

BEFORE THE PUBLIC SERVICE COMMISSION OF WYOMING

IN THE MATTER OF THE FILING BY U S WEST
COMMUNICATIONS, INC., FOR AUTHORITY TO FILE
ITS TSLRIC 2000 ANNUAL INPUT FILING

)
) DOCKET NO. 70000-TR-00-556

IN THE MATTER OF THE APPLICATION OF U S WEST
COMMUNICATIONS, INC., FOR AUTHORITY TO FILE
ITS 2000 ANNUAL TSLRIC STUDY FILING

) (RECORD NO. 5616)
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) DOCKET NO. 70000-TR-00-570
) (RECORD NO. 5705)
)

APPEARANCES

For the Applicant, Qwest Corporation, formerly U S WEST Communications, Inc.:

PAUL HICKEY and ROGER FRANSEN, of Hickey, Mackey, Evans & Walker

For the Intervenors, Bruce Burns and Peggy Rounds:

AL MINIER, of Rothgerber, Johnson & Lyons, L.L.P.

For the Intervenor, McLeodUSA:

ELIZABETH ZERGA, of Herschler, Freudenthal, Salzburg, Bonds & Zerga

HEARD BEFORE

Chairman Steve Ellenbecker

Deputy Chair Steve Furtney

Commissioner Kristin H. Lee

Chairman Ellenbecker presiding

MEMORANDUM OPINION, FINDINGS OF FACT, CONCLUSIONS OF LAW

AND ORDER

(Issued December 29, 2000)

This matter is before the Wyoming Public Service Commission (Commission) upon the filing of Qwest Corporation,

formerly U S WEST Communications, Inc. (Qwest), of the inputs to its 2000 annual cost study for total service long-run incremental cost (TSLRIC), and its application for approval of its 2000 TSLRIC cost study.

The Commission, having heard the testimony in this case, reviewed the record thereof and its files concerning Qwest, applicable Wyoming law, and being otherwise fully advised in the premises, **HEREBY FINDS AND CONCLUDES:**

1. On March 31, 2000, Qwest filed with the Commission, pursuant to the provisions of Section 518 of the Commission's Rules, the proposed inputs to its annual TSLRIC study for 2000. The filing included a petition for confidential treatment of the inputs.
2. On May 1, 2000, Qwest filed with the Commission, pursuant to the provisions of W.S. 37-15-402(a), an application for approval of its 2000 TSLRIC study. The filing also contained a petition for confidential treatment of the study.
3. On July 11, 2000, Bruce Burns, of Sheridan, Wyoming, petitioned to intervene in Docket No. 70000-TR-00-570.
4. On July 18, 2000, Mr. Burns petitioned to intervene in Docket No. 70000-TR-00-556.
5. On July 21, 2000, pursuant to its open meeting action taken July 18, 2000, the Commission issued an Order authorizing the intervention of Mr. Burns in Docket No. 70000-TR-00-570.
6. On July 31, 2000, pursuant to its open meeting action taken July 27, 2000, the Commission issued an Order authorizing the intervention of Mr. Burns in Docket No. 70000-TR-00-556.
7. On July 31, 2000, the Commission also issued a Notice of Filing with respect to both filings, establishing an intervention and protest deadline of August 31, 2000.
8. Notice of the filings was published in the *Casper Star-Tribune* and the *Wyoming Tribune Eagle*; and was broadcast on KUWR-FM radio in Laramie, Wyoming.
9. On August 3, 2000, the Commission issued an Order Setting Public Hearing and Establishing Procedure, which set the matter for hearing to commence at 9:00 a.m. on Tuesday, October 31, 2000, at the Commission's hearing room at 2515 Warren Avenue, Suite 300, in Cheyenne, Wyoming, and continuing thereafter as required through November 3, 2000. The Order established the following procedural deadlines and requirements:

Prehearing conference:	September 5, 2000, at 3:00
Deadline for applicant to file prepared testimony and exhibits:	September 29, 2000
Deadline for intervening parties to file prepared testimony and exhibits:	October 20, 2000
Deadline for all parties to file proposed order of witnesses:	October 25, 2000
Public hearing:	October 31-November 3, 2000

The Order also stated that the applicant would be allowed to present such rebuttal as it deemed necessary, at the public hearing, but would not be required to file prepared rebuttal testimony in advance of the hearing.

10. On August 16, 2000, the Commission issued an Order Modifying Procedural Schedule, which rescheduled the prehearing conference commencing at 3:00 p.m. on Thursday, September 7, 2000.
11. On August 30, 2000, Qwest filed a Motion for Approval of Confidentiality Agreement and for Protective Order

with regard to both filings.

12. On August 31, 2000, the Commission received petitions for intervention from Peggy Rounds of Evanston, and McLeodUSA.

13. On September 7, 2000, pursuant to open meeting action taken September 1, 2000, the Commission issued Orders authorizing the interventions of Ms. Rounds and McLeodUSA. The Commission also issued an Order Granting Motion for Approval of Confidentiality Agreement and for Protective Order, including a form of confidentiality agreement approved by the Commission for use by the parties in these matters.

14. On September 7, 2000, the Commission also conducted the scheduled prehearing conference. None of the parties presented matters requiring formal Commission action.

15. On September 20, 2000, the Commission issued an Order Consolidating Proceedings, officially consolidating the matters for purposes of the public hearing.

16. Pursuant to public notice and in accordance with the Wyoming Administrative Procedure Act and the Commission's Rules, the Commission held the public hearing in this matter on October 31, 2000. The parties appeared and were given the opportunity to participate fully in the hearing. Qwest presented the direct testimony of Teresa K. Million and the rebuttal testimony of Dick Buckley. Intervenors Rounds and Burns presented the direct testimony of Don J. Wood. Intervenor McLeod presented no witnesses, but conducted cross-examination and exercised its right to file a post-hearing brief. No other interested person requested the opportunity to give a statement.

17. At the conclusion of the public hearing, the Commission closed the record and directed its Staff Attorney to arrange a briefing schedule when the transcripts had been completed. By letter dated November 20, 2000, Staff Attorney Young directed that post-hearing briefs be filed on or before December 11, 2000.

18. On December 11, 2000, McLeodUSA and Qwest Corporation filed post-hearing briefs. On December 12, 2000, Qwest filed a proposed Memorandum Opinion, Findings and Order.

19. On December 14, 2000, the Commission conducted public deliberations pursuant to notice given by the Commission's regular open meeting agenda.

The Facts of the Case

20. Teresa K. Million testified for Qwest as a Director of Service Costs in the Policy and Law area of Qwest. She sponsored prefiled testimony and exhibits (Qwest Exhibit 1) and sponsored additional hearing exhibits (Qwest Exhibits 2, 3 and 4). She summarized her testimony generally as follows:

Thank you. Good morning. I'm here today to describe Qwest's Total Service Long Run Incremental or TSLRIC studies for essential and noncompetitive services that were filed on May 1st of this year.

It is important for the Commission to keep in mind that this filing of Qwest's TSLRIC studies represents to us a compliance filing only and not a request to adjust any of the service prices associated with these studies.

Since this filing merely builds on Qwest's previous filings, I will be brief in explaining the updates to the inputs as well as the revisions to the cost studies and cost models that have been implemented in the interim since the Commission last approved Qwest's TSLRIC studies in February of 1999.

I will do so by discussing the inputs, cost studies and cost models separately and will demonstrate that none of the changes taken individually or cumulatively will cause the Commission to revise its prior conclusion that Qwest's studies comply with Wyoming law.

As the Commission noted in its final order in the prior docket, the development of cost studies is a dynamic process which must continuously be refined and reviewed. So while Qwest continues to update and refine its cost studies and

models, I am certain that after reviewing Qwest's current submission, the Commission will conclude, as I have, that in spite of changes that have occurred, Qwest's studies remain in compliance with the Wyoming statutes and the Commission's TSLRIC rules.

As you may recall, during the previous docket, the Commission conducted a rather thorough and comprehensive of Qwest's cost studies and the models that produced the investment that feed into those studies. Qwest provided an overview of its TSLRIC studies and cost models and described in detail how its submission complied with each of the Wyoming TSLRIC rules.

* * *

. . . The result of that detailed review was that the Commission required Qwest to change only two of its inputs to the cost studies. The first change requires Qwest to use a 9.188 percent cost of money in its studies.

