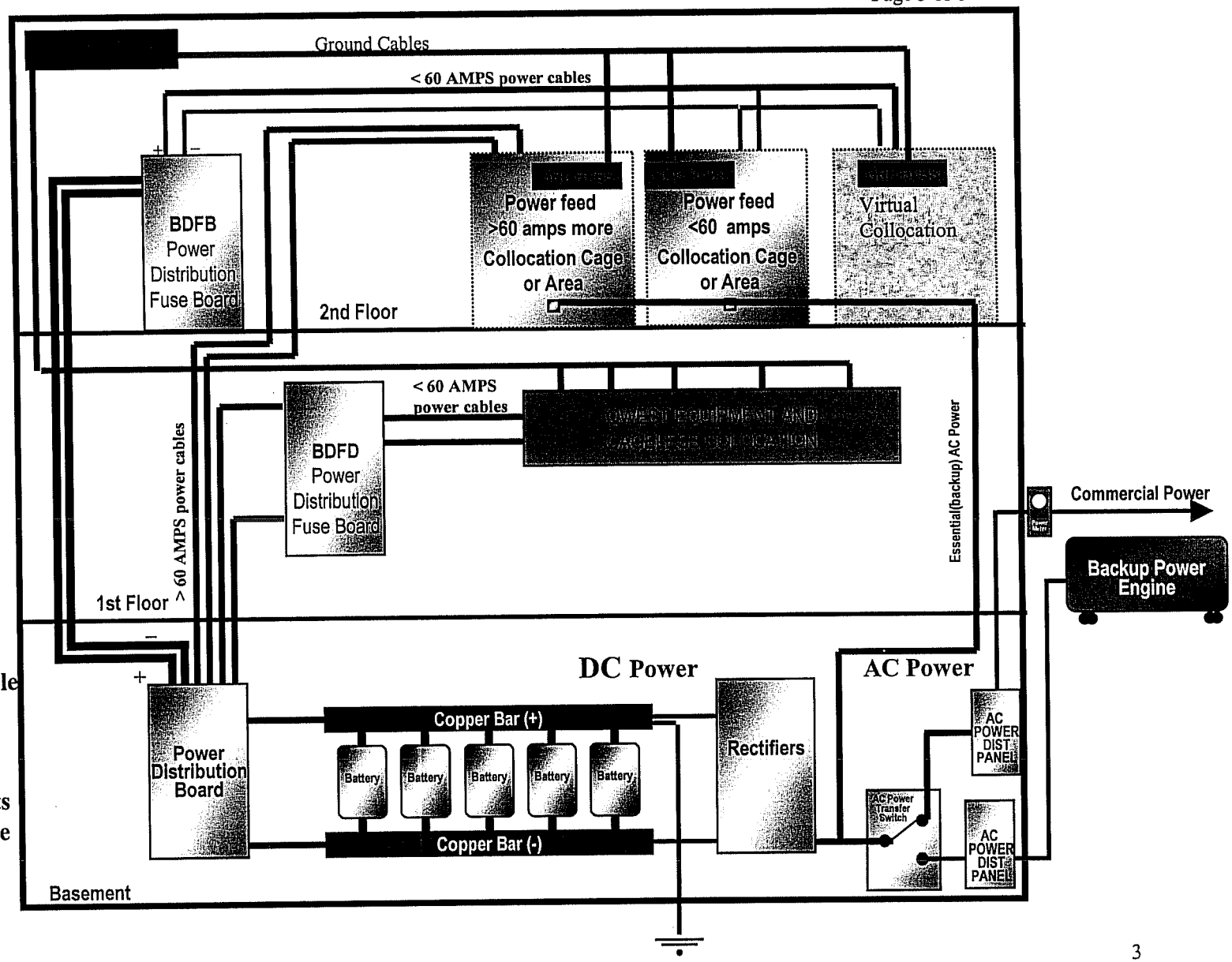
Power Plant

Recurring
AC generator
BDFB
PDB
Batteries
Power usage
Rectifiers
Ground Buss
AC Power Usage

