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BEFORE THE ARIZONA CORPORATION COMMISSION

2001 MAY 16 P 3: 51

WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

Arizona Corporation Commission
DOCKETED
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MAY 16 2001

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IN THE MATTER OF INVESTIGATION
INTO U S WEST COMMUNICATIONS,
INC.'S COMPLIANCE WITH CERTAIN
WHOLESALE PRICING REQUIREMENTS
FOR UNBUNDLED NETWORK ELEMENTS
AND RESALE DISCOUNTS.

Docket No. T-00000A-00-0194

**NOTICE OF FILING
DIRECT TESTIMONY**

Please take notice that Z-Tel Communications, Inc., through the undersigned counsel, files the Direct Testimony of George S. Ford in the above-referenced docket, a copy of which is attached.

Dated: May 16, 2001.

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BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
CHAIRMAN
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IN THE MATTER OF INVESTIGATION
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Docket No. T-00000A-00-0194

DIRECT TESTIMONY
OF
GEORGE S. FORD
ON BEHALF OF Z-TEL COMMUNICATIONS, INC.

May 16, 2001

1
2
**DIRECT TESTIMONY OF
GEORGE S. FORD**

3 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A. My name is George S. Ford. I am the Chief Economist for Z-Tel Communications,
5 Incorporated (Z-Tel). My business address is 601 South Harbour Island Boulevard, Suite
6 220, Tampa, Florida 33602.

7 **Q. BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND RELATED
8 PROFESSIONAL EXPERIENCE..**

9 A. I received a Ph.D. in Economics from Auburn University in 1994. My graduate work
10 focused on the economics of industrial organization and regulation with course work
11 emphasizing applied price theory and statistics. In 1994, I became an Industry Economist
12 for the Federal Communications Commission's Competition Division. The Competition
13 Division of the FCC was tasked with ensuring that FCC policies were consistent with the
14 goals of promoting competition and deregulation across the communications industries. In
15 1996, I left the FCC to become a Senior Economist at MCI WorldCom where I was
16 employed for just over three years. While at MCI WorldCom, I filed declarations and
17 economic studies on a variety of topics with both federal and state regulatory agencies. In
18 addition to my professional experience, I was an Affiliated Scholar with the Auburn Policy
19 Research Center at Auburn University in Alabama. Through this professional relationship,
20 I maintained an active research agenda on communications issues and have published
21 research papers in a number of academic journals including the *Journal of Law and*
22 *Economics*, the *Journal of Regulatory Economics*, and the *Review of Industrial*
23 *Organization*, among others. I am also a co-author of the chapter on local and long distance
24 competition in the *International Handbook of Telecommunications Economics*. I regularly
25 speak at conferences, both at home and abroad, on the economics of telecommunications
26 markets and regulation.

27 **Q. COULD YOU DESCRIBE Z-TEL'S SERVICE OFFERINGS?**

28 A. Z-Tel is a Tampa-based, integrated service provider that presently provides competitive
29 local, long distance, and enhanced services to over 350,000 residential consumers in twenty

1 states including New York, Pennsylvania, Massachusetts, Texas, Michigan, Georgia,
2 Illinois, among others. Z-Tel plans to expand nationally as the unbundled network element
3 platform (“UNE-P”) becomes available at TELLURIC rates. The company’s goal is to offer
4 a competitive service to the residential consumers of every state.

5 Z-Tel’s service is not just a simple bundle of traditional telecommunications
6 services, but is unique in that it combines its local and long distance telecommunications
7 services with Web-based software that enables each Z-Tel subscriber to organize his or her
8 communications, including email, voicemail, fax, and even a Personal Digital Assistant (
9 PDA), by accessing a personalized web-page via the Internet. In addition, the personal Z-
10 Line number can be programmed to follow the customer anywhere he or she goes via the
11 “Find Me” feature. Other service features include low long distance rates from home or on-
12 the-road and message notification by phone, email, or pager. Customers can also initiate
13 telephone calls (including conference calls in the near future) over the traditional phone
14 network, using speed-dial numbers from their address book on their personalized web page.

15 **Q. WHAT INTEREST DOES Z-TEL COMMUNICATIONS HAVE IN THIS**
16 **PROCEEDING?**

17 A. Z-Tel’s service is a bundle of many different communications services including voicemail,
18 email, fax, Internet, PDAs, and local and long distance telecommunications into an easy-to-
19 use communications control center. An important element of that bundle is local exchange
20 telecommunications service. To provide the local exchange portion of its service offering,
21 Z-Tel must purchase unbundled network elements from incumbent local exchange carriers
22 like Qwest. At present, Z-Tel’s primary means of providing local exchange service
23 provision is UNE-P. Because Z-Tel is dependent upon the local exchange carrier’s UNEs to
24 provide service at this time, Z-Tel has a strong interest in ensuring the rates established for
25 UNEs are TELRIC compliant and conducive to competitive entry.

26 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

27 A. The purpose of this proceeding is to establish the rates for unbundled elements (UNEs) for
28 Qwest in the state of Arizona, and my testimony will focus on UNE rates. These rates will
29 establish, to a large extent, the cost structure of competitive local exchange carriers seeking
30 to enter the Arizona market. The goal of these potential entrants is to provide business and

1 residential consumers a choice as to who provides their local exchange telecommunications
2 services. Today, consumers can make a choice as to what carrier provides their long
3 distance service, wireless service, paging service, and Internet service from a large number
4 of providers. However, consumers are constrained in their choices with respect to local
5 exchange services. The purpose of this proceeding, hopefully, is to change that fact and
6 open all telecommunications markets to competition. Whether or not the
7 *Telecommunications Act of 1996* is a success or failure for Arizonians depends critically on
8 the choices made in this proceeding – right here, right now.