Second, the Commission required Qwest to use a 65 percent fill factor input for the feeder network in modeling its loop costs. The Commission then concluded that subject to those revisions, the substantial evidence of record supported adoption of Qwest's cost studies as being consistent with Wyoming law and the Commission's rules.

Qwest has implemented these revised inputs in its current TSLRIC studies and, except for the updates and revisions that I'll discuss later, these studies follow the same principles and methodologies presented in the prior docket.

Thus, as before, the Commission should conclude that the currently submitted TSLRIC studies are consistent with Wyoming law and the Commission's rules.

* * *

Okay. Let's talk about inputs and the updates that have taken place. I think the inputs can be broken down into four groups. The first group includes inputs to the LoopMod. That includes things like the fill factors, which I have already said comply with the Commission's required 65 percent; drop lengths; network component prices; and the kilofoot or KILO matrices.

These inputs have been updated to reflect current information, so for example, Qwest is using current contract prices for network components and placement costs. Access line counts have also been updated, and the latest census data has been used to update the KILO matrices, and what the KILO matrices does is it assigns probabilities of occurrence for each of LoopMod's five density groups at particular given distances from the central office.

On the other hand -- and those are some of the inputs that have changed with this latest filing. On the other hand, drop lengths have remained constant and the percentage relationship, such as placement percentages for feeder and distribution and sharing percentages, have all stayed the same.

Now, the second set of inputs is to the Switching Model. The Switching Model is made up of separate modules that feed one into another, and those are explained in more detail in my testimony. Inputs to the Switching Model include central office information, such as number of working lines and trunks, switch types. Other inputs include average CCS or hundred call seconds per working trunk, engineering periods, and investments. The inputs to the Switching Model have been updated to reflect current office data for each individual switch as well as updated CCS information and investments again based on current contract information.

The third group of inputs are the inputs to the Transport Model, such as various equipment, investments and transport configurations and sizes. The transport configurations have been updated to reflect Qwest's more cost forward-looking engineering practices.

The final group of inputs are the inputs to the Capital Cost Factors Module or Capcost, and those include cost of money and depreciation lives as well as investment in expense data. And the changes to those inputs are pretty minor. The depreciation lives that are used in this proceeding are consistent with those that were previously ordered by the Commission in June of 1998. Those were ordered in Docket Number 70000-TA-97-370. And as I've already

mentioned, Qwest's cost of money complies with the Commission's requirements as well, the 9.188 percent.

Investments and expenses have been updated to reflect 1998 data projected to 2000. Previously in the 1999 or 1998 filing, those would have been '96 expenses and investments projected to 1998.

All of these updates to the inputs, of course, serve to keep Qwest's cost studies and cost models forward looking as required by the Wyoming TSLRIC rules.

By the way, a close inspection of the inputs that were filed in March of this year would reveal that while some of the costs, and those are the ones that are based on updated contract prices, while some of those costs have increased slightly, others have decreased slightly. All in all, they are very similar to the costs that you would have seen in the previous filing.

Now, if I may move on to the TSLRIC studies themselves, I'm again certain that the Commission will agree that the changes that have been made to those studies will not alter the conclusions that they, too, are consistent with its requirements in Wyoming. This is because, in spite of the changes, the current studies follow the same TSLRIC principles and overall methodological approach as the TSLRIC studies previously filed in Wyoming.

Now, for example, one of the changes that we did make to the TSLRIC studies is in the way costs are categorized or grouped. This new categorization of costs does not, however, affect the way that those costs are calculated. Previously the studies displayed costs as TSLRIC and shared, with fully allocated being the total of TSLRIC plus shared plus common costs. The current studies display the costs as total direct, network support, directly attributable and common, which again, when added together, equal fully allocated.

As you can see, in the end you get to the same result. The only difference is that the costs have been realigned and refined slightly to provide a clearer and more useful breakout of the data. The Commission can still conduct a meaningful cross-subsidy test as required by the TSLRIC rules using total direct plus network support for the price-cost comparison, and of course, we filed the price-cost comparison in April with our TSLRIC filing.

* * *

I guess the last area I'd like to address is the cost models and modules themselves. Each has been revised and updated, if only slightly, since the previous TSLRIC filing. For instance, the Capcost factors module has been changed so that the new module can be reconciled directly to Qwest's filed financial results. And any adjustments can easily be tracked.

You may remember under the old method what the Capcost factors module did was simply pull results from the daily transaction files those items that we wanted to include in the factors module, but it didn't give you a track to go back and see what we had excluded, in other words, what was not included. What this filing does is allow you to again understand it and audit it more easily because you start with the filed results, you see what things we take out when we develop the factors, and then you see the final result of the factors themselves.

This one more time hasn't changed the results of what you get for the factors module. It simply improves the way that they are displayed so that the calculations and data sources are more clear.

In the case of the LoopMod -- and I'm going to step down through each of the models here, too -- one of the big changes, the name has changed. Previously we called it RLCAP. We changed it to LoopMod because we were trying to, in developing our retail cost model and our ICM or integrated cost model for TELRIC, we were trying to have modules that just made sense. And it was easy to have LoopMod and Switching Module and Transport Module. So the name has been changed.

The LoopMod still combines loop length assumptions, loop characteristics and line counts with the probabilities of the five density groups occurring for very small, small, medium and large wire centers to produce loop investment. One difference between LoopMod and RLCAP is that the cable length assumptions for Density Group 4 have been adjusted to better reflect average density information, and when I was talking about inputs, that's based on some updated census information that we have. So we were using the census information to try to better reflect things like cable length

assumptions and densities in our model.

And while this change was adopted to provide a more accurate reflection of density information, the resulting change in the loop investment is really not significant.

The Transport Model also has a new name. Before in the previous filing it was called SONET 7. Again, this does not reflect a change in the way the model calculates investment. Now, this model does contain a new mix of transport configurations, and the new mix of configurations is designed to reflect Qwest's most current thinking regarding the way transport is most efficiently accomplished, but these are exactly the types of revisions you'd expect to see in forward-looking cost models.

As for the Switching Model, the newer version has been changed slightly, and the model now reflects growth analysis over a five-year instead of a ten-year growth cycle. As discussed previously, a number of inputs to the Switching Model have also been updated, including the switch prices. There are some things like call setup completion ratios and digital line percentages that have also been changed.

So what should be concluded from all of the information that I've provided to you today and the information that was provided in my filed testimony? I guess if I were in your shoes, I might be thinking that I've mentioned an awful lot of differences from the previous filing for you to just be comfortable in signing off on approving our newly filed studies. But if we could put those changes into perspective, you will probably understand what a minor impact they really had overall to the underlying service costs.

Remember, the updates to the inputs include current line counts, current contract prices, some that increased, some that decreased, current switching data for central offices. Changes to the studies and the Capcost module are mostly cosmetic in nature. We've realigned the way that we display things, but we haven't really changed the underlying methodology that calculates the cost. And finally, the changes to the cost models and modules themselves are fairly minor.

So, when you take all of those changes together, what stands out is how little impact they really have had on the study results. And I think that's probably best illustrated if we can compare the new costs for 1FR and 1FB, for example, to our previously approved costs.

* * *

Now, this is where the objection to Exhibit 4 comes in, because what I really had hoped to do at this point was to walk you down through 1FR and 1FB costs and show you that the changes in the outputs from the models in the studies is very minor in comparison to what you saw and previously approved in 1998.

* * *

. . . the first page 2 [of Exhibit 4] that you have is the 1999 filing, which gives you the price-cost comparison based on what we previously called TSLRIC. Since these are confidential numbers, I'm not going to mention any of the numbers. I'm just going to talk about what the differences are between what you are seeing now and what you would have seen under the old exhibit.

The second page that you have there are the price-cost comparisons that we made this year in April of 2000, using the revised inputs, the updated cost studies and the updated cost models. And if you look down at the bottom of the page to Business Flat, One Party, Additional Line, the first representation there is of inside the base rate area 1FB.

And on that second page, if you'll look in the far right-hand column, the number that is represented by Total Direct Plus Network Support, which under the old filing would have been the equivalent of TSLRIC plus shared, and you turn back to the first page 2 and find that same line, now what you see there is just the TSLRIC input from 1999, but I can tell you that when you add the shared onto that number that represents the recurring number for 1FB, there's only a penny difference in the old TSLRIC plus shared and the new Total Direct Plus Network Support.