Non-recurring

DC Power Cable
Grounding Cable
AC Essential Pwr Cable

Note
AC convenience outlets included in Cage Space



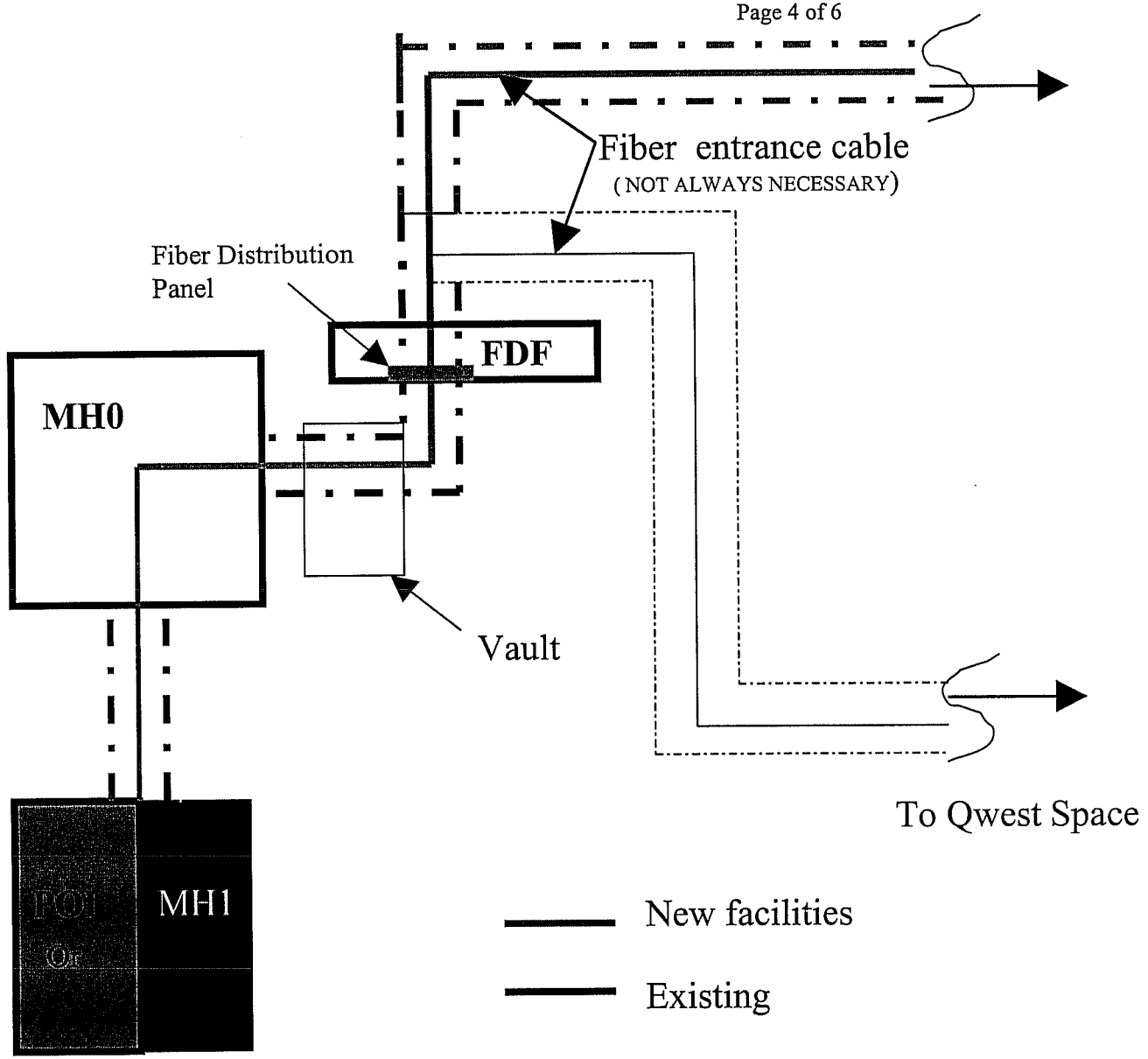
ENTRANCE FACILITIES

Non Recurring

Utility Hole (New)
Fiber splicing and testing
Single fiber jumper
Cable Racking (New)
Cable Placement
Cable (Fiber)
Fiber Placement
Conduit / Innerduct / Riser (New)
Fiber Distribution Panel

Recurring

Utility Hole (Existing)
Conduit / Innerduct / Riser (Existing)
Fiber Distribution Frame
Cable Rack (Existing)
Maintenance