9 **Q. DOES Z-TEL PROVIDE SERVICE IN ARIZONA?**

10 A. Z-Tel has a few operational customers in Arizona, so we are technically able to offer
11 service in the state. Z-Tel certainly hopes to add Arizona to its current mass-market
12 footprint of twenty states. However, the current UNE rates in Arizona, and those proposed
13 by Qwest in this proceeding, preclude Z-Tel from offering service on a mass market level in
14 the state. Hopefully, the outcome of this proceeding will change that business reality, so
15 that the residential consumers in Arizona will have a choice as to who provides their local
16 exchange telecommunications service. Z-Tel anxiously awaits the outcome of this
17 proceeding, which will determine whether Z-Tel actively markets its innovative services in
18 Arizona.

19 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

20 A. In this testimony, my goal is to assist the Commission in making decisions that are critical
21 and central to the development of local exchange competition in Arizona. My testimony is
22 divided into three parts:

23 *First*, I provide the Commission an analytical framework for establishing TELRIC
24 compliant rates that will promote competitive entry in Arizona. Evidence in this
25 proceeding is likely to provide an entire range of “TELRIC compliant rates” from which the
26 Commission must select. As a result, the Commission will need to go beyond mere
27 “number-crunching” and must instead provide a reasoned basis, consistent with the
28 purposes of the 1996 Act, for selecting a rate from the TELRIC “zone of reasonableness.”
29 The Commission should select TELRIC rates from the lower part of this range because that

1 decision will promote the availability of new services in Arizona from new, competitive
2 entrants.

3 *Second*, I discuss how the FCC will review the rates adopted in this proceeding in a
4 Qwest Arizona Section 271 application. In recent Section 271 orders, the FCC has
5 explicitly laid out the manner in which it determines whether UNE rates are TELRIC
6 compliant. The FCC's decisions discuss how the FCC will establish the TELRIC "zone of
7 reasonableness" for all UNEs. In this portion of my testimony, I lay out this analysis in
8 order to assist the Commission and Qwest, which undoubtedly should care whether its UNE
9 rates will pass the FCC's analysis. This "TRILIC test" can be performed for any UNE
10 rate.

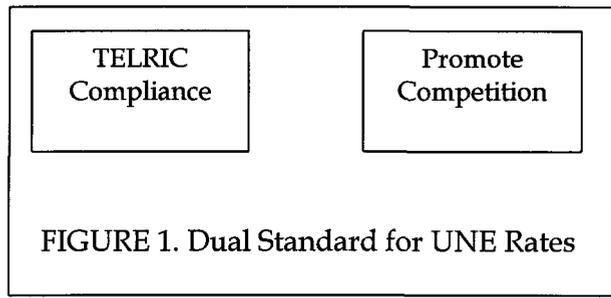
11 *Third*, I perform the FCC's "TRILIC test" for unbundled loops, unbundled local
12 switching, unbundled tandem switching, and unbundled shared transport. This analysis
13 reveals that Qwest's proposed rates for these UNEs will, without question, fail the FCC's
14 TRILIC test. Indeed, the rates for these UNEs are 30-420% higher than the FCC's analysis
15 would permit. In addition, my discussion of unbundled loops includes a short discussion of
16 the impact of Qwest's proposed rate for line-sharing as well as the efficacy of Qwest's line-
17 sharing rate proposal.

18 **Q. DO YOU HAVE ANY GENERAL COMMENTS ABOUT THE COMMISSION'S**
19 **EVALUATION OF THE UNE RATES PROPOSED BY VARIOUS PARTIES IN**
20 **THIS PROCEEDING?**

21 **A.** Yes. It is important that the Commission have an analytical framework within which to
22 evaluate proposed UNE rates. Without such a framework, rates will be determined willy-
23 nilly and may bear neither a relationship to cost nor conducive to competitive entry – the
24 dual standards of the *Telecommunications Act of 1996*. Furthermore, it is difficult to
25 evaluate the proposals of particular parties if an analytical framework is not set forth. In
26 other words, if the "ends" are not specified, it is nearly impossible to evaluate the reason-
27 ableness or effectiveness of the "means." In the end, this proceeding is about more than a
28 number-crunching exercise: it is about whether Arizonans will benefit from competitive
29 entry or not. An analytical framework for UNE rates allows the Commission to make its
30 decision in this broader context.

1 **Q. WHAT ARE THE IMPORTANT ELEMENTS OF AN ANALYTICAL FRAME-**
2 **WORK FOR EVALUATING THE UNE RATES PROPOSED IN THIS**
3 **PROCEEDING?**

4 A. There are two primary elements in the analytical framework. First, as described in detail by
5 the testimony of Qwest witness Theresa K. Million, the TELRIC standard provides one
6 element of this analytical framework. The second element of the analytical framework – as
7 important as the first – holds that the rates established in this proceeding should satisfy, to
8 the greatest extent possible, the mandate of the *1996 Telecommunications Act* to promote
9 competition in all telecommunications markets.