* * *

On the first page, and I'm referring to -- there's not a line number on the second page, but it would be the equivalent number on the second page.

It's the second number under Business Flat, One Party, inside the base rate area or the second line under that heading.

So when you look at total of TSLRIC plus shared and Total Direct Plus Network Support, like I said, those two, and you can -- if you go back to the previous filing, you will certainly be able to see what that shared amount was, and the addition of those two you end up with a penny difference. It's a penny more this year than this was last year.

The direct costs have changed a little bit more than that, as you can see by making the comparison. . . [numbers omitted]

The same thing is true when you look down in Zone 1. What you end up with in the current study is actually a bit lower than what we would have had previously. . . [numbers omitted] But I think if you make that kind of comparison, and again, assuming that you approved the prior studies and you were at least somewhat comfortable with the results that they were producing, that sort of comparison ought to help bring you a level of comfort in terms of what's being provided in our current filing and how much what I've talked about really impacts the numbers here and the outputs.

* * *

In conclusion, I would urge the Commission to accept and adopt Qwest's current TSLRIC studies. None of the inputs or -- input updates or changes made to the cost studies or cost models produce a substantial difference in results from the input studies and models previously filed and approved by this Commission. Qwest is not seeking to change any of its service prices as a result of the minor changes to its TSLRIC results. Conducting a price-cost comparison using the currently filed TSLRIC studies, in other words, Total Direct Plus Network Support, continues to provide the Commission with an appropriate test for cross-subsidies under the TSLRIC rules.

Therefore, I would urge the Commission to approve Qwest's currently filed TSLRIC studies. Thank you. (Transcript, pp. 20-40; questions omitted.)

21. On cross-examination by Mr. Minier, Ms. Million, first noting that Dick Buckley would be the better witness to describe the actual workings of the cost models, gave her understanding of the errors that Mr. Wood made when running the LoopMod cost model, which might have led to his opinion that Qwest had not chosen the least-cost investment options. She described her review of testimony by Qwest witnesses in prior Commission TSLRIC proceedings. She offered to explain inputs to LoopMod and how LoopMod is effectively the same as the model known as RLCAP. She described what a kilo-matrix is, and how it assigns the probability of population density groups to wire centers within the loop model. She further explained how the kilo-matrices are related to, but do not equate directly with the price zones in Qwest's Wyoming rate structure. She noted that she had not personally researched whether the kilo-matrices in the model are validated by the actual layout of population density in large wire centers like Casper and Cheyenne, Wyoming. (Transcript, pp. 41-57 .)

22. On cross-examination by Ms. Zerga, Ms. Million noted that the cost models are capable of producing TSLRIC calculations for competitive as well as noncompetitive services; that Qwest derives revenue in Wyoming from both competitive and noncompetitive services; and that Qwest is not asking in these dockets that the Commission accept its cost study inputs for purposes relating to unbundled network elements (UNEs). (Transcript, pp. 57-58.)

23. In response to questions from Bryce Freeman, Commission advisory staff assigned to the case, Ms. Million testified concerning policy issues. She stated she absolutely believes that there are differences in costs based on density and geographic differences, and that was part of why the FCC is requiring Qwest to deaverage wholesale loop costs state-by-state. She stated that, assuming that TSLRIC and TELRIC costs are not identical but they are very similar and are based on similar investments, then it only makes sense that your retail costs should follow suit. Otherwise, there is a risk that retail cost is essentially a subsidized cost. She gave her understanding concerning whether the Commission rules required deaveraging of costs. She stated that she thought exchange size is one way of approaching cost differentiation, and is a way that Qwest has presented costs in other jurisdictions in some of the wholesale cost dockets.

She noted that there are a number of different ways in which to differentiate costs. She testified that she thought that Wyoming had chosen a method that appropriately balanced public policy issues and did not create a serious burden for customers.

24. In response to questions by Deputy Chair Steve Furtney, Ms. Million testified that she believed the Commission could be assured that there are no cross-subsidies between noncompetitive and competitive services without a TSLRIC filing on the competitive services provided by Qwest because the price-cost comparison that Qwest provided shows that the retail price for the services in the noncompetitive group of services exceeds the costs associated with the total direct and network support. However, she added that there is no assurance that noncompetitive services could not be used to subsidize competitive services.

25. In response to questions by Commissioner Kristin Lee, Ms. Million clarified that the reason Qwest has not included competitive services in its 2000 TSLRIC study filing was the Commission's decision that Silver Star Communications' competitive services were not subject to the requirements of W.S. 37-15-402(a). When asked how she reconciled the Silver Star decision with language in Section 518 of the Commission's Rules, she stated:

Well, I guess the simple answer is clearly we believed that the decisions distinguishing competitive and noncompetitive services in Silver Star controlled, and that was why we believed then that the requirement under 518 would not require us to file competitive services. (Transcript, p. 74.)

26. In response to questions by Chairman Steve Ellenbecker, Ms. Million further explained the changes in the cost models from the 1999 filing, including the changes in the way that cost categories are determined. She stated:

And what we had done internally was break those costs out into four rather than three categories, primarily because it gave us a better view of which costs were most directly assigned with a particular function or the loop, for example, and we wanted to be sure that we had those defined most appropriately, and then network support gave us a category that made sense to us in terms of dealing with the costs and are directly attributable. (Transcript, p. 78.)

27. Don J. Wood testified as an expert witness on behalf of Intervenors Bruce Burns and Peggy Rounds. He sponsored prefiled testimony and exhibits (Burns Exhibit 1) and one surrebuttal exhibit (Burns Exhibit 2). He summarized his testimony generally as follows:

. . . Good morning. I've been asked by Mr. Bruce Burns and Miss Peggy Rounds to review Qwest's cost study for local exchange service. I want to give you a disclaimer up front in terms of the task that I have performed and what I'm reporting on in my testimony. We got the paper version of the local exchange study, and that's what's represented in these two binders in front of me, about a month before the testimony was due. We got the loop and switching models themselves only a few days before the testimony was due.

Now, because of the constraints in terms of the amount of information that I was presented and the time available, what I'm reporting to you on are the investments associated with the local loop, specifically as calculated by what Qwest now refers to as the LoopMod model.

I'm not offering you an opinion on the switching and transport components of local exchange service, because they were outside the scope of what I was able to examine. And I'm not giving you an opinion on the conversion of the investments into the monthly costs because Qwest did not provide me with the electronic model that would allow me to convert investment into cost. That's a process that can be followed in their paper filing, but I did not have the electronic equivalent of that process.

So what I have reported to you in the exhibits to my testimony are specifically investments associated with the local loop. Now, I think those are important because the local loop investments and ultimately costs are the largest components of local exchange service, and that's true in the base rate area and it becomes more true as you move out through the density zones, and obviously in the least dense areas, the local loop is the largest component of the costs by far of local exchange service.

So given the constraints before me, that's what I focused on, and ultimately I think that's the most important.

* * *

Now, I've spent some time with Qwest's LoopMod, with the program, and I can tell you that certainly since five years ago, and even since the 1999 proceeding with RLCAP, progress has definitely been made. You are no longer looking at the Loop Cost Model that represents a completely hermetically sealed black box, which is what we started with a few years ago.

* * *

I'm not here to hold up the process in any way. And I'm not suggesting to you that you ought to hold up this particular filing and process simply because half of this box remains nailed shut. But I want you to be aware that that's the case. I think you're entitled to the information that's in the other half of the box pursuant to Rules 518 and 540, and I certainly think you ought to make it clear in whatever order you issue that the company owes you that information in any subsequent filing.

But what I'm focusing on here is the size that we can look at, and for the purposes of this analysis, I'm accepting the part of the model that I can't see as correct. In other words, I'm assuming that their model works just fine for all the portions that can't be reviewed. And I'm only looking at the portions that can be reviewed.

And what I've attached -- the new capability that I want to talk about first, what I've attached to my testimony as Exhibit DJW-2 is what I call a screen print. It's a printout of a couple of screens that you get when you go into the loop module, and it's the pages that look like this. And what you'll see is this is the user interface, something that you did not have with the predecessor to this model with RLCAP. And it allows the user, whether it be a cost analyst for Qwest, whether it be Commission Staff, whether it be someone like myself who is merely interested in the cost that the model produces, to go in and on each of these lines where you see a little upside-down triangle, it's a pull-down menu, and you can click on those, pull down and make different choices about assumptions in the model.