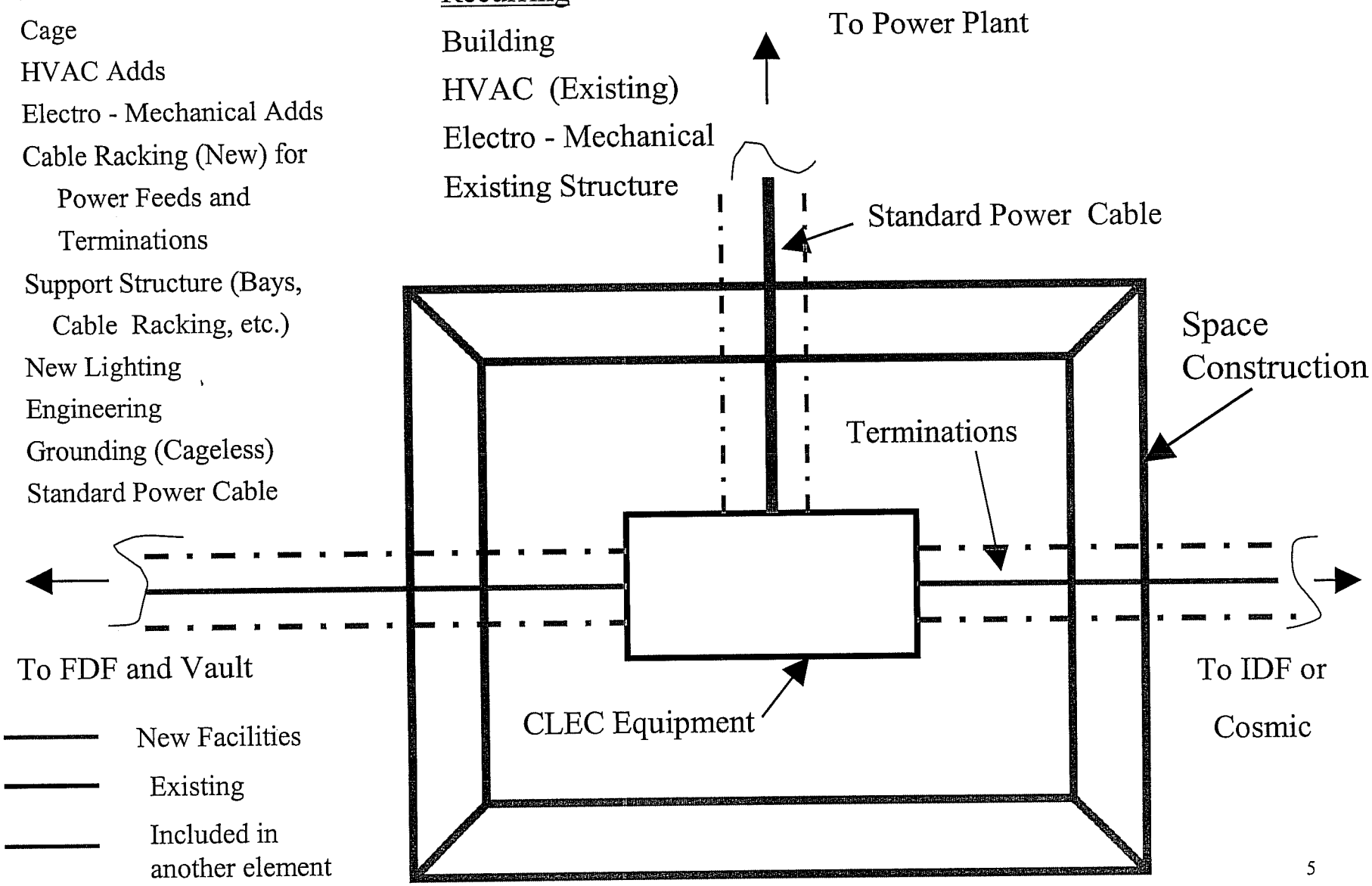
Space Construction

Non Recurring

Cage
HVAC Adds
Electro - Mechanical Adds
Cable Racking (New) for
Power Feeds and
Terminations
Support Structure (Bays,
Cable Racking, etc.)
New Lighting
Engineering
Grounding (Cageless)
Standard Power Cable

Recurring

Building
HVAC (Existing)
Electro - Mechanical
Existing Structure



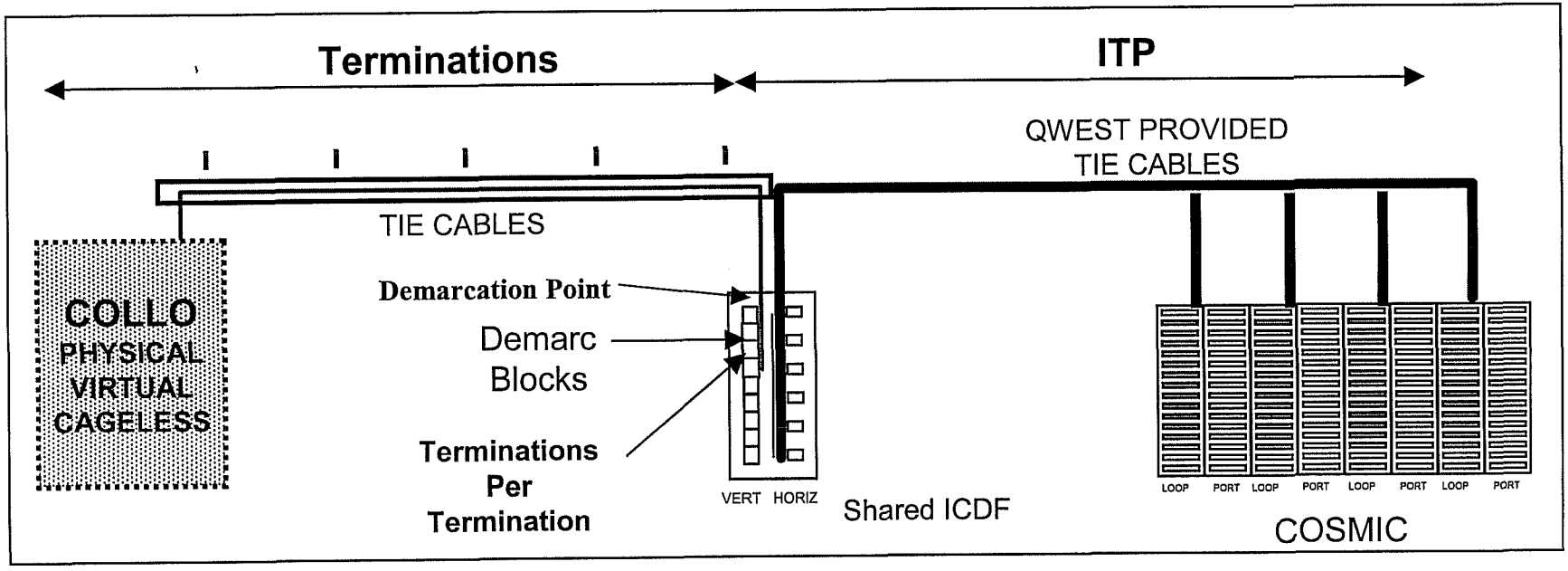
TERMINATIONS

Non-recurring
Blocks/Panel
Cable

ITP (Interconnection Tie Pair)

Recurring
Intermediate Frame
COSMIC Frame (DS0)
DSX Frame (DS1, DS3)
Blocks
Cable
Cable Racking
Meld Run

