BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Petition of QWEST CORPORATION for Arbitration of an Interconnection Agreement with UNION TELEPHONE COMPANY d/b/a UNION CELLULAR under Section 252 of the Federal Telecommunications Act	**DOCKET NO. 04-049-145**

POST SURREBUTTAL REPLY

TESTIMONY OF

PETER B. COPELAND

ON BEHALF OF

QWEST CORPORATION

QWEST EXHIBIT 3PSR

SEPTEMBER 28, 2007

[NON-CONFIDENTIALVERSION]

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I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Peter B. Copeland and my business address is 1801 California Street, Denver, Colorado 80202. I am employed by Qwest Services Corporation (Qwest) as Director, Cost and Economic Analysis, in the Public Policy organization.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS CASE?

A. Yes. I filed Revised Rebuttal Testimony on July 21, 2006 (which completely replaced my Rebuttal Testimony filed on October 24, 2005) and Surrebuttal Testimony on March 5, 2007.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my current testimony is to address the Testimony of Henry D. Jacobsen dated March 15, 2007 (Jacobsen Testimony) and issues impacted by the recently provided data responses of Union Cellular (Union). The Jacobsen Testimony referred to usage data for Union cell sites, which Union had previously stated it did not have the ability to measure. The recently provided data responses

provided some of that data. I will also report on the decision in the arbitration between Qwest and Union just issued in Colorado on the same issue.

My testimony shows that Union's cost study fails to meet Union's burden of proof in this case as specified by the Federal Communications Commission (FCC) because it continues to fail to prove that individual wireless network components are cost sensitive to increasing call traffic. Additionally, my testimony demonstrates that Union's cost study does not include the costs for an *efficient forward-looking network* and, therefore, the study's cost results are not TELRIC-based. My testimony finds that Union has not met its burden of proof in this docket which is consistent with the conclusion of the Colorado commission. Further, I present an updated hypothetical example of a calculation of a local termination rate that includes assumed traffic sensitive costs or "additional costs."

III. ISSUES RAISED IN THE TESTIMONY OF HENRY D. JACOBSEN

Q. WHAT ARE THE MAJOR CONTENTIONS OF MR. JACOBSEN'S TESTIMONY?

A. Mr. Jacobsen states that traffic engineering principles and statistical sizing of telephone plant components are well established in the landline and cellular telephone industries and that Union designs its customer-facing components with a five percent busy hour blocking objective and its trunk-side components with a

one percent busy hour blocking objective. Mr. Jacobsen attaches a Network Administration Report as an exhibit to his testimony, which presents blocking statistics for one seven-day period for Union cell sites by sector.[1] Based on the traffic descriptions in his testimony and his exhibit, Mr. Jacobsen concludes that 100 percent of Union cell sites, backhaul, switch, base station controllers and transport for all voice and data functions are traffic sensitive.

Q. DO YOU AGREE WITH MR. JACOBSEN'S ASSESSMENT THAT UNION HAS PRESENTED EVIDENCE THAT SUPPORTS ITS ASSERTION THAT THE ENTIRETY OF ITS WIRELESS NETWORK COST MEETS THE "ADDITIONAL COST" STANDARD OF THE FCC[2] INCLUDING TELRIC STANDARDS FOR ITS COST STUDY?

A. No. I disagree with Mr. Jacobsen that Union has met its burden of proof in this case for traffic sensitivity for any of its wireless network components. Additionally, Mr. Jacobsen presents misleading information, as well as statements in his testimony that are contradicted by Union's own discovery responses. I address the misleading statements and contradictory information later in my testimony.

[1] March 2, 2007 to March 8, 2007

[2] The FCC clarified the "additional cost" standard in paragraph 10 of its order affirming the Joint Letter which was released September 3, 2003 as follows, "… a cost-based approach – one that looks at whether the particular wireless network components are cost sensitive to increasing call traffic – should be used to identify compensable wireless network components."

As I stated in my previous testimony, the FCC requires that a wireless carrier meet the "additional cost" standard (i.e., prove that particular wireless components are cost sensitive to increasing call traffic) in order to include them as compensable wireless network components. The required proof of traffic sensitivity or "additional cost" is not the case of "ipso facto" support that Mr. Jacobsen presents as basic engineering practices. Rather, in the TELRIC context of this case, the proof must include an examination of each network component's use in an efficient forward-looking network with realistic demand quantities for Union's traffic and forward-looking rather than embedded costs.[3] While Union has finally produced a network usage report for a single component of its wireless network – i.e., radio channels,[4] it has not incorporated these data into its cost study. Union continues to insist that 100 percent of its embedded network costs, including the cost of network components that provide data services and services directly attributable to its own subscribers, be included in its proposed asymmetric rates for local interconnection – i.e., rates for voice calls from Qwest.

[3] See both 47 CFR 51.505 and the discussion on switching costs in the Utah Commission's Report and Order in Docket No. 01-049-85, released May 5, 2003, starting at page 16.
[4] Union also provided usage reports for trunk ports on its switches in response to Qwest Data Requests 6-001 and 7-001.

Q. CAN YOU GIVE AN EXAMPLE OF ONE OF MR. JACOBSEN'S MISLEADING STATEMENTS IN HIS TESTIMONY?

A. Yes. On page four, lines 50-62, of Mr. Jacobsen's testimony, he states that Union has had the means of obtaining traffic data from its TDMA and GSM networks from their inception. In its Data Request 4-009 issued May 11, 2006, Qwest requested:

> For each of the [BEGIN CONFIDENTIAL END CONFIDENTIAL] GSM-Only sites listed on the "GSM Sites Costs" tab of the revised cost study:
>
> (a) identify what the voice capacity of the cell site is;
>
> (b) state how much of the voice capacity identified in subpart (a) above is presently being utilized at each cell site;
>
> (c) identify what the data capacity of the cell site is; and
>
> (d) state how much of the data capacity identified in subpart (c) above is presently being utilized at each cell site.

Union's initial response to this request was an objection and statement that this data could be extrapolated from its CPR data.[5] This response was supplemented on December 29, 2006, when Union responded,

> In discussions with Qwest, Union indicated that it does not maintain the voice and data capacity in the manner requested for each cell site. Specifically, Union would confirm that it *does not maintain the data or voice capacity of each cell site* nor can it

[5] Union's statement was incorrect because it is impossible to determine capacity or utilization information from its CPRs.

> segregate the usage of each cell site by busy or peak hour voice or data volumes. (Emphasis added.)