And the ones particularly related to the loop you will see about the fourth line down you'll see the word "feeder model," and what I show on the next page is that if you click on that, you get a pull-down menu that lets you change the crossover points for what we call a digital loop carrier or a pair gain device for the feeder portion of the loop, and it also lets you assume a hundred percent copper, which is no pair gain or digital loop carrier at all, a hundred percent fiber, a high-bit-rate 100 percent fiber or a hundred percent copper digital loop carrier. I didn't utilize the ISDN option because that wouldn't relate to local exchange service.

And you'll also see for future reference -- for reference that will be relevant, I guess, to a future discussion, that the very bottom line down here is a line called pair gain. That's the kind of equipment that we're talking about for the feeder that's the loop carrier equipment, and you'll see the first choice here is the words "include equipment." There are also options which you don't see if you use that pull-down menu to exclude that particular piece of equipment.

And in fact, that's what we did in our analysis, and if you look over to DJW-3, you'll see what we did. And here's -- let me tell you quickly why I think this is important. Rules 524 and 525 I think are very clear that Qwest must use the most efficient means of supplying the necessary capacity. And they must include the technology or mix of technologies that represent the most economically efficient choice.

And what having this interface and this capability, which is new, gives you is you being a cost analyst that works for Qwest, for the Commission Staff or anyone else, it gives you the ability to run different scenarios, to look at the investment that's generated based on these different assumptions and choose the one that is, in fact, the most efficient means of supplying the necessary capacity and pick the technology or mix of technologies that's the most economically efficient choice. It's a very clear capability and it's a very important capability to be able to do that.

If you look at DJW-3, I'll describe what we've presented, and I think the way the exhibit -- if you look in the upper right-hand corner, it would say base rate area and I think Zones 1, 2 and 3 and I think we actually put Zones 1, 2 and 3 and base rate area last, but I want to turn over and talk about base rate area first, if we can.

Down the left-hand column, you will see Model Variables, Model Run Results and Cost Calculations. And Cost Calculations is a bit of a misnomer here. These are actually investment calculations, and under that you will see

different categories of investments that not surprisingly match up to USOA accounts of different types. And just to jump ahead to the future discussion that I guess we'll have, if you look about two thirds of the way down, you will see a type of investment called pair gain, and in fact, that's the loop carrier investment that we're talking about.

Now, the next column over is entitled "Qwest reported results." And those are the results that we created by running the model exactly as they presented to us by changing nothing, and then we were able -- you will see "Total Average Investment" down at the bottom, and I won't read the number because it's proprietary, but we were able to match up when we reran what we thought was their assumption, we were able to match the investment numbers up with what was provided in the written documentation.

So what you see with, I guess, the bold black rectangle around it is the Qwest's assumption they used in their model.

Now, what I expected to see when I ran other possible scenarios for providing this capability is that everything else would be more expensive or require greater investment because, after all, the requirement is that they use the least costly method of doing it.

What you see, though, in the rectangles with the fine lines are scenarios that turned out actually to be less expensive, require less investment for the total local loop than the investment assumed by Qwest in the cost study.

And the good thing about this page is that you can see the different categories of investment, the poles, the aerial cable, the conduit, underground and buried cable, pair gain equipment, all of those things. So you can see on the various choices which go up and which go down. For example, if you look at the Qwest reported results, that assumes a mixture of some loop carrier on some loops and just a pure copper loop on others. And you see a pair gain investment number that again I won't read out loud, but if you look straight over from pair gain, it's the one in the dark box.

Now, when you look over to the 100 percent copper column, you don't see a number there, and that's because a hundred percent copper means no loop carrier, so that's exactly what you would expect.

Now, when you look over at the three right-hand columns, the 100 percent fiber DLC, the high-bit-rate fiber DLC and the 100 percent copper DLC, you do see DLC equipment numbers there, and in fact, you see higher numbers than Qwest's original assumption. And that's because in these scenarios, by taking on the higher investment of the digital loop carrier, you avoid enough investment associated with cabling and other requirements that the trade-off becomes a lower total investment.

And that really is the benefit of having this type of analysis capability built into a cost model. It lets you evaluate those trade-offs. When you look at the 9-, 12-, 15- and 18-kilofoot crossover assumptions, that's another trade-off associated with fixed versus variable investment, just as with digital loop carrier.

So what I see here is a result that's surprising because it clearly does not appear to be consistent with the requirements of 524 and 525, but when I look within each assumption, you know, 100 percent digital loop carrier versus a mixture versus none, the amount of investment, the relative amount of investment for pair gain equipment versus for cabling is, in fact, what you would expect it to be. I mean, it makes sense. This thing -- internally each scenario looks right in terms of the mix of the different types of investment that are associated with each scenario.

Now, what we found in the base rate area is that there are some options that are purely produced by the Qwest model, and I'm taking again for the purpose of this analysis that the Qwest model is correct. There are four options that are lower cost, one of which is fairly significantly lower cost or lower investment than the one that they actually used.

And as you look through DJW-3, you find that this effect actually increases as you move through the density zones. The ability in Zone 1 for Qwest to have availed itself of a lower investment option, there's slightly greater cost savings than in the base rate, an even greater savings associated in Zone 2, and in Zone 3, where the benefits of fiber feeder really kick in, you see the most pronounced difference in the amount of investment required for the Qwest assumption versus an alternative produced by their model that I've not altered in any way that represents a lower investment assumption.

And what you will see here for each assumption is all of the types of investment, the cable, the pair gain devices, the

poles, the conduit, all of those, and the relative mix that you'd expect to see in these different scenarios.

Exhibit DJW-4, just so that there's no question about the results that I presented in DJW-3, DJW-4 represents work papers that are generated by the LoopMod itself without alteration -- alteration or alteration by myself where you can track the investments that I've reported, the type of investment for each assumption, and you can map all of these back to the numbers as I presented them in DJW-3. Exhibit 3 is merely a summarization and representation of Exhibit 4, but I didn't want there to be any question about the basis for Exhibit 3, so that's why I included these work papers on Exhibit 4.

One benefit to these is that you see on the left-hand column the USOA accounts listed associated with each type of investment, which makes it more clear what these descriptions and types of investment actually are.

Where we get at the end of this process is a position that really I think Ms. Million characterized my conclusion actually fairly accurately. We ran the model, we didn't make any, you know, sneaky changes. We didn't do any behind-the-scenes changes. We ran it straight up. For each result we ran a mix of investments we expected to get, but when we added them up, we found total investment options that are lower than the ones Qwest used in the study.

I think if you're going to have a TSLRIC study consistent with Rules 524 and 525, you need to use these more efficient investments. If the alternative conclusion is somehow there's something else going on in the model that's making these alternative results not valid, and if that's true, then that really calls into question the validity of the one scenario that they did use. I'm not calling into question the validity of any of these scenarios. What I'm calling into question is the use or lack of use by the Qwest cost analyst of this capability when choosing a technology or mix of technologies in order to assume the cost study consistent with 524 and 525. And that concludes my summary. (Transcript, pp. 89-101; questions omitted.)

28. Upon cross-examination by Mr. Hickey concerning what is meant by least cost and least cost-most efficient, Mr Wood stated that by definition the most efficient would be the least cost, and that is how to determine which investment scenario was most efficient; but he went on to add that lower investment did not always equate to lower cost. He further stated that he found the Qwest pair gain calculations to be reasonable. He clarified the time that he had had available to review the model and prepare his testimony. (Transcript, pp. 102-107.) He stated:

Time generally has not been a problem. The specific time between the time that we asked for the electronic version of the studies and the time that we were actually provided the models and their intervening period of time between those two dates has definitely been a problem.

* * *

...[I]t directly relates to the delay in my acquiring the models, which are the basis for the analysis. (Transcript, p. 107.)

However, Mr Wood went on to testify that he had not contacted anyone at Qwest for assistance with the model, nor had Qwest offered him any assistance. (Transcript, pp. 107-109.)