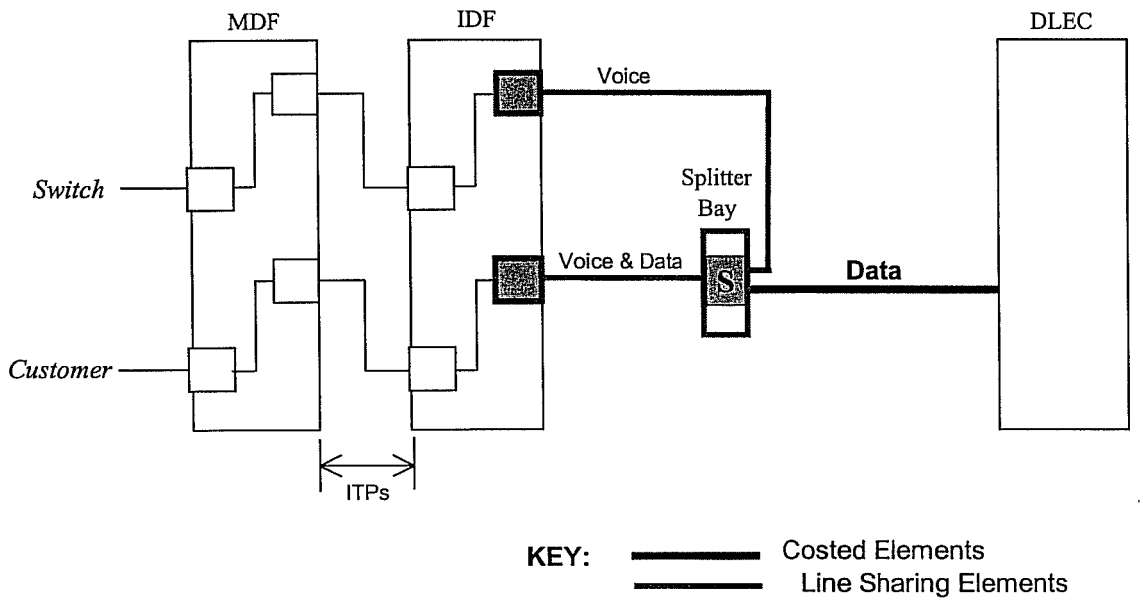
DSO Example



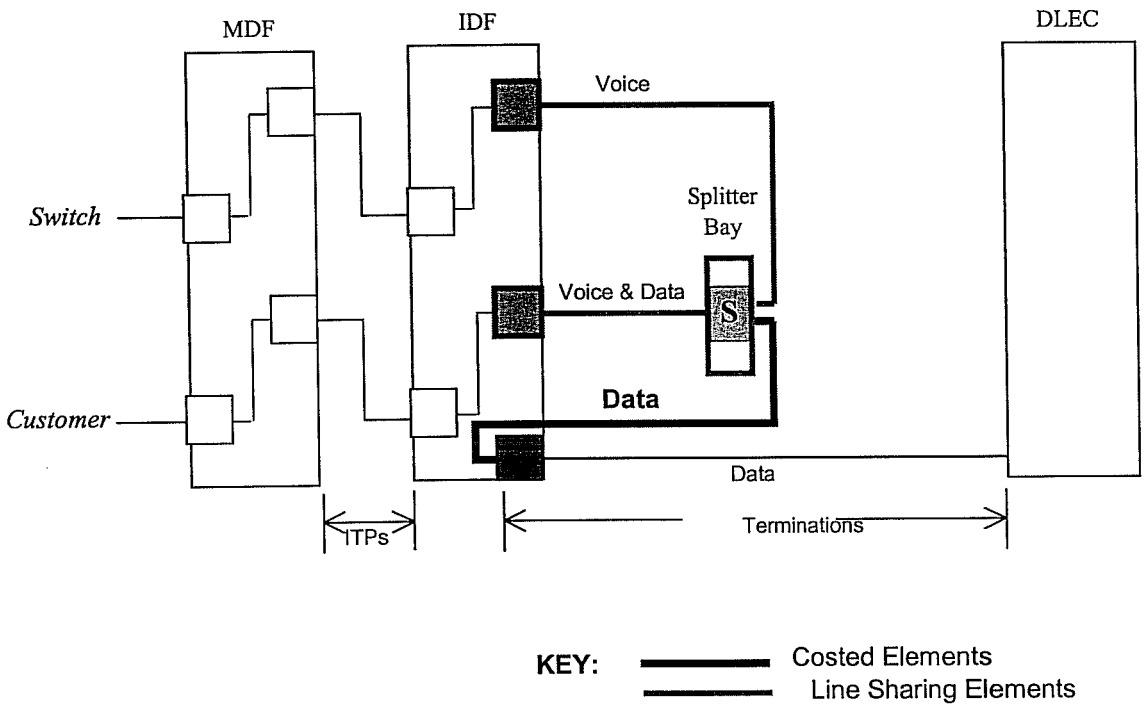
CONTINUATION

[3]

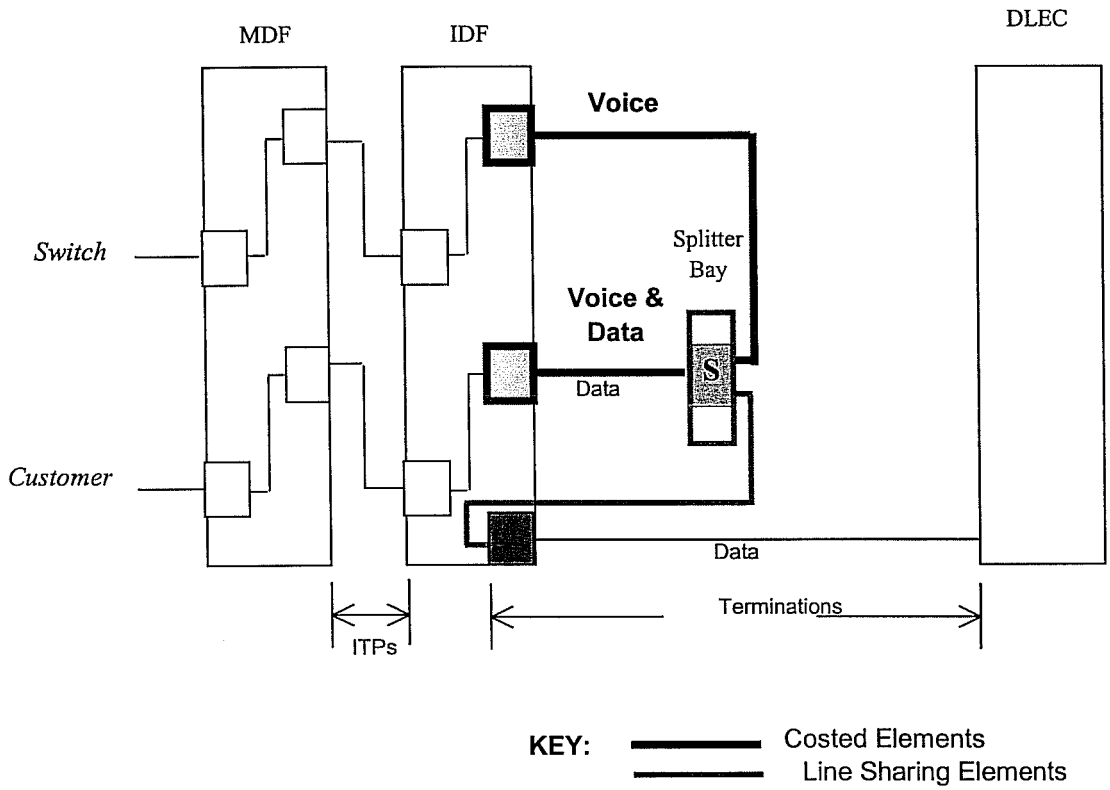
Option 1A - *Splitter on the Splitter Bay: Data Connections Direct to DLEC*