Mr. Jacobsen defends the supplemental response as a true statement, emphasizing the portion of the statement "*by busy or peak hour voice or data volumes*." (Emphasis added.) However, Qwest simply asked for capacity and utilization without reference to the busy or peak hour. By Mr. Jacobsen's testimony, he admits that Union has *always* had the means of obtaining traffic usage data and has managed the network based on these aggregate statistics.[6] However, not until March 15, 2007, with the filing of Mr. Jacobsen's testimony, did Union provide any data. Clearly, Mr. Jacobsen's testimony mischaracterized Qwest's data request. In fact, according to Mr. Jacobsen's testimony, Union did have traffic data responsive to Qwest's request, but chose not to provide it.

Throughout this docket Union has objected to reasonable requests for factual data concerning usage and capacity of network components that Union claims are traffic sensitive. Though Union carries the burden of proof in this docket, it has often objected to these requests based on relevance. What could be more relevant to its claims? As I stated in my Surrebuttal Testimony, Union must base its study on quantitative evidence, not qualitative descriptions of network functions.

[6] On page 4 of his testimony, Mr. Jacobsen states that "augments have been planned and carried out on the basis of aggregate statistics, rather than on busiest or peak-hour demand." That Union has "augmented" its network implies, not only that it had the requested usage data, but also that it knew the capacity limitations of its network.

Q. DOES MR. JACOBSEN MAKE MISLEADING STATEMENTS WHEN COMPARING LANDLINE AND CELLULAR SWITCHES?[7]

A. Yes he does. Mr. Jacobsen describes two differences.[8] First, Mr. Jacobsen identifies the cellular switch as a shared resource and therefore traffic sensitive, with the implication that the landline switch is not a shared resource. This statement is incorrect for two reasons: 1) landline switches are shared resources because each customer in a landline wire center accesses the shared resource, the landline switch, to connect to other subscribers; and 2) as the Utah Commission has ruled in the case of landline switches, a shared resource can be non-traffic sensitive if that resource is configured to include all the capacity necessary to meet the day-to-day usage demand of the network subscribers for a reasonable forecast period.[9]

Second, Mr. Jacobsen describes the cellular switch as more expensive due to its extensive electronics and control. While I admit that cellular switches do have extensive electronics and control, their relevance to the issue of traffic sensitivity/"additional cost" due to voice calls from Qwest is non-existent. The

[7] Jacobsen Testimony, page 5, lines 88-90.
[8] This discussion is in response to Mr. Jacobsen's statements about the landline network engineering. The purpose of this discussion is to clarify for the record the manner in which different types of facility costs are or are not sensitive to increasing call volumes, not to make equivalent facilities arguments for loop equivalency.
[9] Union's response to Qwest Data Request 6-005(a) makes it clear that, except for the trunk ports, its GSM switch meets the Utah Commission's criteria for non-traffic sensitivity as described in its Report and Order in Docket No. 01-049-85, released May 5, 2003, at page 17.

extensive electronics and control in a cellular switch are directed to functions to control and track cellular subscribers' mobility. These functions and their costs are clearly attributable to the cellular subscribers, who purchase wireless service precisely to have mobility. These costs cannot be attributed to Qwest or Qwest's subscribers for calling a Union wireless customer.[10]

Q. DOES THE CUSTOMER SIDE OF A LANDLINE SWITCH HAVE NO GRADE OF SERVICE AS DESCRIBED BY MR. JACOBSEN?[11]

A. No. Landline switches utilize a great deal of integrated digital loop carrier systems. These systems serve subscribers on copper distribution plant and use fiber or copper digital facilities for feeder plant that terminate on the switch in digital ports. The switch ports terminating the digital facilities have fewer timeslots available than the number of subscribers vying for these digital facilities – i.e., the switch ports are "shared resources." Qwest engineers these systems for a P.01 blocking probability.[12] Blocking can take place, but the switch ports are engineered to avoid blocking in excess of one percent in the busy hour. Yet even though these customer-facing switch ports have a defined grade of service objective, the FCC and every state (except Connecticut) has ordered UNE rates

[10] See 47 CFR 51.507.
[11] Jacobsen Testimony, page 9, lines 170-171.
[12] "P.01" is a one percent busy hour blocking based on Poisson Tables. Poisson Tables are conceptually similar to the Erlang B Tables that Union uses.

for switch ports to be non-traffic sensitive.[13] This is yet another example, in addition to the Utah Commission's ruling on switch UNEs, where regulators have determined that a shared resource may be considered non-traffic sensitive.

Q. DO MR. JACOBSEN'S STATEMENTS THAT UNION AUGMENTS ITS GSM SWITCH MEMORY[14] CONFLICT WITH UNION'S RESPONSE TO QWEST DATA REQUEST 6-005(a)?

A. Yes, there is a conflict between the testimony and the data response. The data response indicates that only the trunk port portion of the GSM switch is sensitive to traffic loads. The Qwest data request was:

> For Union's GSM switch:
>
> a. Please provide the installed capacity and the present utilization of that capacity in the busiest hour of the day for the four types of capacity that Mr. Jacobsen discusses on page 6 of his testimony (i.e., (1) processor and common control busy hour call attempts, (2) switching matrix busy hour minutes of use, (3) *memory capacity* of customers, (4) busy hour minutes of use for the various ports or "spigots") (Emphasis added).

Union's response is as follows:

> Union objects to the Data Request as it has been addressed previously in prior discovery. Notwithstanding the objection, Union provides:

[13] A Survey of Unbundled Network Element Prices in the United States (Updated March 2006). This survey was compiled by Billy Jack Gregg, Director, Consumer Advocate Division, West Virginia Public Service Commission.

[14] "Thus, Union will frequently be "on the verge of exhaust" as it makes economically appropriate port and memory additions to its GSM switch." Jacobsen Testimony, page 7 lines 120-122.

a. (1-3) Although in principle these elements of the switch are traffic sensitive, their traffic capability is sized for the life and maximum capacity of the switch. They are not routinely monitored and statistics are not available. (4) The attached telephone network trunk report includes traffic information for all switch (trunk) ports.

Union's response states that processor and common control, switching matrix, and *memory* capacity are sized for the life of the switch and therefore augmentations are not necessary during the life of the switch. Given that in actuality there is no augmentation for these components, these components are not cost sensitive to increasing call traffic. Mr. Jacobsen's testimony is clearly at odds with Union's actual practices concerning its GSM switch.

Q. MR. JACOBSEN STATES THAT IF ALL CELLULAR CUSTOMERS COLLECTIVELY DOUBLED THEIR AMOUNT OF USAGE, TWICE AS MANY END-TO-END FACILITIES WOULD BE REQUIRED.[15] IS THIS A REALISTIC USAGE ASSUMPTION?