10

11 To apply this framework the Commission determines the TELRIC zone of
12 reasonableness first. As I discuss below, the FCC has stated on several occasions that
13 several rates or rate structures can be compatible with TELRIC pricing principles. Once
14 that zone is established, the second portion of the analytical framework is for the
15 Commission to choose the final rate consistent with the purposes of the Act. Most
16 importantly, the Commission then needs to select a rate based on the impact of that rate on
17 competition and competitive entry.

18 **Q. WHAT ROLE DO UNE RATES PLAY IN THE REALIZATION OF**
19 **COMPETITION IN LOCAL EXCHANGE MARKETS?**

20 A. UNE rates play a central and key role in the evolution of competition in the local exchange
21 market. Competitive entry by means of unbundled network elements pursuant to Section
22 251(c)(3) of the Act is one of the core entry mechanisms envisioned by Congress.
23 Congress appropriately determined that in order for new entrants to compete against
24 entrenched incumbents like Qwest, those entrants needed to be able to replicate quickly the
25 economies of scale, scope and density that those incumbent, monopoly incumbents possess.

1 If UNE rates are set so high that a prospective entrant cannot earn a competitive
2 return, then entry into the local exchange market and other local telecommunications
3 markets will not occur. Competition requires multiple firms vying for the patronage of
4 customers. To move from monopoly, the current situation, to an environment in which
5 multiple firms compete, new firms must enter the market. Because entry is governed, to a
6 large extent, by UNE rates, the UNE rates established in this proceeding will greatly impact
7 the future of competition in Arizona's local exchange market – particularly for residential
8 consumers.

9 **Q. IF A UNE RATE IS TELRIC COMPLIANT, IS THAT ENOUGH FOR PURPOSES**
10 **OF THE TELECOMMUNICATIONS ACT?**

11 A. I do not believe so. The TELRIC standard is not so rigid as to produce a rate for each UNE.
12 Rather, TELRIC pricing principles generate a “zone of reasonableness” where the
13 boundaries of that zone are determined by what cost estimates can or cannot be defended
14 with a TELRIC analysis. Relevant FCC orders are clear on this point. In other words, there
15 is not single TELRIC rate, but a range rates that may comply with TELRIC pricing
16 principles. A critical – but usually under appreciated – component of the Commission's
17 analysis is what part of that zone would promote competitive entry.

18 **Q. FOR CLARITY, WOULD YOU PLEASE PROVIDE AN EXAMPLE OF HOW THIS**
19 **MIGHT PLAY OUT.**

20 A. Sure. Assume that two cost studies, both of which choose a set of inputs that are TELRIC
21 compliant, produce cost estimates for, say, a Network Interface Device (NID). The first
22 model estimates the cost to be \$0.50 per month while the second estimates the cost to be
23 \$1.50 per month. The differences in cost estimates arise from different assumptions about
24 the cost-of-capital, depreciation schedules, and so forth. As the FCC observed, “The Act
25 requires that UNE rates be just and reasonable, and in other contexts, we have determined
26 that standard to mean that any of a number of inputs or results from within a certain range
27 could be appropriate. *In the Matter of Joint Application by SBC Communications Inc., et*
28 *al. for the Provision of In-Region InterLATA Services in Kansas and Oklahoma,*
29 *Memorandum Opinion and Order, FCC 01-29, CC Docket No. 00-217 (January 22, 2001)*
30 *(“OK-KS 271 Order”), ¶ 91 (citations omitted).* Assuming that the assumptions of both

1 models can be defended as TELRIC compliant, it may be that one model always chooses
2 TELRIC compliant input values that tend to produce lower cost estimates while the other
3 always chooses TELRIC compliant input values that tend to produce higher cost estimates.

4 In this situation, what is the Commission to do? Without an additional level to the
5 analytical framework, how could the Commission justify selecting one TELRIC rate over
6 the other? One potentially arbitrary solution would be for a state commission to simply take
7 a simple average of the two numbers and set the UNE rate for the NID at \$1.00. This
8 approach might be reasonable if only the first criterion of the analytical framework is
9 relevant. However, this arbitrary averaging concept is not consistent with the overarching,
10 pro-competitive mandate of the *1996 Telecommunications Act*.

11 Clearly, choosing the \$0.50 cost estimate to set the UNE rate is more conducive to
12 competitive entry than either the \$1.00 average cost or \$1.50 cost estimate. While the
13 Commission may choose to alter a few of the input values so that the lower cost estimate is
14 \$0.60 rather than \$0.50, it is always the case that choosing cost estimates from the lower
15 range of TELRIC compliant values will promote competition to a greater extent than
16 estimates at the upper-end of the TELRIC 'zone of reasonableness.'

17 **Q. HOW DO LOWER UNE RATES ENCOURAGE COMPETITION?**

18 A. Competitive entry is driven by expected profitability. If Z-Tel can offer service and earn a
19 reasonable return, then the company will do so. The company's goal is nationwide
20 coverage, and our decision not to enter any particular state at a point in time is usually
21 driven by UNE costs.

22 Z-Tel is not unique in this regard. In fact, since UNE rates represent a substantial
23 portion of a CLEC's cost of providing telecommunications services, the final rates will
24 have an appreciable and demonstrable impact upon entry. Given that CLECs are price
25 takers – that is, we must offer service at something near existing market prices – any
26 reduction in cost will increase the margin between revenue and cost, thus increasing
27 expected profitability and, as a consequence, competitive entry.