29. In response to questions from Ms. Shelley Macy, Commission advisory staff assigned to this case, Mr. Wood testified as to which investment scenarios would be most efficient in terms of lowest investment. He stated that for the base rate and Zone 1, 100 percent copper DLC would be the most efficient; high-bit-rate fiber DLC would be the most efficient for Zone 2 and Zone 3. He further testified that his opinion would be based upon forward-looking technology. (Transcript, pp. 110-111.) However, he noted as follows:

The only exception would be in a case where you had two investments that were very close and the type of equipment or the facility had very different maintenance costs, for example, so that when you got down to the annual and monthly cost level, the slightly higher investment might be the slightly lower cost or vice versa, which is why I answered Mr. Hickey before about whether I thought investment always meant lowest cost because in the cost there's not only the investment, but they apply their annual charge factor, and for the capital components it will be the same, but for the maintenance specific to that account it may be slightly different. (Transcript, p.111.)

30. In response to questions by Deputy Chair Furtney, Mr Wood testified that there is no way to determine that cross-subsidization is not happening between competitive and noncompetitive services if the Commission does not require filing of the TSLRIC for the competitive services. He further testified that controlling cross-subsidization was important to enabling competition. He stated that to determine whether effective competition exists, you must see some period of time in which a provider is in a dual wholesale and retail role, providing either all or some portion of the underlying facilities of its competitors; and you must look at the relationship between the wholesale and retail prices, and at those competitive prices of the incumbent to ensure against anticompetitive pricing, including cross-subsidy. (Transcript, pp. 114-115.) He added:

And to the extent the overstatement of cost increases as you move into those low-density areas, then you really have a case where the customers with the least opportunity for competitive choices are generating the money necessary for the incumbent to then engage into an anticompetitive act for customers who do have a competitive alternative. (Transcript, p.117.)

31. In response to questions by Chairman Ellenbecker, Mr. Wood testified that he could not offer an opinion on the validity of the cost model's mechanical operation, because there was still a significant portion of the model's underlying assumptions which were not open to review. He stated that the Commission should require that Qwest, in its next annual filing, provide more access to those underlying assumptions. (Transcript, pp. 118-122.) He testified that it is important that the Commission not relax the requirement of least cost-most efficient technology for local exchange service, otherwise, ". . . if you start taking that into account and it's less efficient, you're charging local exchange ratepayers for the cost that Qwest is incurring to offer some other competitive service, which is anticompetitive, anti-consumer and probably violates the cross-subsidy provision of the '95 Act." (Transcript, p. 124).

32. In response to questions by Mr. Freeman, Mr. Wood discussed the possibility that there might be investment scenarios which could potentially prove more economically efficient than any of the scenarios included in his exhibits. He stated that was a possibility, but noted that the list contained the types he expected to see, and was fairly complete given the currently available technology. He testified that a new entrant might not necessarily deploy the technology options listed in his attachment DJW-3, but might explore alternatives such as coax cable or wireless distribution. He described his familiarity with the Commission's TSLRIC Rules, including his involvement in drafting and review during the promulgation of those rules, as well as some of the underlying policy decisions the Commission made as part of the rule making process. He specifically discussed the impacts of assigning 100 percent of the local loop cost to local service. (Transcript, pp. 128-136.)

33. Dick Buckley testified on rebuttal based on his 20 years with Qwest in service cost calculations, particularly for the past 15 years working on model development for local loop costs. He sponsored rebuttal exhibits during the hearing (Qwest Exhibits 5, 6, 7 and 8). He testified generally as follows:

The purpose of my rebuttal testimony is to respond to the direct testimony of Mr. Wood. What I'm going to attempt to do is recreate and make some corrections to the Exhibit DJW-3 and provide a balance on the statement made earlier by Ms. Million that certain investments were left out of the model.

* * *

There are three points that I want to cover in my rebuttal testimony. First off, Mr. Wood stated that there are underlying levels of the model that are hidden from the user, and that the current model is better than the old model, but there's still some portions that are hidden.

He also said that he did not have time to convert or the data that was necessary to convert the investments to cost. In his analysis he left out certain investments, and in some earlier conversations here he pointed out that if you look at his exhibit, and we can go to his DJW-3, the Zone 1 of DJW-3, he stated that he felt that he made the selections within the model and received reasonable numbers, felt comfortable that he was getting at the investments he was trying to model, but that we had not -- Qwest had not selected the least-cost or least- investment option.

I guess my first concern when I looked at the exhibit was that if you go back to the line that Mr. Hickey asked Mr. Wood about, and that is on the Zone 1 page of DJW-3, the pair gain line, which is about two thirds of the way down the sheet, that in the Qwest 12- kilofoot option it produces [redacted] cents of digital carrier loop investment.

Excuse me. It produces a large dollar amount of digital loop carrier. Now, if I go across that and go to the options for a hundred percent fiber-based DLC and a hundred percent fiber high-bit DLC and a hundred percent copper-based DLC, what I see in each of those is it produces less investment. And as a cost analyst, I would look at that and say something is wrong. I'm missing something.

If I look at the hundred percent copper-based DLC, it jumps out even more in the fact that typical copper-based DLCs are smaller systems designed for lower density and on a per-working-line basis are usually less efficient, more costly. And in fact, what it shows is something that's a fourth of what the mix that Qwest advocates produces. So first off, I would look at that and say I must be doing something wrong.

Before we go any further, I'd like to get up and just draw a picture real quick so we are all on the same page with what we're talking about with the least-cost crossover if that's okay with the Commission.

* * *

Starting out at a CO, a main feeder route going out, at some point out here, and what we've chosen, based on input from our network personnel, is 12 kilofeet. At some point out there, placing more physical copper pairs becomes more costly than serving those end users using electronics.

Now, there's a couple different options that can exist out there. If we were to look at this as being a very small wire center and this being a large wire center, I'm going to serve these customers with physical copper pairs. And I think it's kind of an industry given that there's always going to be, unless you've got special situations, such as demand for high cap services or -- that's about the only thing I could see driving it, but if I'm looking at the provision of voice grade services, there's always going to be some portion of that feeder route close into the central office that would be less costly to provide on copper pairs than on digital loop carrier systems. For example, if I pay \$6 a foot for a piece of cable and I go a hundred feet and I provide 50 pairs on it, I'm going to spend \$600 to place that cable and then terminate it and provide 50 working lines.

If I said no, instead of doing that, I'm going to put a digital loop carrier system on, I'm talking about spending 25, \$30,000 for a carrier system that will provide 96 lines. So now I've got twice as many lines, but I'm spending 20 times as much money. So common sense says that's a place where I'll use physical copper pairs. Where is that point where I cross over?

Now, if I'm doing this in a very small wire center, someplace out here I've got demand and I can put a box that will provide 96 lines, and I'm going to use fewer copper pairs to get back to the central office. I still have to place cabling, but now, instead of using a larger cable to get to those customers, I can use 13 copper pairs and derive 96 channels.

* * *

That's pair gain digital loop carrier system, subscriber line carriers, it's multiplexing. The same sort of situation can happen here in a large wire center, and now I'm out at a distance like that, but I've got more demand.

So now I'm going to place a larger box and instead of using physical copper pairs to derive -- or to provide band width to that box, I'm going to use fiber, but I still, once again, I have to place fiber back to the office. Now I can derive 672, 1344 and provide, using the electronics and the fiber, the same thing that I would provide with coarse-gauge long copper loops, but it's cheaper to put in that electronics at some point as you move along that feeder route.

So I'm making a decision here, do I use copper or digital loop carrier systems? And then based on the size of the wire center, I make a decision do I use a large fiber-optic OC-3, which is 84 DS1s, or a very large band width system to provide service at a location or do I use a smaller digital loop carrier system because the demand is lower? And that's the situation where if I put this piece of equipment out here in a low-density route for a small wire center, I'm going to end up with what on the surface may look like a lower-cost option, but when I take into account the amount that it's utilized, and this Commission has ordered that Qwest assume 65 percent utilization, if I put this large piece of equipment out here and serve 40 customers, I'll have about a 9 percent utilization, not a 65.

So, from an engineering standpoint, I'm going to look for the most efficient technology to provide service based on the density and the point at which it becomes the least-cost solution. So that's really what we're talking about here with least-cost crossovers.