A. According to Union, doubling the aggregate amount of usage is not a realistic assumption. Union's response to Qwest Data Request 6-015 states that a doubling of average usage per customer is an "improper hypothetical" assumption and "assumes a condition contrary to fact." However, even if usage is doubled, there are three possible outcomes as to the need for additional facilities. The first outcome could be that there is no need for additional facilities because there is

existing capacity sufficient in the current facilities to handle a doubling of the usage. The second outcome is that there could be the need for some additional facilities, due to exhaust in specific areas of the network, but on an overall basis, this would be a fractional increase in overall facility growth. For example, Union's current average BTS utilization of radio channels[16] is only [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent of the installed capacity; therefore there would not be a doubling impact on facilities with the doubling of actual usage. The least likely outcome is that every network area would exhaust and additional capacity would be required to augment portions of every area. Even in this scenario, it is not clear whether all facilities would need to be augmented because of the modularity of the incremental growth equipment. Again, Mr. Jacobsen makes a statement about the doubling of facilities as if it is fact, without supporting quantification. He does not show the effect on Union's wireless network components individually or its effect on the TELRIC calculation of costs.

[15] Jacobsen Testimony, page 6 lines 94-96.
[16] I further examine this issue later in my testimony.

Q. DOES MR. JACOBSEN MAKE OTHER ERRORS IN DESCRIBING CELLULAR NETWORK CAPACITIES?

A. Yes. Mr. Jacobsen says, "For example, a Nortel S8000 BTS will support eight radios, and each radio will support 8 radio channels."[17] The first part of this statement is flatly incorrect. Based on Nortel's S8000 Indoor Base Transceiver Station Customer Product Overview, the S8000 BTS product is designed for full growth capability of up to eight radios per sector in a trisector configuration for a total of 24 radios. Even the S8000 in an omnidirectional configuration has a capacity of more than eight radios. As I discuss later, Union's projected usage of 150 percent of its current usage will never exceed the fully equipped capacity of an S8000 BTS. Therefore, when Mr. Jacobsen concludes, "As Mr. Hendricks states, if more than eight radios are required in the cell site, the only recourse is to install an additional BTS," he is at odds with Nortel's description of its product and improperly suggesting that Union must build new BTSs to accommodate increased usage. It appears that the reason Union builds new cell sites is to expand its coverage area, which again is a subscriber-attributed cost.

[17] Jacobson Testimony, page 7 lines 135-136.

Q. DID MR. JACOBSEN ADDRESS THE DEPLOYMENT OF 2G AND 3G NETWORKS AND THEIR DATA SERVICE CAPABILITIES?

A. Mr. Jacobsen states that 1G networks are being phased out while 2G networks are the current successor and that 3G networks are in limited deployment. While Mr. Jacobsen supports the inclusion of 100 percent of the Union wireless network in its cost study, he ignores the data services supported by these wireless network components and the fact that Union heavily markets these data services to its customers. When a Qwest customer makes a voice call to a Union wireless customer no data services are implicated. The costs of the data services are purely attributable to Union's subscribers.[18] Wireless network upgrades for 2G and 3G networks with their resulting capacity increases are driven by the offering of new and faster data services. Union offers a wide array of data services including Multimedia Messaging, Mobile Web, and Downloadable Services, as well as "Bargain Bundles" of these services. See Qwest Exhibit 3PSR.1, which lists the data service options on Union's web site. The costs of these data services should be removed from Union's cost study.

[18] In response to Qwest Data Request 6-006, Union affirmed that the minutes of use in its cost study only include voice minutes. However, Union includes both data and voice network costs in the numerator of the cost per minute calculation, while the denominator includes only voice minutes.

IV. "ADDITIONAL COST" STANDARD AND UNION DATA REPONSES RELATING TO SWITCHING AND BTSs

Q. HAVE YOU EXAMINED THE DATA THAT UNION PROVIDED IN RESPONSE TO QWEST 6-001?

A. Yes. I have been able to examine the data provided to me.

Q. BASED ON THE BUSY HOUR TRAFFIC SUMMARIES FOR BTS SECTOR TRAFFIC PROVIDED BY UNION IN RESPONSE TO QWEST DATA REQUEST 6-001 (I.E., THE NETWORK USAGE REPORTS), HAVE YOU BEEN ABLE TO CALCULATE UNION'S UTILIZATION OF RADIO CHANNELS IN ITS BTS?

A. Yes. I was able to make this calculation. Union currently uses [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent of its installed radio channel capacity. If the usage is increased by [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent to reflect the level of usage in Union's cost study, the utilization increases to at most [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent. Confidential Qwest Exhibit 3PSR.2 provides the data and calculations that support these estimates. The worksheet estimates Union's installed BTS radio capacity by taking the "Number of Channel Elements" for each sector in the Network Usage Reports and using an Erlang B Table at 5 percent blocking to determine the busy hour capacity of these channel elements.

The utilization is the March 2007 carried busy hour minutes of use (MOUs) divided by this estimated capacity. The number of carried MOUs used in the numerator is an average of the busy hours for the week of March 2-8, 2007.

Q. HOW WOULD YOU INTERPRET THE CURRENT [BEGIN CONFIDENTIAL END CONFIDENTIAL] PERCENT AND FORECASTED [BEGIN CONFIDENTIAL END CONFIDENTIAL] PERCENT UTILIZATION RATES FOR THE WORKING RADIO CHANNELS?

A. Both the current actual utilization and the forecast utilization are extremely low. Based on its book cost, Union uses the cost of its existing and planned BTS configurations and the forecasted usage as the cost and the demand for its efficient forward-looking "TELRIC study." Such low utilization does not meet the TELRIC standard for efficient network design.[19] This fact alone is sufficient to reject Union's cost study. With the inefficient network design and the use of embedded book cost, it is clear that Union's cost study should not be accepted as a TELRIC study.

Q. BASED ON YOUR REVIEW OF THE NETWORK USAGE REPORTS PROVIDED BY UNION IN RESPONSE TO QWEST DATA REQUEST 6-

[19] See requirement for a 90 percent switch fill factor in Utah Commission's Report and Order in Docket No. 01-049-85, released May 5, 2003, at page 18.

001 AND PREVIOUSLY SUPPLIED DATA, WHAT IS THE TREND IN MOUS PER BTS?

A. I have compared the total MOUs and the number of associated cell sites generating those MOUs that Union supplied in its Network Usage Reports with similar data from its original cost study and with the revised study filed in August of 2006. This comparison shown on the following table indicates a downward trend in usage per BTS.

[BEGIN CONFIDENTIAL

END CONFIDENTIAL]

Since the usage per BTS is declining, the traffic sensitivity of the BTS must again be called into question. The data provided by Union does not support the traffic sensitivity of the BTS costs; rather it supports a conclusion that BTSs are being deployed, not because of usage, but in order to gain access to additional customers – i.e., coverage.