1 **Q. SHOULD RATES BE ESTABLISHED SOLELY TO INDUCE COMPETITIVE**
2 **ENTRY?**

3 A. No. The Act establishes two standards for rates. First, UNE rates must be set at costs, which
4 (in practice) implies they must comply with the FCC's TELRIC pricing rules. The
5 establishment of rates conducive to competitive entry is the second, not the only, criterion.
6 The FCC clearly stated that the reasonableness of rates is not determined by the business
7 case of potential entrants. *OK-KS 271 Order*, ¶ 65 ("incumbent LECs are not required . . .
8 to guarantee competitors a certain profit margin."). Satisfying the TELRIC standard is, I
9 believe, the first order of business.

10 However, the TELRIC standard establishes a zone of reasonableness, not a
11 particular rate. Once the boundaries of the 'zone of reasonableness' are set, the second
12 order of business is to choose rates from that part of the 'zone of reasonableness' for which
13 entry is most feasible. In some cases, it may be that costs are simply too high to induce
14 entry, even at the low end of the 'zone of reasonableness.' In other cases, however, entry
15 may be feasible for some part of the 'zone of reasonableness' but not for others. It is
16 imperative that this Commission consider the entry impact of the selection UNE rates. The
17 analysis is simple: lower UNE rates promote competition, higher UNE rates deter
18 competition.

19 **Q. IS YOUR ANALYTICAL FRAMEWORK SO GENERAL THAT QWEST WOULD**
20 **AGREE?**

21 A. With respect to the first criterion of TELRIC compliance, yes. Ms. Million's testimony
22 specifically addresses that issue, but *only* that issue. Qwest likely would contest the second
23 criterion. In contrast to the interest of the United States Congress and the vast majority of
24 consumers, Qwest likely has no desire to adopt a framework that promotes competition.
25 This observation is not necessarily a criticism of Qwest; the company is simply responding
26 to its incentives, as any rational firm would do.

27 The question this Commission must answer is whether it wants to join Qwest in
28 frustrating the competitive process or whether it wants to bring the benefits of competition
29 to the households and businesses of Arizona. The cost testimony of the various parties,
30 including my own, will assist the commission in establishing the bounds of the TELRIC

1 zone of reasonableness. Further, my testimony, and the testimony of other CLECs, will
2 assist the Commission in promoting competition; Qwest is quite competent to lead the
3 charge at impeding it.

4 **Q. BUT SHOULDN'T THE FINAL RATES BE THE "OUTPUT" OF A FORMAL**
5 **TELRIC COST MODEL?**

6 A. Not necessarily. One could draw a distinction between rates determined by using a formal
7 TELRIC cost model and rates that comply with TELRIC. In fact, the FCC's recent
8 Oklahoma, Kansas, and Massachusetts 271 Orders seem to draw such a distinction.

9 In Oklahoma, for example, the state commission arbitrarily reduced a number of
10 rates to bring those rates down to TELRIC levels. The discount was not based on TELRIC,
11 but the FCC determined that the final rate was indeed TELRIC compliant. The FCC stated
12 in the *OK-KS 271 Order*, "[w]hile the loop rates were not derived in total compliance with
13 our TELRIC rules, this flaw is not fatal to SWBT's application. The discounts now
14 available in Oklahoma compensate for the ALJ's use of a fill factor that was not compliant
15 with TELRIC." *OK-KS Order*, ¶ 87. In the Massachusetts 271 Order, the FCC concluded,
16 despite a number of flaws in the cost models used to generate cost estimates for Verizon-
17 MA, "that any errors made by the Massachusetts Department in establishing loop rates were
18 not so great as to render the resulting rates outside the range that a reasonable application of
19 TELRIC principles would produce." *In the Matter of the Application of Verizon New*
20 *England, Inc., et al. for Authorization to Provide In-Region InterLATA Services in*
21 *Massachusetts*, Memorandum Opinion and Order, FCC 01-130, CC Docket No. 01-9 (April
22 16, 2001) ("*MA 271 Order*"), ¶ 33.

23 **Q. PLEASE SUMMARIZE HOW THE ANALYTICAL FRAMEWORK IS APPLIED.**

24 A. The most important point for the Commission to remember is that it's decision in this case
25 is not limited to choosing input values and running calculations. In this proceeding, Qwest
26 and other parties have proposed input values and other factors that the parties will debate
27 throughout this proceeding. But in the end, the Commission will face a choice of what rate
28 in the TELRIC zone of reasonableness to select. I want to stress the importance to the
29 public interest it is to select rates in this zone that promote competitive entry.

1 For the most part, Qwest will offer assumptions and input values that increase UNE
2 costs because Qwest prefers there be no competition. The CLECs, alternately, will offer
3 assumptions and input values that decrease UNE costs so that offering a competitive local
4 exchange service in Arizona is financially viable. In most cases, the input values
5 recommended by the various parties to this proceeding will be supported by expert
6 testimony and based, though sometimes loosely, on a reasoned analysis. There should be
7 sufficient evidence on the record to expose those cases where recommendations are void of
8 any merit or are inconsistent with TELRIC.