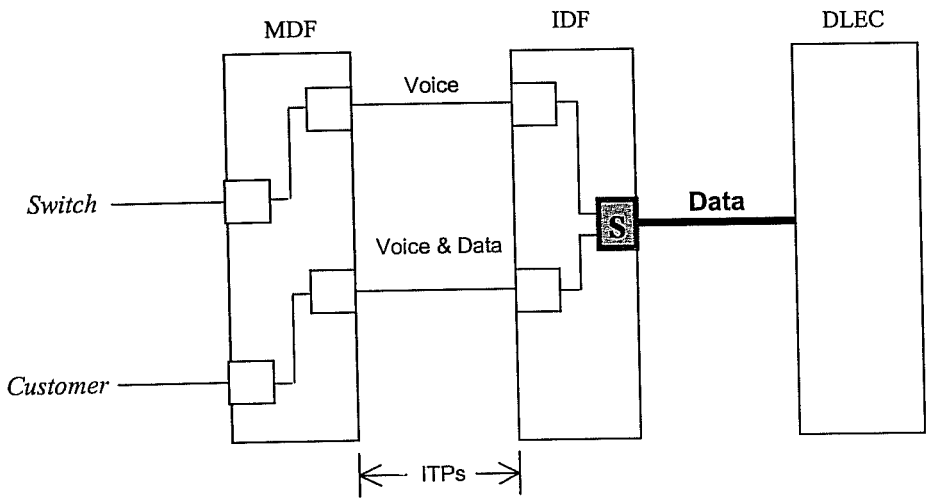
Option 1B - Splitter on the Splitter Bay: Data Connections to the 410 Block



Option 1A & 1B - Splitter on the Splitter Bay: Per Each Voice and Voice/Data Connections