Q. HAS QWEST PROVIDED UNION YET ANOTHER OPPORTUNITY TO CLEARLY IDENTIFY TRAFFIC SENSITIVE COMPONENTS IN ITS NETWORK SINCE YOU FILED YOUR SURREBUTTAL?

A. Yes. In Qwest's Sixth Set of Data Requests, Qwest asked a series of questions that were specifically targeted at this issue. Request 6-015 asked Union to identify what components would need to be added to accommodate a doubling of calls from Qwest landline customers assuming that the number of Union wireless subscribers was held constant. Union declined this opportunity to support Mr. Jacobsen's statement[20] that doubling customer usage requires twice as many end-to-end facilities, by objecting that the data request "is argumentative overbroad and poses an improper hypothetical. In addition, this question assumes a condition contrary to fact."

Request 6-017 took an indirect approach trying to identify which components in Union's GSM network are not traffic sensitive. Qwest requested that Union identify what capacity would need to be added if the number of its wireless subscribers doubles while the total traffic on its network stays the same. Again Union objected and declined to respond.

These are two examples of the type of information required to demonstrate that network facilities are cost sensitive to increasing call traffic. In refusing to

provide it, Union has failed to meet its burden to establish that it is entitled to asymmetric compensation for call termination.

V. AN UPDATED HYPOTHETICAL EXAMPLE OF ADJUSTMENTS TO THE STUDY

Q. IN YOUR SURREBUTTAL TESTIMONY FILED IN MARCH 2007 YOU INCLUDED A HYPOTHETICAL COST STUDY (I.E., CONFIDENTIAL QWEST EXHIBIT 3SR.2). HAS ADDITIONAL DISCOVERY CAUSED YOU TO REVISE THE HYPOTHETICAL COST STUDY?

A. Yes. Union responses to both Qwest data requests and Division of Public Utilities (DPU) data requests have shed additional light on Union's cellular network such that I am submitting a new hypothetical cost study, Confidential Qwest Exhibit 3PSR.3. Before describing the adjustments I have made, let me review what has not changed. At this point in time, more than two years after filing its first cost study, Union has failed to demonstrate that the network components included in its study are traffic sensitive as required by the FCC. I again emphasize this fact, because it is pivotal to the asymmetrical rate issue. The FCC clarified the "additional cost" standard in paragraph 10 of its order affirming the Joint Letter which was released September 3, 2003 as follows, "… a cost-based approach –

[20] Jacobsen Testimony, page 6 lines 94-96.

one that looks at whether the particular wireless network components are cost sensitive to increasing call traffic – should be used to identify compensable wireless network components." I want to emphasize the criteria that the network components must be "cost sensitive to increasing call traffic" because, while Union has made statements that it believes that components are traffic sensitive, it has not presented any evidence that any component in its network is cost sensitive to increasing voice calls from Qwest end users to Union wireless customers. Again, the burden to make that case is Union's.

Q. WHICH VERSION OF THE UNION COST STUDY IS SERVING AS THE BASE FOR YOUR HYPOTHETICAL ADJUSTMENTS?

A. I am starting with Union's latest revised cost study accompanying Mr. Hendricks' August 11, 2006 Supplemental Surrebuttal Testimony. This is the same study I used as the basis for the hypothetical study provided with my Surrebuttal Testimony.

Q. WHAT ADDITIONAL INFORMATION HAS UNION PROVIDED THAT IS CAUSING YOU TO MODIFY THE HYPOTHETICAL COST STUDY YOU SUBMITTED WITH YOUR SURREBUTTAL TESTIMONY?

A. In response to Qwest's Sixth Set of Data Requests, Union provided additional information that has made me rethink which components of the GSM switch and the BTSs could possibly be traffic sensitive. First, let me address the switch. In

Data Request 6-005, Qwest asked about the utilization of the four switch capacities that Mr. Jacobsen identified in his testimony. Union responded by saying that, except for the trunk ports, all capacities of the switch are "sized for the life and maximum capacity of the switch." Union's response makes the case that the only GSM switch components that can possibly be "cost sensitive to increasing call traffic" are the trunk ports. Since the "additional cost" test in the FCC order requires that components be cost sensitive to increasing call traffic, I have recalculated the switch cost to be included in the study assuming only trunk ports are traffic sensitive.[21]

Q. HOW EXACTLY HAVE YOU COMPUTED THE TRAFFIC SENSITIVE SWITCH COST?

A. I have used the same methodology that Union used in its most recently filed cost study. In fact I used the "Summary" tab of the Excel workbook version of that study. I have renamed that tab the "Switch" tab and highlighted the cells that I have revised.

Q. WHAT CELLS DID YOU REVISE?

A. First I changed the investment in Row 6 to equal the investment in the switch that is trunk port related. Specifically, of those switch costs that I included in the cost study filed with my Surrebuttal Testimony, only the trunk port related costs are

[21] See related footnote 9.

included in my revised cost study.[22] Trunk ports are contained in the Digital Trunk Controller (DTC), so I have included the DTC and the peripheral processors which can be used to support the DTC. Of the total [BEGIN CONFIDENTIAL END CONFIDENTIAL] that Union input as its GSM Switch Cost, only [BEGIN CONFIDENTIAL END CONFIDENTIAL] or [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent is associated with the DTC (see "Trunk Port Inv" tab of Confidential Qwest Exhibit 3PSR.3). So I have included [BEGIN CONFIDENTIAL END CONFIDENTIAL] in Row 6 of the Switch tab.

Q. WHAT OTHER CHANGES HAVE YOU MADE TO REFLECT THE SWITCH COSTS THAT YOU HAVE ASSUMED ARE "COST SENSITIVE TO INCREASING CALL TRAFFIC" FOR PURPOSES OF YOUR HYPOTHETICAL STUDY?

A. I have adjusted the Operational Expenses on Row 18 to reflect only those expenses associated with the GSM switch trunk ports. First, of the [BEGIN CONFIDENTIAL END CONFIDENTIAL] of switch related expenses that Union has identified on Row 49 of its "Summary" tab, I have identified that [BEGIN CONFIDENTIAL END CONFIDENTIAL] is associated with

[22] This switch revision is in addition to the adjustments that I detailed in my Surrebuttal Testimony.

its GSM switch.[23] Because this is the total GSM switch expense and only [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent of the total GSM switch investment is associated with trunk ports, I assumed that [BEGIN CONFIDENTIAL END CONFIDENTIAL] is related to the trunk ports. This is the amount I entered on Row 18 for Operational Expense.

Q. HAVE YOU MADE ANY OTHER REVISIONS TO UNION'S SUMMARY TAB?

A. Yes. A number of minor revisions have been made in the column labeled "Year 15." These revisions are simply to correct the methodology to synch with the economic life input of 14.5. In the 15th year, there is only a half-year of economic life remaining. Therefore, the Return on Rate Base, the Operational Expenses, the Taxes and the demand or PV Minutes computations have all been revised to reflect only a half year.