9 Facing a menu of model assumptions and input values, the Commission will be
10 forced to conclude that, in general, there is no single “right” number but a range of “right”
11 numbers. The first step of the analytical framework defines what this range of “right”
12 numbers is, thereby establishing the TELRIC ‘zone of reasonableness.’ This step is the first
13 step of the analytical framework.

14 Once these boundaries are established, the second part of the analytical framework
15 is to be applied. Each input value, assumption, or resultant cost estimate should be
16 classified according to its effect on competition. Because higher UNE rates reduce
17 competition and lower UNE rates increase competition, assumptions and/or input values
18 that increase the cost estimates decrease competition and those that decrease cost estimates
19 increase competition. The final input values and assumptions accepted by the Commission
20 should be chosen so that competitive entry is viable, *i.e.*, from that part of the “zone of
21 reasonableness” associated with lower costs. The second part of the framework is certainly
22 easier to implement than the first.

23 **Q. IS IT POSSIBLE THAT CHOOSING LOWER UNE RATES WILL DISCOURAGE**
24 **FACILITIES BASED COMPETITION?**

25 A. No. The first criterion of the framework is that rates be TELRIC compliant. If rates are set
26 well below TELRIC, it may be the case – but not necessarily the case – that CLECs will
27 delay facilities deployment. But as long as rates are in the range of forward looking costs,
28 deployment of facilities will not be impeded. CLECs will, in fact, make rational and
29 efficient build-out decisions if UNEs are priced pursuant to TELRIC.

1 This is because TELRIC rates are designed to replicate this build-out decision. For
2 example, long distance capacity can be purchased in a highly competitive market. The
3 wholesale price for long distance capacity is generally consistent with what a TELRIC
4 methodology would produce and does not vary based upon the historical basis of what any
5 particular IXC network cost to build in the past. Rather than impede facilities deployment,
6 however, interexchange fiber optic capacity increases annually at a rapid rate of growth.
7 Having your “own” facilities has benefits that cannot be incorporated into the static and
8 stale framework of a cost model or the overly simplistic comparative static arguments
9 typically made in these proceedings regarding the “make or buy” decision of entrants.
10 Further, the ILEC is a reluctant seller, forced by law and penalty mechanisms to offer
11 services to CLECs. This situation raises other (generally intangible) costs of the deal by
12 CLECs. As a result, CLECs will consider replacing ILEC facilities as soon as it is
13 financially sensible, in terms of the full costs of the transaction, to do so. As a result, the
14 full price of a UNE is not equal to the rate set in this proceeding; the full price always
15 exceeds the UNE rate and includes these other intangible and hard to quantify costs.

16 **Q. WHAT RATE ELEMENTS DOES YOUR TESTIMONY COVER?**

17 A. For a UNE-P provider serving residential customers, like Z-Tel, the most important cost
18 elements are loops, switching, transport, and non-recurring charges. The bulk of my
19 testimony is devoted to methods by which loop rates and switching costs can be determined
20 in this proceeding. Included in my discussion of loop rates is an evaluation of the proposed
21 line-sharing charges. Z-Tel does not, today, use line sharing. Nevertheless, charges for line
22 sharing should affect the price of a loop and Z-Tel does purchase loops. Further, I believe
23 some clarification on the economics of line-sharing is needed.

24 **Q. HOW DO YOU EVALUATE THE PROPOSED RATES FOR UNES?**

25 A. In the two most recent 271 Orders, the FCC set forth a simple methodology to determine
26 whether a UNE rate in any state is consistent with another TELRIC-compliant rate in
27 another state. In reaching a decision about the reasonableness of the loop rates in
28 Oklahoma, the FCC used its Hybrid Cost Proxy Model (“HCPM”) to compare the relative
29 rates of Texas and Oklahoma. The FCC’s analysis is as follows:

1 In taking a weighted average of loop rates in Oklahoma and Texas,
2 we find that Oklahoma's rates are roughly one-third higher than those in
3 Texas. . . . Using a weighted average of wire-center loop costs, the USF cost
4 model indicates that loop costs in SWBT's Oklahoma study area are roughly
5 23 percent higher than loop costs in its Texas study area (ft. omitted). We
6 therefore attribute this portion of the differential, roughly two-thirds of it, to
7 differences in costs. The remainder of the differential, however, is not *de*
8 *minimus*, and we cannot ignore its presence.

9 *OK-KS Order*, ¶¶ 83-5 (citations omitted). As the Commission is aware, in that proceeding,
10 in response to criticism from the Department of Justice and parties, SWBT offered
11 "discounted rates." The determined that these new rates were TELRIC compliant as
12 follows:

13 The weighted average of the Oklahoma discounted loop rates is
14 roughly 11 percent higher than the weighted average of the loop rates in
15 Texas. This differential between Oklahoma promotional and Texas rates is
16 well within the 23 percent differential suggested by the USF cost model, and
17 so we conclude that the discounted rates meet the requirements of the Act

18 *OK-KS 271 Order*, ¶86 (citations omitted). The FCC's TELRIC test is a clear and
19 straightforward methodology with which it is possible to evaluate the TELRIC
20 compliance of Qwest's proposed UNE rates.