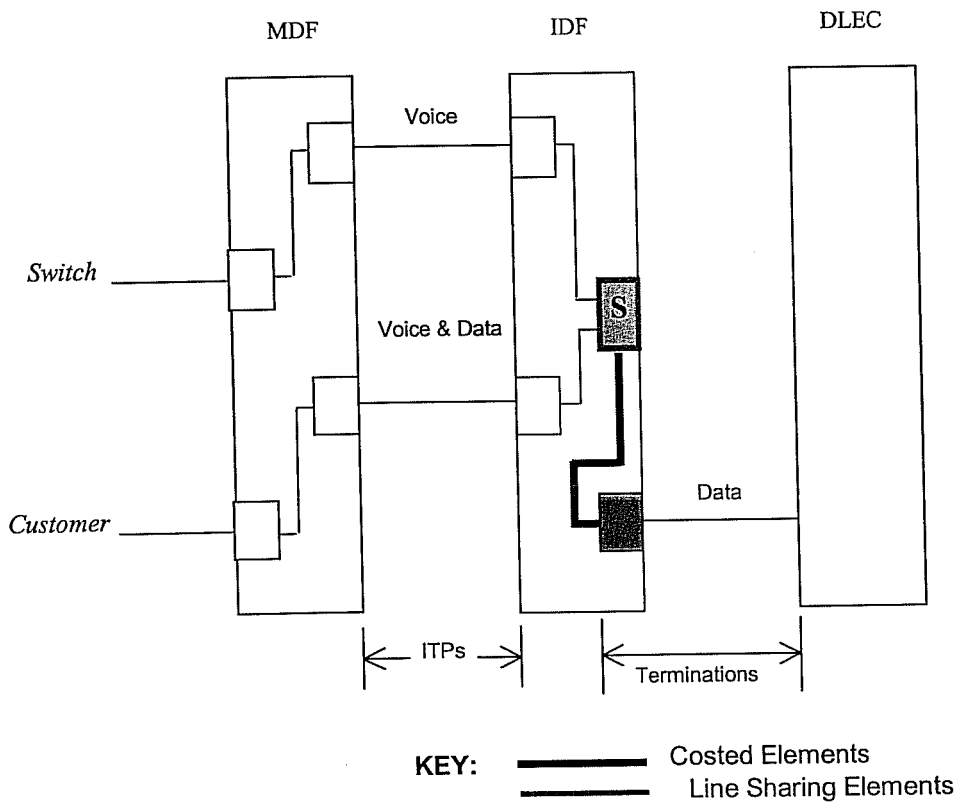


Option 2A - Splitter on the IDF: Data Connections Direct to DLEC

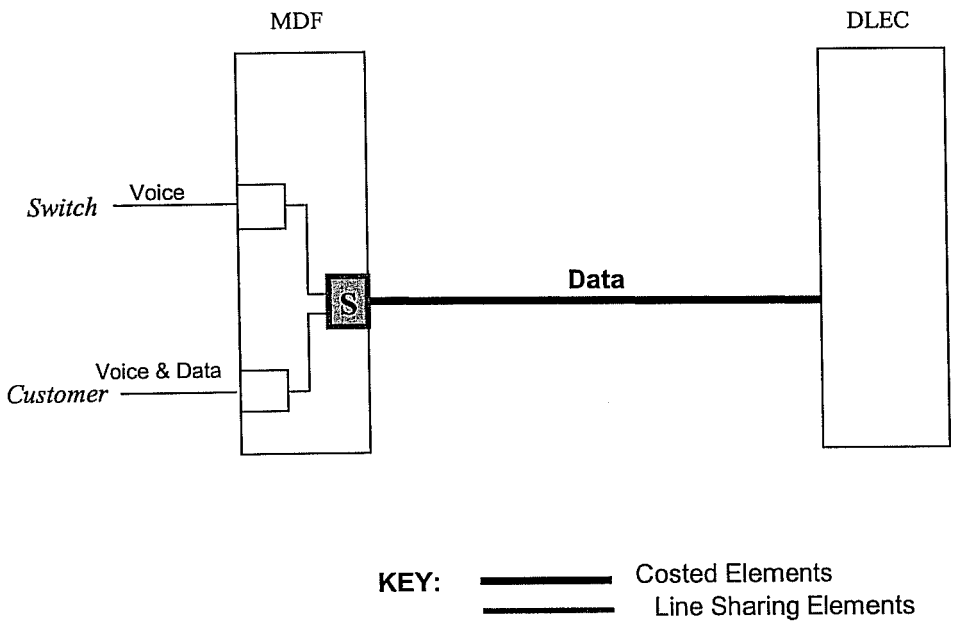


KEY: Costed Elements
Line Sharing Elements

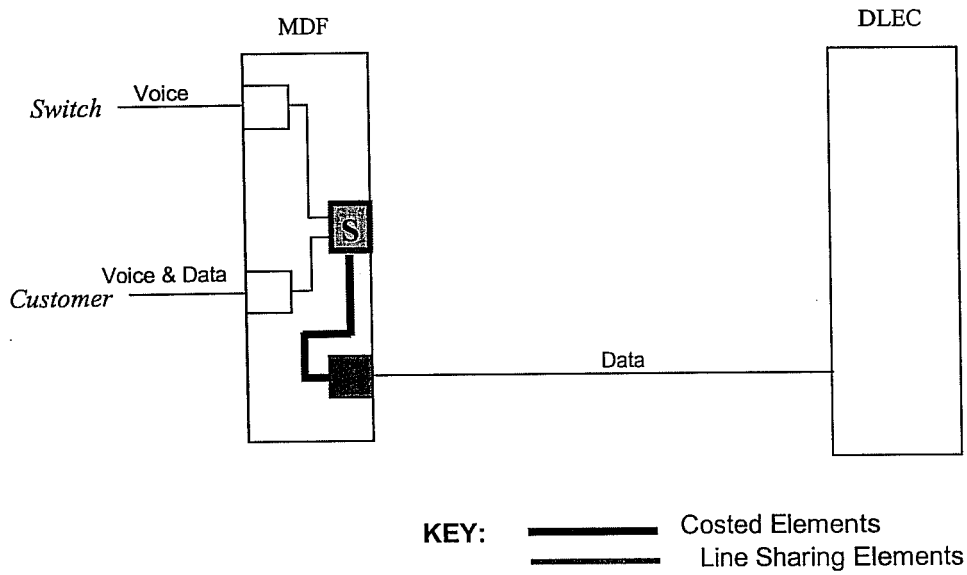
Option 2B - Splitter on the IDF: Data Connections to the 410 Block



Option 3A - Splitter on the MDF: Data Connections Direct to DLEC



Option 3B - Splitter on the MDF: Data Connections to the 410 Block



EXECUTIVE SUMMARY

QWEST

ACCESS TO OPERATIONAL SUPPORT SYSTEMS FOR INTERCONNECTION - Development & Enhancements

2002 COST STUDY

JUNE 2002
REVISED SEPTEMBER 2002

Cost Study #6550

OPERATIONAL SUPPORT SYSTEMS INTERCONNECTION DEVELOPMENT & ENHANCEMENTS

TABLE OF CONTENTS

A. PURPOSE, SCOPE, AND APPLICATION

The purpose of this study is to determine Operational Support Systems (OSS) development and enhancement (Start Up) capital and expense dollars that will be incurred by QWEST to provide access to OSS for interconnection.

The costs calculated in this study can be used for developing pricing for customer requested items.

B. DESCRIPTION OF SERVICE

The OSS development and enhancement capital and expense dollars are the start up costs that will be incurred by QWEST to provide access to OSS for interconnection.

C. STUDY METHODOLOGY

The QWEST Windows Personal Computer Cost Calculator (WINPC3) was used to convert capital investments and expenses to 2000 costs by applying the appropriate South Dakota capital and expense factors. The costs displayed do not include any ongoing maintenance costs[1], product specific advertising expenses, and pre - sales expenses or sales compensation expenses. Total actual investments and expenses for 1997-2000 were used to determine cost.

The costs of providing access to OSS include not only the development of electronic interfaces but also the enhancement of existing operational support systems. Investments and expenses have been identified for the tasks summarized in each of the following categories.