[23] In response to Qwest Data Request 4-012 Union clarified that only expenses "associated with sub-accounts that begin with the number "8" are GSM." The other switch expenses are related to the Cell/TDMA switch – i.e, they have sub-accounts that begin with the number "3." Please see the "Expense" tab of Confidential Qwest Exhibit 3PSR.3 to see how these expenses are identified.

Q. WHAT IS THE RESULTING COST PER MINUTE FOR THE GSM SWITCH THAT YOUR REVISED HYPOTHETICAL STUDY PROVIDES?

A. I am not advocating that any of Union's GSM network is traffic sensitive. However, given that Union has put on the record that it believes the switch to be 100 percent traffic sensitive, I want to point out the inconsistency of that position, which is reflected in Union's most recent study, with the responses Union has provided to various data requests. In the event that it is concluded that Union has made the case that some of its GSM switch is traffic sensitive, I am providing a cost study on the record that is reasonably consistent with Union's responses. The cost for the assumed traffic-sensitive components of the GSM switch, which is consistent with Union's responses, is [BEGIN CONFIDENTIAL END CONFIDENTIAL] per minute (see Row 34 of "Switch" tab of Confidential Qwest Exhibit 3PSR.3).

Q. IN YOUR SURREBUTTAL HYPOTHETICAL STUDY YOU DID NOT INCLUDE ANY BTS RELATED COSTS. YOU SAID EARLIER THAT YOU HAD RECONSIDERED THAT SOME BTS COSTS COULD POSSIBLY BE TRAFFIC SENSITIVE. IS THIS CORRECT?

A. It is accurate that I did not include any BTS cost in the hypothetical cost study in my Surrebuttal Testimony. This is because I did not believe Union had provided

any material support for its belief that the BTS is traffic sensitive. At that time, Union had not provided any data on the capacity and utilization of the BTSs. Since then, Union has provided the number of working voice channels for each BTS sector and the voice MOUs, both in the busiest hour and for the entire day, for a seven-day period in March of 2007. This information was included in the four summary reports Union provided in response to Qwest Data Request 6-001 (Usage Measurement Reports). I still contend that by simply providing these Usage Measurement Reports Union has not met its burden. It has not proven traffic sensitivity of the BTSs because it has not demonstrated that its BTSs are "cost sensitive to increasing call traffic" nor has it incorporated any of this capacity or utilization data into its study. I have, nonetheless, included in my hypothetical cost study, Confidential Qwest Exhibit 3PSR.3, those BTS costs where traffic sensitivity could conceivably be argued. Again, this is to assure that there is a TELRIC BTS cost on the record, should it somehow be decided that some of the BTS costs are traffic sensitive, that is consistent with the little information that Union has provided in its reports as opposed to the 100 percent traffic sensitive assumption made in Union's most recent cost study.

Q. WHY DO YOU THINK THAT THE BTS IS NOT "COST SENSITIVE TO INCREASING CALL TRAFFIC?"

A. In addition to the point I made earlier that a [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent increase in the utilization of the existing capacity in the [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs for which Union provided March 2007 measurements would only use [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent of the BTSs' capacity, Union currently has enough capacity in those [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs to more than satisfy the needs of the demand it projects for [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs. Union projects that the voice MOUs will increase to [BEGIN CONFIDENTIAL END CONFIDENTIAL] per year when it fully deploys [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs. As the calculation in the following table demonstrates, there is presently enough capacity in just [BEGIN CONFIDENTIAL END CONFIDENTIAL] of Union's BTSs to handle over [BEGIN CONFIDENTIAL END CONFIDENTIAL] MOUs per

year. [BEGIN CONFIDENTIAL

END CONFIDENTIAL] Union cannot contend that costs will increase because of increased call traffic when the current capacity is sufficient to meet the MOU demand that Union is projecting.

Q. IS THERE ANY COMPONENT OF THE BTS THAT UNION COULD ARGUE IS TRAFFIC SENSITIVE?

A. Based on the Usage Measurement Reports provided in response to Qwest's Data Request 6-001, no BTSs will exhaust with a [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent increase in the March 2007 MOUs.[24] However, some BTSs may require additional working channels. If Union does not have that capacity installed already, this may require installing additional radios.

[24] Union's projected demand in its cost study is based on a 50 percent increase in demand, but as discussed above, the MOUs per BTS have actually declined from 2004 to 2007.

Q. IF INCREASES IN VOICE TRAFFIC CREATED THE NEED FOR ADDITIONAL RADIOS IN A BTS, COULD THE RADIO CAPACITY OF A BTS EXHAUST THEREBY REQUIRING MORE EQUIPMENT BE INSTALLED OTHER THAN JUST RADIOS?

A. No. No BTS will require additional equipment, other than possibly radios. I say this based on an analysis of the voice MOUs in the Usage Measurement Reports. No sector, even with a [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent increase in voice MOUs, will require more than 8 radios. Each sector in a BTS has capacity available to house at least 8 radios.

Q. WHY DO YOU SAY THAT EACH SECTOR HAS CAPACITY FOR AT LEAST 8 RADIOS?

A. Union has deployed and is deploying Nortel BTS technology. It has included the cost of both Nortel S8000 and S12000 in its cost study, thereby endorsing it as the forward-looking TELRIC technology. The S8000 can be, and usually is in Union's GSM network, configured in a trisector configuration. Each BTS under this configuration has 3 sectors – each with capacity of 8 radios.[25]

[25] The S8000 in an omnisector configuration can have 16 radios. The S12000 has a capacity of 12 radios per sector.

Q. AS RADIOS ARE ADDED, UP TO THE EIGHT RADIOS PER SECTOR CAPACITY, DOES OTHER EQUIPMENT HAVE TO BE ADDED TO THE BTS?

A. No, not other than the extension cabinets required to house the radios. The BTS S8000 when initially installed contains a processor called a Compact Base Common Function (CBCF). This processor can handle three full sectors each with eight radios.[26] Furthermore, each sector is equipped with antennae, which can accommodate eight radios. The backhaul to the Base Station Controller (BSC) from each BTS requires a minimum of one DS1, which has 24 timeslots. Each radio needs one timeslot, so the initial DS1 can accommodate all 24 radios. The tower itself does not need augmentation. In sum, each trisector BTS when initially installed to provide access to a geographic area, even if equipped with as little as one radio per sector, has capacity to accommodate up to eight radios per sector by simply adding radios and up to two extension cabinets to house more radios.

[26] In Union's response to Qwest Data Requests 6-025 and 6-027, it confirms that the processors and memory in the S8000 are non-blocking "meaning that the BTS will operate without blocking when all available channels in a fully-populated BTS cabinet are fully utilized."