21 **Q. WOULD YOU PLEASE SUMMARIZE THE FCC'S ANALYSIS?**

22 A. Yes. In its initial filing, Southwestern Bell proposed a loop rate of \$18.87 for Oklahoma.
23 Note that the loop rate in Texas was \$14.10. *OK-KS 271 Order*, ¶ 83 n.245. Thus, the loop
24 rate in Oklahoma was about 34% more than the loop rate in Texas ($18.87/14.10 = 1.34$).
25 The FCC recognized that the rate difference between the two states might be explained by
26 legitimate cost differences. To evaluate this possibility, the FCC used the HCPM to
27 compute the relative cost of loops in Oklahoma and Texas. The HCPM's estimate of loop
28 costs revealed that the costs in Oklahoma were only about 22% higher than in Texas. Thus,
29 cost differences explained only about two-thirds of the rate difference. While the FCC
30 observed that this rate difference unexplained by cost differences was "not *de minimus*, and
31 [it could not] ignore its presence," the issue became moot when SBC agreed to cut the loop
32 rate in Oklahoma to \$15.70. This lower rate easily passed the TELRIC test.

1 **Q. DID THE FCC APPLY THIS “TELRIC TEST” IN THE MASSACHUSETTS 271**
2 **ORDER?**

3 A. Yes. In that *Order*, the FCC used a similar analysis to evaluate Verizon’s unbundled
4 switching rates. Because the switching costs in Massachusetts, as determined by the
5 HCPM, were higher than in New York, the FCC found no fault in importing the New York
6 switching rates into Massachusetts.

7 **Q. DOES THE FCC’S ANALYSIS PRODUCE A “POINT ESTIMATE” OF THE**
8 **TELRIC UNE RATE, OR A ZONE OF REASONABLENESS?**

9 A. The direct application of the test produces a point estimate. However, the equality between
10 the ratio of UNE rates and UNE costs (as determined with HCPM) is not exact. This
11 deviation from exact equality allows for the bounding of reasonable deviations from the
12 point estimate of UNE costs. Thus, in my analysis, the zone of reasonableness is
13 determined by the FCC’s historical conclusions about UNE rates, within the context of the
14 271 proceedings.

15 **Q. HAVE YOU COMPUTED THE FCC’S ANALYSIS FOR QWEST’S PROPOSED**
16 **UNE RATES?**

17 A. Yes. I performed the test for loop rates, unbundled end-office and tandem switching, and
18 common/shared transport.

19 **Q. PLEASE DESCRIBE THE CALCULATIONS FOR THE LOOP RATES.**

20 A. Texas was the reference state for Oklahoma and Kansas, because Oklahoma and Texas “are
21 adjoining states; because the two states have a similar, if not identical, rate structure for
22 comparison purposes, and because we have already found the rates in Texas reasonable.”
23 *OK-KS 271 Order*, ¶ 82. The same justification was used to select New York as the
24 reference state for the Massachusetts’ cost comparison. *MA 271 Order*, ¶ 21. Qwest’s
25 UNE rates have not been deemed TELRIC compliant by the FCC for any of the states in its
26 region. Thus, we must choose a reference state from one of the five states, or some
27 combination of the states for which have been deemed TELRIC compliant. Since location
28 appears to be an important element of the FCC’s choice of the reference state, Texas,
29 Oklahoma, or Kansas qualify on these grounds for a reference state for Arizona. Further,

1 SBC's UNE rate structure is more compatible with Qwest than is Verizon's rate structure.
2 For example, the rate structure for unbundled switching and reciprocal compensation are
3 very similar between SBC and Qwest states, but not Verizon states.

4 **Q. WHICH OF THE THREE SBC STATES DO YOU USE AS THE REFERENCE**
5 **STATE?**

6 A. Rather than pick a specific SWBT state as the reference state, I used the average of the
7 three SBC state rates as the reference for two reasons. Using multiple states for the
8 reference allows us to establish a zone of reasonableness.

9 **Q. PLEASE DESCRIBE THE RESULTS OF THE TELRIC TEST FOR UNBUNDLED**
10 **LOOPS.**

11 A. The UNE loop rates and HCPM cost estimates for loops in Texas, Oklahoma, Kansas, and
12 Arizona are summarized in Table 1. Applying the relative cost framework developed by
13 the FCC to evaluate the TELRIC compliance of UNE rates reveals that Qwest's proposed
14 loop rates are well outside the bounds of TELRIC. Specifically, the HCPM cost estimate
15 for Arizona is below the cost estimates for all three SBC states and the weighted average of
16 the three states. Yet, Qwest's proposed loop rate is more than twice as high as the Texas,
17 Kansas, the weighted average rate, and nearly twice as high as the Oklahoma rate.

18

State	Statewide Average Loop Rate	HCPM Cost Estimate
Texas	14.10	16.61
Oklahoma	15.70	20.48
Kansas	16.20	18.77
Wgt. Average	14.54	17.35
Arizona	28.96	15.87
Proposed Rates		
Lower Bound	12.17	
Point Estimate	13.30	
Upper Bound	13.70	

19 **Q. SO QWEST'S PROPOSED LOOP RATE DOES NOT PASS THE FCC'S TELRIC**
20 **TEST?**

21 A. Without question, Qwest's proposed loop rates unquestionably flunk the FCC's TELRIC
22 test (when using the reference state chosen here). If the loop rates established in this

1 proceeding are to be part of a 271 application by Qwest-AZ, then the loop rates need to be
2 reduced to more than half Qwest's proposed rate level.