Resale - Resale allows a competitive local exchange carrier (CLEC) to serve a customer with a finished service at a resale rate. The capacity of many systems has been increased to account for the increased activity level and the additional storage of data. Such systems include CRIS (billing), BOSS/CARS (customer service records), RSOLAR/SOLAR/SOPAD (service order processors), FACS (facilities availability), TIRKS (trunk inventory), LMOS/WFA (repair). Various other tasks must be performed on systems. Examples include recording and billing of CLEC ordered wholesale listings in LSS, and adding reseller ID and associated resale edits to SONAR and RSOLAR/SOLAR/SOPAD.

Unbundling - Unbundling allows a CLEC to obtain facilities from QWEST at an unbundled rate. Unbundled network elements include the unbundled loop, local switching, transport elements and line ports. Capacity must be expanded to handle

[1] Ongoing Maintenance expenses are included in a separate cost study.

the additional data that identifies the unbundled elements and their features and to allow for their ordering, provisioning, repair and billing. Additionally, various tasks must be completed on systems. Such systems and tasks include adding Universal Service Order Codes and Master Customer Numbers, and associated edits to RSOLAR/SOLAR/SOPAD and SONAR and adding the ability to test unbundled loops to MLT.

1

Local Interconnect Services (LIS) - LIS trunks are the interoffice facilities supporting interconnection traffic. Capacity must be increased for TIRKS and WFA. For example, additional capacity is needed to support new data identifying traffic by a CLEC. Additionally, various tasks must be completed on systems. An example of these tasks is updating the routing tables in the repair systems so that those systems recognize the unique codes identifying each CLEC.

Collocation - Collocation permits a CLEC's equipment to reside in leased space

1

within a QWEST central office. Specific examples of systems work include modifying the billing systems and the service order processors to mechanize the billing for collocation.

Systems Access - This term is used to describe the work and functions involved in the human-to-computer and computer-to-computer interfaces. These interfaces allow a CLEC to access QWEST's OSS to perform pre-ordering, ordering, provisioning, maintenance and repair, and billing functions. All of the software development tasks are included here. Examples include defining functional requirements, producing design specifications, coding modules, developing and executing test scripts, planning and building releases, and moving application code into production environments.

UNE Remand – The Unbundled Network Element (UNE) Remand projects are those involved in modifying the OSS to allow the new or revised UNEs to be handled as individual products. Capacity in various OSS had to be expanded to handle the additional data that identify UNEs and their features and to allow for their ordering, provisioning, repair and billing, as QWEST does not provides UNEs to itself.

D. STUDY ASSUMPTIONS

1. The study assumes cost recovery of 1997-2000 development and enhancement investments and expenses over a 10-year period beginning in 2002and ending in 2011

2. This study assumes CLEC demand for completed service orders based on actual service orders generated as a result of Local Service Requests, estimates of service orders generated as a result of Access Service Requests, migration estimates of existing CLEC Resale lines and QWEST Retail lines to UNE C, and line sharing. Total completed service orders for 2001 through 2010 are extrapolated with a linear trend using EXCEL from the 1999 actual service orders generated and forecasts of 2000 and 2001 service order demand.

3. Estimated expenses associated with the expense factors used to calculate costs have been removed from the cost study inputs for 2000.

4. QWEST has not used economic depreciation lives (and/or cost of money) in

5. this cost study. QWEST does not advocate these depreciation lives (and/or cost of money), nor does it believe that these are appropriate inputs for its cost studies beyond the scope of this application.

E. TOTAL ELEMENT LONG RUN INCREMENTAL COST

Qwest performs Total Element Long Run Incremental Cost (TELRIC) studies to estimate the economic cost of providing network elements. The Qwest TELRIC studies identify the forward-looking costs associated with the provision of the total quantity of a network element in the long run. The *forward-looking* Qwest TELRIC studies identify the costs that are likely to be incurred in the future, and consider the latest forward-looking technologies and methods of operation that are currently available. These studies are *not* embedded or historical, and do not measure the impact of prior investment decisions by the corporation. The Qwest TELRIC studies also identify the *long run* costs associated with providing a network element—reflecting a time period over which all inputs (including changes in the size of facilities, levels of investment, etc.) can be adjusted.

The Qwest cost study format disaggregates the cost results, on a unitized basis, into the following components:

Investment-Based Costs and Other Element-Specific Expenses are direct costs. Investment Based Costs are associated with recurring cost elements and include the capital costs (e.g., depreciation, return, taxes) and maintenance costs associated with the investment required for provisioning a network element. Element-specific Expenses are other network element costs such as billing and for non-recurring costs, the labor-related expenses associated with the provision of a network element.

Marketing and Business Fees are direct costs for which Qwest's accounting records typically allow tracking down to a particular product or service group.

Other Direct Costs include network administration and engineering costs and various other administrative costs such as the cost of general-purpose computers and accounting and finance expenses. These costs are not directly associated with a

specific network element. However, these costs vary with the provision of all network elements, and are not common to the entire firm.

Total Element Long Run Incremental Costs (TELRIC) represent the sum of all direct costs (e.g., Investment-Based Costs and Other Element-Specific Expenses, Marketing and Business Fees and Other Direct Costs). This measure of costs includes the forward-looking costs incurred in the provision of a network element. This measure of costs is consistent with TELRIC as defined by the FCC.

Common Costs are associated with the enterprise as a whole. These costs do vary based on the total size of the firm, but do not vary with the provisioning of individual network elements. These costs are avoidable only with the elimination of the entire firm, and are sometimes referred to as *general overhead costs.*

Fully Allocated Costs represent the sum of Total Element Long Run Incremental Cost plus Common Costs (TELRIC + CC).