Q. WHY DOES YOUR ANALYSIS LEAD YOU TO CONCLUDE THAT UNION WILL NOT REQUIRE MORE THAN EIGHT RADIOS IN A BTS SECTOR?

A. Again, each sector has capacity for eight radios. Each radio has eight channels, so there is capacity for 64 channels in each sector. Not all of the channels are available for voice. In response to Qwest Data Request 6-007(a), Union stated that the general rule is for one control channel for each 16 radio channels. So in a voice only environment, four of the 64 total channels in a sector would be control channels, leaving 60 channels for voice traffic. Therefore, my analysis establishes that in no sector for which Union has provided usage measurements will a [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent increase in its March 2007 busy hour usage require more than [BEGIN CONFIDENTIAL END CONFIDENTIAL] less than the 60 voice channel capacity of each sector.[27]

Q. PLEASE EXPLAIN THE ANALYSIS YOU HAVE PERFORMED.

A. Please see Confidential Qwest Exhibit 3PSR.4, which summarizes my results. I started with the busy hour (BH) MOUs in the Usage Measurement Reports. For each day of a week in March 2007, Union provided the BH MOUs in each sector

[27] It is noteworthy that of the [BEGIN CONFIDENTIAL END CONFIDENTIAL] sectors for which Union provided measurements, [BEGIN CONFIDENTIAL END CONFIDENTIAL] sectors or [BEGIN CONFIDENTIAL END CONFIDENTIAL] will require less than [BEGIN CONFIDENTIAL

for [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs. For each sector, I averaged the MOUs for these seven busy hours to get the average BH MOUs for the week. Then, to accommodate the [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent growth that Union assumes in its cost study, I multiplied each sector's average BH MOUs by [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent to get the projected use per sector. I then took, for each sector, the projected usage and, using an Erlang B Table with 5 percent blocking, determined the number of channels that would be required to serve the projected usage.[28] In no sector did the number of voice channels required to serve the projected usage exceed [BEGIN CONFIDENTIAL END CONFIDENTIAL].

Q. BUT WHAT IF THE MARCH 2007 BUSY HOUR MEASUREMENTS UNION HAS PROVIDED ARE NOT FROM THE BUSIEST SEASON?

A. Given that Union has provided no other data, this is all I had to work with. However, with 60 voice channels available in each sector and no sector requiring more than [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice channels, it is unlikely that the busy hour in another month would require more than 60 voice channels.

END CONFIDENTIAL] voice channels – i.e., less than [BEGIN CONFIDENTIAL END CONFIDENTIAL] of the 60 voice channel capacity.

Q. ARE SOME OF THE 64 CHANNELS IN A SECTOR REQUIRED FOR DATA SERVICES THAT UNION OFFERS ITS SUBSCRIBERS?

A. If data services are provided, yes. In a TELRIC study for voice traffic, costs associated with data services should not be considered. However, as Union explains in response to Qwest Data Request 6-007, text messaging or short message service (SMS) is provided over the control channels, and EDGE data can be carried on voice channels subject to voice pre-emption. So that leaves only GPRS data that requires dedicated channels that cannot be used for voice. Again, with the highest use sector only requiring [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice channels, there are plenty of channels available in a sector with 8 radios to accommodate GPRS. In any event, only voice network costs and voice demand should be included in calculating an asymmetric local interconnection rate, subject to the "additional cost" standard.

Q. ARE THE ONLY COMPONENTS IN THE BTS THAT COULD POSSIBLY BE COST SENSITIVE TO INCREASING VOICE MOUS THE RADIOS THEMSELVES?

A. Yes. Each BTS is installed to reach customers in a geographic area. When a trisector BTS (Nortel S8000) is initially installed, the minimal equipment will

[28] In response to Qwest's Data Request 6-002 asking for its engineering methods, Union stated that the "capacity engineering is for an objective 5 percent blocking based on Erlang-B (truncated Poisson) probability tables."

have capacity for up to 24 radios or 8 radios per sector. So as long as no more than 8 radios are required in a sector, which I have shown to be the case, no components need to be added to accommodate additional voice MOUs with the possible exception of radios and the extension cabinets in which radios are housed.

Q. IF THE RADIOS WERE ASSUMED TO BE TRAFFIC SENSITIVE, HAVE YOU ESTIMATED THE COST PER MOU FOR RADIOS?

A. Yes. I have estimated this cost in the "BTS" tab of Confidential Qwest Exhibit 3PSR.3.

Q. HAS UNION PROVIDED THE COST OF THE RADIOS?

A. Based on information that Union provided in response to DPU data requests, I have been able to calculate a cost for radios. In Exhibit 15 that Union provided in response to the DPUs Fourth Set of Data Requests, Union provided the material cost of the BTS radio equipment for each of the [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs for which it provided costs in its cost study. But this is the total cost, including, among other components, the CBCF processor. In order to determine how much of this cost varies with working voice channels, I performed a linear regression with working voice channels as the independent variable and total radio material cost as the dependent variable. The resulting material cost per working voice channel is [BEGIN CONFIDENTIAL END

CONFIDENTIAL]. Assuming the average of [BEGIN CONFIDENTIAL END CONFIDENTIAL] working voice channels per radio (the remaining channels being used for control and data), the average radio material cost is roughly [BEGIN CONFIDENTIAL END CONFIDENTIAL].[29]

[BEGIN CONFIDENTIAL

END CONFIDENTIAL]

Q. IS THIS COST SUFFICIENTLY RELIABLE TO USE IN YOUR ESTIMATE?

A. Probably not. The reason I say this is that the R Squared regression statistic from this analysis is only 0.06, which means that only six percent of the variation in the

[29] This [BEGIN CONFIDENTIAL END CONFIDENTIAL] working voice channels per radio was derived by first estimating the number of radios, which was not directly provided, by taking the working voice channels in each sector, dividing by 8 channels per radio, and rounding up. The total working voice channels was then divided by the estimated number of radios. See "VoiceChansPerRadio" tab in Confidential Qwest Exhibit 3PSR.3.

total BTS material cost can be explained by variations in the number of working voice radio channels. This is yet another indication that the radio cost is not "cost sensitive to increasing call traffic." If working voice channels are traffic sensitive, the level of call traffic would drive the need for working voice channels, but my regression analysis shows that there is very poor correlation between working voice channels and total radio cost in Union's network. This is yet another instance where Union has failed to provide sufficient detailed data to meet its burden in this case.

Q. ASSUMING, CONTRARY TO YOUR TESTIMONY, THAT A DECISION IS MADE THAT THE RADIOS ARE TRAFFIC SENSITIVE, WHAT COST DO YOU PROPOSE USING FOR RADIOS FOR PURPOSES OF YOUR HYPOTHETICAL COST STUDY?