* * *

Mr. Wood made a selection based on the feeder facility for a hundred percent fiber-based DLC or a hundred percent copper-based DLC, and as the DLC in my Exhibit Qwest 5, if you go back a few work sheets, back a few screens in the model, and we can put this up on the projector and look at those screens live, there are some selections that must be made so that you can make sure that you include all of the equipment that's necessary.

If we go through Exhibit Qwest 5, the first screen is very similar to what you saw with DJW-2, I believe it is. DJW-2 has two screens, and the first two are the same sort of selections. And can I stop here and just make one comment?

* * *

As we go back through the screens, you'll see that you can make the selection just as was shown on DJW-2, page 2, of a hundred percent fiber-based DLC.

* * *

At this point I can see where he would make the mistake and hit the go button. The fact is if you hit the additional options button, you can come back and make selections on certain categories. Screen 3, variable categories sheet, that drops you down into network component prices, and if you look off on the right-hand column, the bottom two buttons, fiber-optic system percentages and pair gain system percentages.

You go to page 5, you can see that for the fiber-optic systems, the default values that Qwest places in the model, because of the fact that there is low demand in a very small and a small wire center and the use of a 672 line system remote terminal, which is the fiber-based DLC, the use of that type of equipment would not produce an efficient network for lower-density routes.

Kind of an analogy, if I were to hire someone to haul dirt for me, I could hire a guy with a pickup truck or hire a guy with a semi, and the guy with the semi would say on a per-pound basis I can haul dirt for a dime a pound. The guy with the pickup truck would say it's going to cost me a dollar a pound. I'm going to go with the guy with the semi. Unfortunately, I only need a pickup's worth of dirt and he's going to back off on that and tell me I'm changing my prices. You don't use a large system or a large truck to provide product or services in a low-demand area.

The converse is true, if I have a lot of demand out on the route, I would not use a system -- if we go to the next page, I would not use one of the 96-channel or 192-channel systems to provide service in a high-demand area because now I'm going to be placing these things side by side by side. That is a higher cost, less efficient way of providing service.

In the example of the pickup truck and the semi, if I need a semi's worth of dirt, that guy with the pickup is going to make a lot of trips and it's going to cost me more per pound to get that dirt delivered per cubic yard.

So, first off, the first thing I think we need to be aware of here is that in Mr. Wood's sensitivity runs, he provides information on a hundred percent fiber-based DLC and a hundred percent copper-based DLC that represent them as being lower cost alternatives than a mix inside 12-kilofoot physical copper, outside 12 kilofoot some sort of DLC system. That's incorrect. The information that was included in the run, and we can go through and make a test run that shows the default value, the assumption that was made with Mr. Wood and the assumption that I'll show on Exhibit 6 of my testimony, and you'll be able to see that by including those investments, you eliminate those options as being least-cost options.

What we really are getting down to -- we can go ahead and go through my exhibit, Qwest Exhibit 6. The same sort of examples that Mr. Wood provided, and what I've shown at the bottom is the investment produced, total average investment. This is the bottom of the left-hand side, total average investment, and then for those situations that used a

hundred percent fiber-optic, I adjusted the fill from the 65 percent ordered by the Commission to a fill that would be achieved if I'm using a 672-line system where I've got demand for 65 percent of a 96-line system or 65 percent of a 192-line system. So I adjusted the fill down to better reflect what would happen if you used the semi to deliver a pickup truck's worth of dirt.

And then below that I showed the values that come off of DJW-3 and what the difference is. The base rate area, there is a dramatic difference between the hundred percent fiber DLC, straight run through the program, even though I selected the right equipment, and reflection of the right fill. But regardless of that, it still is not the least-cost option for base rate in.

And before I leave that thought, let me go back to the board and show one other item because this is, I think, important to understand based on Mr. Wood's response to one of Mr. Hickey's questions.

If you are building a least-cost crossover, you build that for the network. You don't build it for a route. You don't build it for a -- excuse me. You don't build it for a zone. For this wire center, assuming you had perfect circles, if you have base rate area, Zone 1, Zone 2 and Zone 3, when I make the decision as to what kind of equipment to put in that route, I can't say, well, I'm going to use a certain type of equipment in the base rate area in and build my whole network, my whole route based on that decision and then get out to Zone 2 and say that's not the least cost for Zone 2, so now I'm going to build different for Zone 2.

It's one route, one facility that's going to go out there, either a fiber facility or a copper facility or, in the case of a network growing over time, multiple facilities going in the ground. But the network design is uniform. I use a certain gauge of cable. I put enough fibers in close in cable here so I can serve demand as I move out along that route.

So when the network personnel make a decision as to what their crossover point is, when we do an analysis for least-cost crossover point, we look at the statewide data. We don't look at Zone 1, Zone 2, Zone 3. You have to look at -- it's a complete network, not a network for Zone 1 and a network for Zone 2.

If you go through each of these pages in this exhibit, you can see that the numbers provided by Mr. Wood understated certain investments, and what happened was when he selected a hundred percent DLC and did not change the percentages of fiber-optic equipment for the very small and small, it was excluded.

The same sort of thing happened when he said a hundred percent copper-based DLC and did not change the investments for the medium and large to reflect copper-based systems. So he had copper facilities going out to a location and no electronics hanging on the end to make it work.

On the other side in the very small and small with the hundred percent fiber, he had fibers going out to a location and no electronics hanging on the end to make it work, which explains why the fiber-based -- excuse me, the copper-based DLC has very little extra investment for the copper DLC equipment when you compare it to the 12- kilofoot crossover.

Logically if I made that conversion to a hundred percent copper-based DLC when only a small percentage are using it today, that investment for equipment would sky-rocket. And you can see by looking at the last column that there is [redacted] -- excuse me. Back up. There is a large dollar amount that's added to it in each of the zones. So that additional investment for equipment for fiber-based DLC is not reflected in Mr. Wood's testimony.

Another point that I want to explore is the fact that even though you do have, and Mr. Wood agreed with me on this, even though you do have a lower investment in one situation, it might result in a higher cost.

In my Exhibit Qwest 7, I took data out of one of the cost studies that was filed, residence inside the base rate area, basic exchange. All I did at the time that I found out that I was going to be involved in this was find one of the filed studies, and this is a study that, to my understanding, was provided to Mr. Wood the third week in September. And I pulled the first four columns coming from the left to the right from that study. Rather than going out and gathering up all of the individual cost factors, I just kept the same ratio. So I have a TSLRIC dollar value and I have an investment dollar value. And if I am talking about a different level of investment for that same account code, the relationship should stay the same.

And then all I did was take the statewide investment numbers for a 12-kilofoot crossover and the statewide investment numbers for a 9-kilofoot crossover and developed a loop-only total investment 12 kilofoot slightly higher than 9 kilofoot and then a loop-only cost for 12 kilofoot and 9 kilofoot and the cost is slightly lower. In fact, what Qwest filed, based on the 12-kilofoot crossover, produces the least-cost, most efficient network.

* * *

If it's all right with all the parties, what I can now do is using the laptop run through the model itself. . . (Transcript, pp.138-158; questions omitted.)

34. Utilizing Ms. Million's laptop computer and a projector, Mr. Buckley demonstrated the LoopMod, further explaining where he believed Mr. Wood had not run the model properly. He demonstrated how he could reproduce the calculations contained in Mr. Wood's exhibits. He then showed the places where he believed that Mr. Wood had not set the model correctly; demonstrated the corrections he felt were necessary; and reproduced the calculations contained within his rebuttal exhibits. (Transcript, pp. 161-167.)

35. In response to cross-examination by Mr. Minier, Mr. Buckley further testified concerning why Qwest's choice of a 12-kilo-foot crossover was appropriate and the least cost/most efficient loop technology, based on engineering reality. (Transcript, pp. 171-181.)

36. In response to questions by Ms. Macy, Mr. Buckley further testified concerning the underlying basis for the 12,000 feet cross-over. He stated:

. . . What we have done in the past is gone through and run an individual loop kilofoot by kilofoot and then looked for the point where a crossover would be most efficient based on the options, depending on the cost for a 96 versus a 192 versus a 672-type remote electronics, that may vary a little bit. We're talking a couple kilofeet.

What we stepped back to was the fact that for the network organization, based on their recognition that at 12 kilofeet and beyond you make a gauge change, instead of using a certain type of copper, you're going to go to a more coarse-gauge copper, they recommended the 12 kilofoot. We've seen the same sort of recommendations in other models. There's arguing about whether it should be 9 or 10 or 11 or 12, but it falls in that range through most of the industry models.