Study Name	*OSS Development and Enhancements*	
Study Requester		
Type of Study	*TELRIC*	
Study ID	*6550*	
Cost Factor Group	*Interconnection*	
Study Applications		
Completion Date	*June 13, 2002*	
Cost Analyst	*Nancy Frazee*	
Study Review	**Reviewer**	**Date**
		June 13, 2002
Models Used	**Model**	**Version**
	Wholesale Cost Program	*2.08*
	Cost Factor Databases	*02SD01E*
	Cost Factors Model (TELRIC)	*02V1*
Cost Factors Used	**Factor**	**Effective Date**
	Capital Recovery	*04/02*
	Ad Valorem	*02/02*
	Marketing Factors	*04/02*
	Other Direct Expenses	*04/02*
	Common	*04/02*
	Cost Of Money	*10.14%*
Inflation		
Major Cost Drivers		

Parameter File: I:\SLHILL-Team\OSS\SD OSS Studies\2002\SD OSS START UP.xls, Sheet "WINPC3 Parameters"
State(s): SD
Database Vintage: 02SD01E
Factors For: Interconnection
Report Type: ICM Format
Decimal Places: 2
Costs Format: Annual
Group Totals: Yes
ACF Input: I:\SLHILL-Team\OSS\SD OSS Studies\2002\SD OSS START UP.xls, Sheet "WINPC3 ACF Inputs"
ACF Output: I:\SLHILL-Team\OSS\SD OSS Studies\2002\SD OSS START UP.xls, Sheet "WINPC3 ACF Outputs"
Investment: I:\SLHILL-Team\OSS\SD OSS Studies\2002\SD OSS START UP.xls, Sheet "WINPC3 Investments"
Output: I:\SLHILL-Team\OSS\SD OSS Studies\2002\SD OSS START UP.xls, Sheet "WINPC3 Output"

State: South Dakota

Description	Loaded Investment	Direct Expense	Invst. Based & Mktg.	Network Support	Other Direct Expenses	TELRIC	Common	TELRIC + Common
OSS Development and Enhancements Cost per Order	$0.69	$9.80	$10.18	$0.50	$2.77	$12.95	$0.92	$13.87

OSS Development and Enhancements Rate per Order	$12.95

Row	6/13/02 7:29 AM South Dakota	Source or Calculation	Factor Value	Development and Enhancements Cost per Order
			A	B
1	**Investment**	sl r"Total" cD		0.69
2				
3	***Investment Based Costs***	***sl r"Total" cK***		0.17
4				
5	Direct Expenses			9.80
6	Miscellaneous Expenses			0.00
7	Billing & Collection - PL			0.00
8	***Total Investment Based + Billing & Collection***			9.97
9				
10	***Marketing & Business Fees***			
11	Product Management Expense	cA*(r8-r6)	0.019957	0.20
12	Sales Expense			0.00
13	Product Advertising Expense			0.00
14	Business Fees (Other Operating Taxes)	cA*(Sum(r8:r13)-r6	0.001483	0.02
15	***Marketing & Business Fees Total***	***Sum r11:r14***		0.21
16				
17	***Sub-Total Invst., B & C, Mktg***	***r8 + r15***		10.18
18				
19	***Other Direct Expenses***			
20	Network Operations	cA*(r17-r6)	0.034832	0.35
21	Network Support Assets	cA*(r17-r6)	0.014703	0.15
22	General Support Assets	cA*(r17-r6)	0.088742	0.90
23	General Purpose Computers	cA*(r17-r6)	0.043342	0.44
24	Uncollectible	cA*(r17-r6)	0.003786	0.04
25	Accounting & Finance Expense	cA*(r17-r6)	0.007346	0.07
26	Human Resources Expense	cA*(r17-r6)	0.008294	0.08
27	Information Management Expense	cA*(r17-r6)	0.070887	0.72
28	Intangibles	cA*(r17-r6)	0.000000	0.00
29	***Total Other Direct Expenses***	***Sum r20:r28***		2.77
30				
31	***TELRIC***	***r17 + r29***		12.95
32				
33	***Common***			
34	Executive Expense	cA*(r31-r6)	0.011267	0.15
35	Planning Expense	cA*(r31-r6)	0.000525	0.01
36	External Relations Expense	cA*(r31-r6)	0.037846	0.49
37	Legal Expense	cA*(r31-r6)	0.004717	0.06
38	Other Procurement Expense	cA*(r31-r6)	0.001860	0.02
39	Research & Development Expense	cA*(r31-r6)	0.000006	0.00
40	Other General and Admin Expense	cA*(r31-r6)	0.015064	0.20
41	***Common Costs***	***Sum r34:r40***		0.92
42				
43	***TELRIC + Common Costs***	***r31 + r41***		13.87

6/13/2002
South Dakota

OSS Development and Enhancements

OSS Development and Enhancements Cost per Order

Acct	FRC	Account Name	Investment	Depreciation	Cost Of Money	Income Tax	Ad Valorem	Maintenance	Switch RTU	Total Capital Costs
2124	2124	General Purpose Computers	0.69	0.11	0.03	0.01	0.01	0.00	0.00	0.17
		Total	**0.69**	**0.11**	**0.03**	**0.01**	**0.01**	**0.00**	**0.00**	**0.17**

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 14th day of October, 2002, the foregoing **Direct Testimony of Teresa K. Million and six exhibits** was filed and served upon the following parties as follows:

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Karen Cremer, Staff Attorney South Dakota Public Utilities Commission 500 East Capitol Avenue Pierre, SD 57501 Email: Karen.cremer@state.sd.us *Protective Agreement Executed*	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to karen.cremer@state.sd.us
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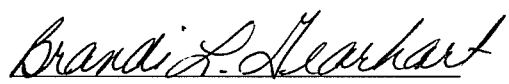

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