A. I have been able to derive a material cost of [BEGIN CONFIDENTIAL END CONFIDENTIAL] per radio based on the information Union provided in response to data requests – significantly higher than the [BEGIN CONFIDENTIAL END CONFIDENTIAL] implied by the regression. I

would propose this cost as being the most conservative estimate based on data provided by Union.[30]

Q. PLEASE DESCRIBE HOW YOU CALCULATED THIS COST.

A. Union provided two documents that I used. The first document was the Nortel contract itself, Agreement 20021119. On the page marked 400281A, which is part of Union's Exhibit A to Attachment 1 of Supplement No. 1 of the contract, the S8000 Indoor 1900 MHz S111D has a net price, before applying the volume discount, of [BEGIN CONFIDENTIAL END CONFIDENTIAL]. This number has been reduced already by the list price discount. In addition, there is a [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent volume discount to which Union is entitled.[31] So the fully discounted price for an S111 BTS is [BEGIN CONFIDENTIAL END CONFIDENTIAL]. The S111 is a trisector BTS with one radio in each sector. To determine just the radio cost, I looked at the cost of a similar BTS with two radios in each sector or an S222. The difference in cost between the two BTSs is the cost of adding one radio to each sector or three radios to the S111.

[30] Based on the price for the two omnidirectional S8000s in the Nortel contract, the per radio price is less. See the text box for the "Net Price BTS Equipment Per Radio" input in the "Inputs" tab of Confidential Qwest Exhibit 3PSR.3.

[31] The [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent discount is discussed on the page marked 400274A in 5.3 of Supplement No. 1 of Agreement 20021119.

That brings me to the second document Union provided. This is the Firm Price Quote on the page marked 400329 of the Purchase Order No. 26426A provided by Union on February 21, 2007. This page shows the Winter Park Lodge BTS as having an S8000 S222 H2D 1900 Indoor priced at [BEGIN CONFIDENTIAL END CONFIDENTIAL]. The difference in the fully discounted price between the two BTSs is [BEGIN CONFIDENTIAL END CONFIDENTIAL]. Dividing this by three radios – the difference between the two BTSs – gives the price per radio of [BEGIN CONFIDENTIAL END CONFIDENTIAL].

Q. WHAT OTHER ADJUSTMENTS NEED TO BE MADE TO THIS MATERIAL COST?

A. There are a number of adjustments made in the "Inputs" tab of Confidential Qwest Exhibit 3PSR.3. The cost per radio for software is added, both for the Base Station Controller and the Operations and Maintenance software. This cost is then loaded with an Overhead Loading Factor of [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent for both labor and overhead costs. This Overhead Loading Factor is an average based on the BTS radio investments in Exhibit 15 of Union's response to DPU Data Request 4.1.[32] Finally, the resulting

[32] BTSs with Overhead Loading Factors of over [BEGIN CONFIDENTIAL END CONFIDENTIAL] were excluded from this average as they were outliers and considered to be unreasonably high for an efficient network under TELRIC principles. See "Overhead" tab in Confidential Qwest Exhibit 3PSR.3.

loaded cost per radio is multiplied by [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent. This is the percent of the radio cost that is voice related. The resulting voice related cost per radio, fully loaded including software, labor and overhead, is [BEGIN CONFIDENTIAL END CONFIDENTIAL].

Q. HOW WAS THE [BEGIN CONFIDENTIAL END CONFIDENTIAL] PERCENT VOICE RELATED FIGURE DERIVED?

A. As described earlier, based on the Usage Measurement Reports, on average there are [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice channels per radio. Further, all of the control channels were allocated to voice by adding [BEGIN CONFIDENTIAL END CONFIDENTIAL] control channel per radio, consistent with Union's response to Qwest Data Request 6-007(a). Since there are a total of eight channels per radio, the [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent was derived by dividing the sum of the [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice channels plus [BEGIN CONFIDENTIAL END CONFIDENTIAL] control channels, a total of [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice related channels, by eight.[33]

[33] It is noteworthy that Union's cost study takes the entire cost of its GSM network and divides it by only voice minutes to get a TELRIC cost. While Union admits that its GSM network also provides additional services over and above voice, such as data and voice messaging, all the costs are divided only by minutes

Q. HOW WAS THIS COST PER RADIO INCORPORATED INTO THE HYPOTHETICAL COST STUDY?

A. As with the "Switch" tab discussed above, the "BTS" tab is exactly the same as the "Summary" tab of Union's study except for the highlighted cells, which I will explain. This assures that I am using the same methodology as Union is advocating. The total BTS investment that could possibly be considered traffic sensitive is calculated by multiplying the [BEGIN CONFIDENTIAL END CONFIDENTIAL] cost per radio by the number of radios that would be required to serve the [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSs. The resulting investment is placed in Row 6 of the "BTS" tab of Confidential Qwest Exhibit 3PSR.3.

Q. HOW DID YOU DETERMINE THE NUMBER OF RADIOS REQUIRED TO SERVE [BEGIN CONFIDENTIAL END CONFIDENTIAL] BTSS?

A. Starting with the total projected voice MOUs in Union's study, roughly [BEGIN CONFIDENTIAL END CONFIDENTIAL] MOUs per year, I divided by [BEGIN CONFIDENTIAL END CONFIDENTIAL] annual voice MOUs per radio which I derived by multiplying the [BEGIN CONFIDENTIAL END CONFIDENTIAL] voice channels per radio explained above by the [BEGIN CONFIDENTIAL END CONFIDENTIAL] MOUs per year per

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associated with the one service – voice. This methodology results in voice minutes "recovering" the cost of

channel assumed in the "Transport" tab of Union's cost study. So roughly [BEGIN CONFIDENTIAL END CONFIDENTIAL] radios [BEGIN CONFIDENTIAL

END CONFIDENTIAL] are required to serve the projected demand which, when multiplied by [BEGIN CONFIDENTIAL END CONFIDENTIAL] per radio, results in a total BTS radio investment of roughly [BEGIN CONFIDENTIAL END CONFIDENTIAL] million. The precise calculation is shown on Row 6 of the "BTS" tab of Confidential Qwest Exhibit 3PSR.3.

Q. WHAT OTHER REVISIONS DID YOU MAKE IN THE "BTS" TAB?

A. I made similar revisions in the column labeled "Year 15" as were discussed above in regards to the "Switch" tab. Also, I adjusted the Operational Expenses (Row 18) to reflect only those expenses that are associated with the radios. This was accomplished by determining a ratio of the BTS equipment expense per cell site to the BTS equipment investment per cell site, which was then multiplied by the total BTS radio investment discussed above which appears on Row 6 of the "BTS" tab.