What we went with is what our network personnel told us they were doing in the field.

* * *

According to the network configurations and architectures group, that's what they are recommending as the first option unless something else comes up that would cause an engineer to choose otherwise that they would use or investigate using digital loop carrier system for any feeder plant that terminates beyond 12 kilofeet.

I think it is a correctly modeled number. I don't know that anybody can tell you the right number, but based on a variety of data that's been gathered and a variety of knowledgeable people in the industry, the model puts together that data and that expertise and produces a reasonable estimate of the investments for local loop. (Transcript, pp. 181-182, 184; questions omitted.)

37. Mr. Wood testified in response to Mr. Buckley's rebuttal testimony. He stated that three main points caused the analysis that Mr. Buckley performed to be fundamentally at odds with TSLRIC the Commission's Rules: First, that Qwest took the 12-kilofoot assumption, the crossover point, from engineering not as something that they developed and tested; second, that Mr. Buckley was assuming the wrong network engineering; and finally, Mr. Buckley was confusing wire centers with zones. As part of his explanation of the three points, particularly the second point, Mr. Wood drew own version of Qwest Exhibit 8 (Burns Exhibit 2). He stated that the use of a 12 kilofoot crossover creates a self-fulfilling prophesy, and did not comply with Commission Rule 522 because it was based upon existing facilities. He stated that Mr. Buckley's fill factor adjustments consider the total quantity of the service, regardless of the number of zones through which a distribution feeder might pass. (Transcript, pp. 187-194.) He criticized Mr. Buckley's position that there was no hidden information in the model, stating, ". . . the fundamental underlying information, the loop

lengths associated with the zones, the sizing of his wire centers, the density information that Ms. Million talked about is not available in the set of spreadsheets that I was provided." (Transcript, p. 194.)

38. On cross-examination by Mr. Hickey, Mr. Wood stated that Mr. Buckley appeared to be reasonably proficient at running the LoopMod; but he added, "Of course, I've done what he did and my employees have done what he did, so I guess we can agree that we're all proficient if that's the hurdle." (Transcript, p. 197.) Mr. Wood testified that the implication that there were some functions within the model of which he was not aware was, ". . . absolutely 100 percent absolutely not true." Id. He added:

There's nothing that Mr. Buckley described today either in his paper exhibits or his model demonstration that I was unaware of at all. What Mr. Buckley showed us was that you can isolate costs by wire center. I made no attempt to do that in the presentation that I presented. (Transcript, pp. 197-198.)

Mr. Wood agreed that in order to determine efficiency, you have to have considered some real-world perspectives on how the operational aspects of the network exist, but added:

. . . but that's a very slippery slope because real world quickly becomes embedded constraints if you're not careful, and that's unfortunately what happened to the Qwest analysts and presumably Mr. Buckley when they took from engineering the 12-kilofoot crossover which the engineers developed based on reinforcing the embedded network rather than properly calculating what the TSLRIC crossover would have been. And then that thinking carried forward then unfortunately and Mr. Buckley's understanding on his diagram about how certain customers would be served caused him to make the mistake he did about fill factors. (Transcript, pp. 198-199.)

39. In response to questions from Ms. Macy, Mr. Wood said that his recommendations to the Commission remained the same in spite of Mr. Buckley's testimony. (Transcript, p. 199.)

40. Mr. Buckley testified in response to Mr. Wood's sur-rebuttal. He testified that there is not any embedded analysis by network personnel concerning the 12 kilofoot crossover, but rather, analysis on the placement of new plant; and that it is based on the idea of serving total demand. He further stated:

The economies that exist within that are that if I was to look at a feeder route in an existing small wire center, I may have eight or nine copper facilities that have gone out, grown over the years. That model, the LoopMod does not reflect that. It reflects using sufficiently sized facilities to serve total demand. There is nothing embedded about it.

The idea that network reached a 12-kilofoot conclusion for least-cost crossover based on reinforcement is ludicrous. If I have demand for an additional line and I don't have facilities there, there is a less costly, on a first-cost basis, a less costly solution.

I put a single-line pair gain system in. It's a small piece of electronics in the office, costs about 300 bucks, small piece of equipment out in the field, costs about \$300. \$600 I added a facility. We don't show that in our model, and the reason we don't show it is because if you size the facilities for total demand, an additional pair is much less than \$600. But if I'm looking at it from an embedded plant network, if I'm an engineer that says I need to get a pair out there to serve that customer, I can spend 600 bucks and get him a pair. I'm not going to go out and resize the whole cable.

So their embedded analysis does not come into play in these studies at all. It should be dismissed.

* * *

Also I think there's a point that Mr. Wood is confusing, and maybe it's because of his background with MCI and familiarity with other models. Density groups are not the same as density zones. Zones, base rate in and Zone 1, Zone 2, Zone 3, are not the same as density zones. Those are distance zones that are based on political decisions, density decisions and the network.

Just like he said, the network is built through all of those zones. Every wire center, and the model reflects the various economies of scale that each of the wire centers can achieve, wire center groups can achieve. Each of those wire centers

are going to have base rate areas, they are going to have zones. You may have Zone 1 and 2 and not a Zone 3, but you're going to have zones in base rate areas within each wire center. So there's not a mismatch between the fact that the underlying building block is a wire center and that those wire centers do have zones within them.

* * *

The last point that he brought up was the fact that certain data was not available to him. I think if you look at any of the models out there, they have input data, the length data, customer location data and HAI. All of that is an input data. The length data was available to Mr. Wood because otherwise he would not have been able to run the model. It is not in the model. It's a matrix of information that's pulled into the model as it processes. But those files exist in the length subdirectory that's associated with the LoopMod program itself.

So that data was there. It's not hidden from anyone. And it's available. I looked at one sheet on the total program, but there are files that get pulled into that program, and they are all available to whoever uses the model.

* * *

I think that I was able to demonstrate that if I were to run the model with the input selections that Mr. Wood made, I would have certain wire center groups that assume a hundred percent digital loop carrier but have no electronics to make them work. That is a fact. If you are to make the proper selections, you will get digital loop carrier investment and that will show you that the 12-kilofoot crossover that is advocated by Qwest is a least-cost solution versus the selections that Mr. Wood made. (Transcript, pp. 200-205; questions omitted.)

41. In response to questions by Ms. Macy, Mr. Buckley testified that on a statewide level, the 12-kilofoot or 12,000-foot crossover between physical copper and digital loop carrier systems produces a slightly higher investment and a slightly lower cost. It is the least-cost solution, not the 9 kilofoot and not any of the hundred percent digital loop carrier solutions. (Transcript, p. 206.)

Legal Standards Applicable in this Case

42. W. S. § 37-15-401 generally outlines the Commission's authority to regulate telecommunications services. It provides, in part, as follows:

(a) In addition to the powers exercised pursuant to the provisions of W.S. 37-15-408, the commission has the power to:

* * *

(iii) Make any rules and regulations, in accordance with the Wyoming Administrative Procedure Act, necessary for the commission to carry out its powers in this chapter, including rules objectively established and consistent with commonly accepted industry standards, where applicable standards exist;

(iv) Require reports and studies as to prices and terms and conditions of service, necessary and relevant for the commission's exercise of its authority, including those protected as trade secret or confidential based on legitimate competitive or other operational concerns;

* * *

43. W.S. § 402(a) provides that:

(a) Services provided by a telecommunications company that provides noncompetitive services shall be priced such that the service's revenues from sale of the service recover the total service long-run incremental cost of providing that service, except as provided for in this section. Total service long-run incremental cost studies used by a telecommunications company shall be filed with the commission on an annual basis at the time and in the form required by commission rule and under protective order as a trade secret and shall be subject to commission review and approval. Telecommunications companies having fewer than thirty thousand (30,000) access lines in the state are

exempt from the requirement to file cost studies on an annual basis, but do remain subject to the commission powers in W.S. 37-15-401(a)(iv). A telecommunications company having fewer than thirty thousand (30,000) access lines in the state may utilize a reasonable total service long-run incremental cost study surrogate, in lieu of conducting its own study, based on cost studies as are available for comparable, including nonregulated, telecommunications companies in this state or other states.