3 **Q. WHAT LOOP RATE S WOULD SATISFY THE FCC'S RELATIVE COST**
4 **ANALYSIS?**

5 A. Table 1 also summarizes the zone of reasonableness for loop rates in Arizona. The point
6 estimate loop rate is \$13.30, with a lower bound of \$12.17 and upper bound of \$13.70.
7 Using the implicit percent discounts from Table 1, the deaveraged loop rates are provided
8 in Table 2.

Table 2. Recommended Loop Rates

State	Qwest Proposed Rate	Lower Bound	Point Estimate	Upper Bound
Average	28.96	12.17	13.30	13.70
Zone 1	23.07	9.69	10.59	10.92
Zone 2	28.64	12.03	13.15	13.55
Zone 3	42.14	17.70	19.35	19.94

9 Additionally, we cannot forget that loop rates even lower than those in Table 2 will
10 be more conducive to competition, and lower loop rates may be justified as TELRIC
11 compliant. Other CLEC testimony may provide support for lower loop rates.

12 **Q. DO YOU RECOMMEND THE COMMISSION ADOPT THESE RATES?**

13 A. Yes. These rates, or rates lower than those in Table 2, are TELRIC compliant for the entire
14 cost of the loop, according to a rate review method designed and employed by the final
15 arbiter of TELRIC compliance, the FCC. Notably, these loop rates are the cost for the
16 entire loop, thus a further downward adjustment is required to account for any positive loop
17 charges for line-sharing.

18 **Q. WHAT ADJUSTMENTS TO DO YOU PROPOSE FOR LINE-SHARING?**

19 A. The testimony of the Qwest witnesses on line sharing is unclear as to what the proposed
20 line-sharing charge of \$5 is intended to cover. Two possibilities exist. First, you can
21 interpret line-sharing as the division of the local loop into two distinct parts: a high
22 frequency part and low frequency part. In this context, the two elements are separate, and
23 the charges for these two unique elements should be separate.

1 **Q. HOW DOES THIS VIEW OF LINE-SHARING AFFECT LOOP RATES?**

2 A. If the “cost” of the high frequency portion of the loop is \$5, then the cost of the low
3 frequency portion of the loop should be reduced by \$5. Qwest’s cost model estimates the
4 cost of the entire loop, including both the high frequency and low frequency portions. If we
5 separate the high and low frequencies into two distinct elements, then the full cost of the
6 loop is simply the cost of the high frequency portion of the loop plus the low frequency
7 portion of the loop, or

$$8 \quad C = c_H + c_L, \quad (1)$$

9 where the variable C is total cost, c_H is the cost of the high frequency portion of the loop,
10 and c_L is the cost of the low frequency portion of the loop. If the line-sharing charge is \$5,
11 therefore, and we use the TELRIC compliant statewide average loop cost from Table 2
12 (\$13.30), then the low frequency portion of the loop cost is

$$13 \quad c_L = 13.30 - 5.00 = 8.30. \quad (1')$$

14 Of course, if the Commission sets a different cost for line-sharing (or the entire loop), then
15 the cost of the low frequency portion of the loop would be different.

16 **Q. DOES THIS REDUCTION IN LOOP COSTS FOR THE LOW-FREQUENCY**
17 **PORTION OF THE LOOP APPLY ONLY TO THOSE LOOPS WHERE THE LINE**
18 **IS SHARED, OR ALL LOOPS?**

19 A. The reduction should apply to all loops, or at least those loops that are capable of line-
20 sharing. Under this first interpretation of line-sharing, the high and low frequencies are
21 separated out as different, unique elements. Because the elements are separable, the
22 charges for those elements are separable.

23 **Q. WHAT IS THE ALTERNATIVE INTERPRETATION OF LINE-SHARING?**

24 A. The alternative interpretation holds that the high and low frequencies are not necessarily
25 separable, but that the total loop cost is shared by two services provided over a loop. Thus,
26 if the total loop cost is \$13.30, then the low frequency service bears some percentage of the
27 total cost and the high frequency service bears the remaining cost. There are two possible
28 pricing rules given this interpretation of line sharing. The first rule is much like Equation
29 (1), where the low frequency rate is reduced by the line-sharing rate, except the reduction

1 occurs only for shared loops (not all loops). The sum of rates for each loop equals the cost
2 of loop.

3 **Q. WHAT IS THE SECOND PRICING RULE FOR LINE-SHARING WHERE LOOPS**
4 **ARE INTERPRETED AS BEING SHARED FACILITIES?**

5 A. The alternative pricing rule computes a weighted average loop rate, reducing the all loop
6 rates by an amount sufficient to offset the total revenue from line-sharing (whether actual or
7 imputed). Mathematically, the relationship is

8
$$C = p_L + w \cdot p_H, \quad (3)$$

9 where w is the percent of total lines that are “shared,” and p_L and p_H are the rates for the
10 low-frequency and high-frequency portions of the loop. I have assumed that all lines use
11 the low frequency portion of the loop. Importantly, the sum of the low frequency and high
12 frequency rates (p_L, p_H) must equal the total cost of the loop (C).