Q. WHAT IS THE RESULTING COST PER MINUTE FOR THE BTS THAT RESULTS FROM THESE REVISIONS TO UNION'S STUDY AS

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more than just voice services and is, thus, a clear violation of TELRIC principles.

REFLECTED IN THE "BTS" TAB OF CONFIDENTIAL QWEST EXHIBIT 3PSR.3?

A. The cost per minute, if the radios are assumed to be traffic sensitive to voice calls from Qwest, is [BEGIN CONFIDENTIAL END CONFIDENTIAL] per minute.

Q. IS THERE AN ALTERNATIVE MANNER IN WHICH TO EXAMINE THE "ADDITIONAL COST" OF THE BTS RADIOS?

A. Yes there is. The primary purpose of Union's wireless network is to provide mobile wireless service to its own subscribers in areas where these subscribers live, work, and pursue recreational activities. Therefore, it is important to separate the costs caused by these subscribers from the costs caused by the termination of local calls from Qwest customers. One method of separating these costs is to determine the effect on the number of BTS radios required if MOUs from Qwest are removed. This methodology determines an incremental cost per Qwest MOU.

Q. CAN YOU DESCRIBE YOUR METHODOLOGY FOR MAKING THIS CALCULATION?

A. Yes. This analysis computes the radios attributable to Qwest MOUs. See Confidential Qwest Exhibit 3PSR.5. This exhibit determines the number of radios that are required for the current MOUs. It then computes how many fewer

radios would be required were there no MOUs from Qwest. The difference is the number of radios attributable to Qwest MOUs. Then the cost per Qwest MOU is computed by dividing the annual cost of the radios attributable to Qwest MOUs by the annual MOUs from Qwest. The cost per Qwest MOU is [BEGIN CONFIDENTIAL END CONFIDENTIAL], which is [BEGIN CONFIDENTIAL END CONFIDENTIAL] percent less than the hypothetical TELRIC for the BTS of [BEGIN CONFIDENTIAL END CONFIDENTIAL] per minute that I computed above.

Q. WHAT DO YOU CONCLUDE FROM THE RESULTS OF THIS ALTERNATIVE CALCULATION?

A. My conclusion is that Union is adequately compensated for the termination of Qwest voice traffic with the current reciprocal compensation rates. Asymmetric rates are not justified by any information supplied by Union in this case.

Q. WHAT ABOUT THE TRANSPORT COST THAT UNION INCLUDES IN ITS COST STUDY?

A. Union's cost for transport is undocumented. Union claimed that it is a conservative estimate in its response to Qwest Data Request 1-020, but provided no vendor contract, or even embedded cost, to justify its transport cost estimate. There is no way to determine if the cost is forward-looking or based on efficient network design. Given that transport networks do not vary whether provided by a

wireline carrier or a wireless carrier and the Utah Commission has already ruled on a TELRIC-based cost for transport, my recommendation is that the Commission continue to utilize the TELRIC transport costs it approved for Qwest.[34]

VI. COLORADO DECISION

Q. YOU MENTIONED EARLIER THAT THE COLORADO COMMISSION HAD RECENTLY ISSUED A DECISION ON THIS ISSUE. PLEASE DESCRIBE THE DECISION.

A. As the Commission is aware, Qwest and Union arbitrated essentially identical disputes regarding their interconnection agreement in Colorado before the Colorado Public Utilities Commission. In fact, the schedule in this case was extended by the parties so that the Colorado hearing could take place first. The hearing before the Colorado commission was held in December of 2005. Post-hearing briefs were submitted, and the Colorado commission had the matter under advisement for many months. However, on September 26, 2007, the Colorado

[34] That the Commission-approved rate for transport should apply is further supported in the Direct Testimony of Jason Hendricks on page 5. Referring to the microwave technology that Union includes in its cost study, he states that: "This is, in fact, how calls are carried today for ultimate termination from Qwest's customers to Union's wireless customers *because it is the most efficient means to do so over such long distances."* (Emphasis added.). Whether transport over long distances is for wireline or wireless terminated traffic, the most efficient, and therefore TELRIC, technology is the same.

commission issued its oral decision during its regularly scheduled meeting. The written decision is not yet available, but will be provided when it is.

On the asymmetric compensation issue, the Colorado commission concluded that Union had failed to meet its burden to demonstrate that the components of its wireless network were cost-sensitive to increasing call traffic. Therefore, the commission rejected Union's cost study and ruled in Qwest's favor on this issue.

Q. UNION HAS REVISED ITS COST STUDY SEVERAL TIMES IN THIS DOCKET. HAVE THESE REVISIONS CORRECTED THE PROBLEM WITH UNION'S COST STUDY PRESENTED IN COLORADO?

A. No. Although Union has refined and corrected some aspects of its cost study in this docket, the cost study still rests on the fundamental premise that 100 percent of Union's wireless network is traffic sensitive. Union has not modified that essential assumption or incorporated any quantitative evidence supporting a finding that 100 percent of its network is traffic sensitive. Furthermore, as I have pointed out, even if it is assumed that Union has provided evidence that some components of its wireless network are traffic sensitive, appropriate determination of the TELRIC-based costs associated with those assumed traffic sensitive components demonstrates that Union is adequately compensated by the current reciprocal compensation rates approved for Qwest.

VII. CONCLUSION

Q. HAS MR. JACOBSEN'S TESTIMONY OR ANY DATA RESPONSE RECENTLY PROVIDED BY UNION PROVIDED PROOF THAT 100 PERCENT OF THE COSTS OF ITS WIRELESS NETWORK ARE TRAFFIC SENSITIVE?

A. No. Neither Mr. Jacobsen's testimony nor the data responses provide the support for Union's position that 100 percent of its wireless network costs are traffic sensitive. My testimony demonstrates that the data responses often provide information that directly conflicts with Mr. Jacobsen's testimony and that Mr. Jacobsen misstated other issues in support of Union's case.

Q. WHAT DO YOU CONCLUDE?

A. Union has provided inadequate documentation of switch, cell site and transport costs and has violated TELRIC costing principles in its cost study.

Q. WHAT IF, FOR THE SAKE OF ARGUMENT, YOU ASSUME THAT SOME ELEMENTS OF UNION'S WIRELESS NETWORK ARE TRAFFIC SENSITIVE?

A. Even if one assumes that Union has demonstrated that some of its costs are traffic sensitive, as I have done in Confidential Qwest Exhibit 3PSR.3, the Commission

should deny Union's request for an asymmetrical rate because Union is adequately compensated by the current reciprocal compensation rate.

Q. WHAT DO YOU RECOMMEND?

A. The Commission should reject Union's cost study and deny Union's claim for an asymmetrical compensation rate. This is consistent with the conclusion already reached by the Colorado commission.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.