44. W.S. § 35-15-403 prohibits cross subsidization between competitive and noncompetitive serves, as well as authorizing the Commission to gather information to investigate and enforce that prohibition. Section 403 provides that:

(a) No telecommunications company shall use revenues earned from or allocate expenses to noncompetitive services to subsidize services determined by the commission to be subject to competition. The commission shall not require revenues or expenses from competitive services to be attributed to noncompetitive services. Revenues obtained from noncompetitive telecommunications services may not be used to subsidize competitive services. Revenues from competitive telecommunications services may not be used to subsidize noncompetitive telecommunications services. Nothing in this subsection shall affect the assignment of any revenues received from the universal service fund for the exclusive support of high cost, local exchange services.

(b) Notwithstanding the provisions of W.S. 37-15-104 the commission may review financial information of a telecommunications company relating to the provision of any services for the purposes of enforcing this section. Information provided to the commission under this subsection shall be provided under confidential and proprietary protection.

(c) Any cost studies filed with the commission pursuant to this section or W.S. 37-15-401(a)(iv) shall be provided confidential and proprietary protection by the commission.

45. Pursuant to the provisions of W.S. § 37-15-402(a), and the provisions of Sections 518 through 546 of the Commission's Rules, telecommunications companies with more than 30,000 access lines are required to file annual cost studies of the total service long-run incremental costs (TSLRIC) for their services. Section 518 requires that such telecommunications companies must file annual TSLRIC studies for both competitive and noncompetitive services.

46. Section 518 of the Commission's Rules also provides that telecommunications companies required to file annual TSLRIC studies must also file proposed inputs to each annual study, on or before April 1, each year.

47. Pursuant to the provisions of Section 518 of the Commission's Rules, each telecommunications company must provide simultaneously with its annual TSLRIC study, a complete set of work paper and sources documents. Subsection 518(b) provides that the work papers shall set forth all significant assumptions and identify all source documents used in preparing the cost estimate. Subsection 518(c) provides that the work papers must be organized so that a person unfamiliar with the study will be able to work from the initial investment, expense and demand data to the final cost estimate.

Additional Findings of Fact

48. The Commission finds that there is no material issue of fact concerning the proposed inputs to Qwest's 2000 annual TSLRIC study filing. The intervening parties have presented no evidence challenging the inputs. The changes in how the costs are categorized and the update of costs in an attempt to recognize current conditions are of the nature that the Commission would expect to see from one annual filing to the next, and remain consistent with prior decisions of the Commission.

49. The parties have identified two general areas in which they have remaining factual disputes. First, the parties disagree concerning the extent to which Qwest's cost models retain a certain "black box nature," in which certain underlying assumptions operating within the model remain hidden. Second, the parties disagree as to whether Qwest has chosen the least cost or least cost/most efficient investment cost scenarios upon which to calculate TSLRIC.

50. With regard to the "black box nature" of the TSLRIC study models, the Commission agrees with Intervenors Bruce Burns and Peggy Rounds, and finds that the assumptions which form the basis of the kilo-matrices are not sufficiently

open to review.

51. With regard to whether Qwest has chosen the least cost or least cost/most efficient investment cost scenarios for calculating TSLRIC, the Commission finds that Qwest's explanation and demonstration of the LoopMod model justifies Qwest's choice of distribution feeder investment cost scenarios. The Commission further finds that the LoopMod demonstration and the testimony concerning the TSLRIC study models does not indicate that Qwest has intentionally not chosen the least cost or least cost/most efficient investment scenarios, nor does the evidence indicate a generalized flaw in Qwest's TSLRIC study methodology.

52. The Commission finds that Intervenor McLeodUSA has raised one important question of law concerning interpretation of Section 518 of the Commission's Rules and W.S. § 37-15-402(a).

53. The Commission finds that the only factual assurance that Qwest is not cross-subsidizing between its competitive and noncompetitive service, in violation of W.S. § 37-15-403, is for Qwest to file cost information for competitive services.

Conclusions of Law

54. Qwest is a telecommunications company as defined by W.S. § 37-15-103(a)(xi), and as such, subject to the Commission's jurisdiction pursuant to the provisions of W.S. § 37-15-401.

55. Proper public notice of these proceedings was given in accordance with the provisions of the Wyoming Administrative Procedure Act, W.S. § 37-2-203 and the Commission's Rules, especially Section 106 thereof. The public hearing was held and conducted pursuant to the provisions of W. S. §§ 16-3-107, 16-3-108, 37-2-203, and applicable sections of the Commission's Rules. The interventions of Bruce Burns, Peggy Rounds and McLeodUSA were properly granted, and they each became a party to the case for all purposes.

56. Qwest's proposed inputs to its 2000 annual TSLRIC study are appropriate, and are consistent with the requirements of the Commission's Rules.

57. Section 518 of the Commission's Rules requires that Qwest's annual TSLRIC study filing include work papers which set forth all significant assumptions and identify all source documents used in preparing the cost estimate. Subsection 518(c) provides that the work papers must be organized so that a person unfamiliar with the study will be able to work from the initial investment, expense and demand data to the final cost estimate. Having found that the kilo-matrices are not sufficiently open to review as required by Section 518, the Commission concludes that the recommendation of Intervenor Burns and Rounds, that Qwest further define the kilo-matrices in its next annual TSLRIC filing, is appropriate, and is consistent with the Commission's Rules.

58. Sections 518 through 546 outline the general requirements for calculating TSLRIC pricing floors pursuant to W.S. § 37-15-402(a). Having found that Qwest's choice of distribution feeder investment cost scenarios is justified, and having further found no general flaw with Qwest's TSLRIC study methodology, the Commission concludes that the 2000 study should be accepted, subject to the conclusions contained in Paragraph 59, immediately following herein, and further subject to the specific ordering provisions herein below.

59. Section 518 of the Commission's Rules requires that Qwest file its annual TSLRIC study for both competitive and noncompetitive services. W.S. § 37-15-403 prohibits cross-subsidization between competitive and noncompetitive services. Having found in this case that there is no factual assurance against such cross-subsidization unless Qwest files for its competitive services cost information similar to that contained in its TSLRIC study, the Commission concludes that the requirement to file a TSLRIC study for both competitive and noncompetitive services is appropriate and within the authority granted to the Commission by the provisions of W.S. §§ 37-15-403(b) and (c), and W.S. §§ 37-15-401(a) (iii) and (iv). Therefore, the Commission further concludes that Qwest should file a TSLRIC study for its competitive services, regardless of whether Qwest must price its competitive services at or above TSLRIC pursuant to the provisions of W.S. § 37-15-402(a).

60. The Commission understands how Qwest might have interpreted the Commission's recent decision in *The Matter of the Price Schedule Filing of Silver Star Communications Regarding Telecommunications Services Offered in the Afton*,

Wyoming Exchange Area, Docket No. 70006-TT-98-33, and *The Matter of the Price Schedule Filing of Silver Star Communications Regarding the Provision of Certain Telecommunications Service on a Resale Basis in the Afton, Wyoming Exchange Area*, Docket No. 70006-TT-99-36, as having relieved Qwest of the obligation to include competitive services on its annual TSLRIC study filing. The individual Commissioners remain divided on the proper interpretation of W.S. § 37-15-402(a); and therefore conclude that it is appropriate to revisit

interpretation of that statute. The Commission will in the near future determine the proper forum to conduct further inquiry into the interpretation and application of W.S. § 37-15-402(a) to any and all types of telecommunications companies and their services.

NOW, THEREFORE, IT IS HEREBY ORDERED THAT:

1. Pursuant to open meeting deliberations conducted December 14, 2000, the filing of Qwest Corporation of the inputs to its 2000 TSLRIC study is accepted; and the application for approval of its 2000 TSLRIC study should be, and the same is hereby, approved, subject to the condition that Qwest file a TSLRIC study for its competitive services within 45 days of the issue date of this order.
2. Qwest is further directed to explicitly define its kilo-matrices and the underlying assumptions relating thereto, in its next complete annual TSLRIC filing.
3. This Order is effective immediately.

MADE and ENTERED at Cheyenne, Wyoming, this 29th day of December, 2000.

PUBLIC SERVICE COMMISSION OF WYOMING

STEVE ELLENBECKER, Chairman

KRISTIN H. LEE, Commissioner

(SEAL)

Attest:

EDNA YOUNG, Assistant Secretary