13 **Q. WHY MUST THE SUM OF THE TWO RATES EQUAL THE TOTAL LOOP**
14 **COSTS?**

15 A. The goal of TELRIC pricing for UNEs is to replicate what the price would be for an
16 element in a competitive market. In a competitive market, the two prices of two jointly
17 supplied goods – such as the high and low frequency portions of the loop – must sum to the
18 average cost (including a reasonable profit) of the good. The theory of joint supply was a
19 contribution of economist and philosopher John Stuart Mill, who observed in the case of the
20 joint supply of gas and coke:

21 The gas and coke together have to repay the expenses of their
22 production, with the ordinary profit. To do this, a given quantity of gas,
23 together with the coke which is the residuum of its manufacture, must
24 exchange for other things in the ratio of their joint costs of production. But
25 how much of the remunerations of the producer shall be derived from the
26 coke, and how much from the gas, remains to be decided. Cost of production
27 does not determine their prices, but the sum of their prices (Principles, pp.
28 569-570).¹

29 The solution to the problem of joint supply, therefore, is that when goods are
30 “produced jointly in fixed proportions, the equilibrium price of each product must be such

1 as to clear its market, subject to the condition that the sum of the two prices equals their
2 (average) joint costs.”² Thus, if TELRIC is intended to mimic a competitive market [*Local*
3 *Competition First Report and Order*, 11 FCC Rcd 15499 (1996), ¶ 679 (“forward looking
4 costs simulates the conditions in a competitive marketplace”)], TELRIC does provide
5 guidance on pricing line-sharing.

6 **Q. WHAT IS THE RIGHT CHARGE FOR LINE-SHARING? \$5.00 AS QWEST**
7 **PROPOSES?**

8 A. Probably not. In fact, a straightforward application of the theory of joint products would
9 indicate that the correct loop charge for line-sharing, at least in the near term, should be
10 zero.

11 To find the appropriate prices for each “product” on the joint facility, one needs to
12 know the demand curves for both the low-frequency and high-frequency portions of the
13 loop. The intersection of the (vertical) sum of these two demand curves with the average
14 cost curve (*i.e.*, TELRIC) establishes the quantity supplied of loops. The prices for the
15 individual “products” are then read off the respective demand curves at the total quantity
16 supplied.

17 At present, the penetration of telephone service in Arizona is about 93% of total
18 households.³ Because the demand for line sharing is predicted (by Qwest) to be quite small
19 (3% of total lines), it is unlikely that line-sharing demand will alter the total quantity
20 supplied of loops. Even if line-sharing service were free, no more than about 50% of the
21 total population (the penetration rate for computers) would have any interest in it in the
22 short run. Only if about 95% of loops would be shared at a price of zero should line-
23 sharing have any charge at all. Under the theory of joint products (with competition), any
24 product that does not contribute to quantity supplied, through its affect on the summed
25 demand curve, has a zero price in a competitive market.

¹ John Stuart Mill, *Principles of Political Economy*. W.J. Ashley (ed.). London: Longmans, 1910.

² Robert B. Ekelund, Jr. and Robert F. Hebert. *A History of Economic Theory and Method*, 3rd Ed. New York: McGraw-Hill, 1990 (p. 178, emphasis in original).

³ *Trends in Telephone Service*, March 2000, Table 17.2, Federal Communications Commission.

1 **Q. DOES QWEST PROPOSE TO SHARE THE COST OF THE LOOP BETWEEN**
2 **LOW-FREQUENCY AND HIGH-FREQUENCY PORTIONS OF THE LOOP?**

3 A. I do not believe so. While Qwest describes dividing shared loop costs (Million Direct
4 Testimony, p. 66), Qwest does not propose that loop costs be shared at all. Rather, Qwest
5 proposes that it recover the full cost of the loop from the low frequency portion of the loop,
6 and treat the line-sharing charge icing on the cake. In other words, Qwest is attempting to
7 generate a windfall for itself by charging an additional \$5 for every shared loop above and
8 beyond the cost of the loop itself. Qwest clearly recognizes that line-sharing does not
9 change the cost of the loop, but is merely a sharing by non-competing uses of a loop
10 facility. Qwest, however, fails to incorporate this fact into its proposed rate structure. If
11 loop costs are to be “shared,” then the loop rates and retail rates must be reduced to offset
12 the increase in revenues from the charges for line sharing. Economic theory could not be
13 clearer on this point.

14 **Q. HOW DO YOU PROPOSE TO ADJUST THE LOOP RATES FOR LINE**
15 **SHARING?**

16 A. As illustrated in Equation (3), I’s loop costs need to be adjusted downward by an amount
17 equal to the revenue received for the high frequency portion of the loop, including such
18 charges that I imputes to itself when it provides DSL on a shared loop. In its filing, I
19 estimates that the number line-shared DSL lines will equal about 3% of total access lines in
20 Arizona. Using this (in my opinion, highly conservative) estimate of demand, the \$5
21 proposed rate for line-sharing, a statewide average loop rate of \$13.30, and Equation (3),
22 we can compute that the loop rate should be reduced by \$0.15 per loop ($= 0.03 \cdot 5.00$). This
23 adjustment to rates ensures that I does not over-recover loop costs. Furthermore, as line-
24 shared DSL penetration increases beyond 3% – a likely occurrence, given the emphasis I is
25 making on rolling out this service – the analog loop rate will need to be decreased as well. I
26 suggest that the Commission re-examine this factor every year and order commensurate
27 adjustments.

1 **Q. HAVE YOU PERFORMED THE FCC TELRIC TEST FOR QWEST'S PROPOSED**
2 **SWITCHING RATES?**

3 A. Yes. The end office switching rates and costs are summarized in Table 3. The average
4 switching rate per-minute includes all end-office switching charges, including the switch
5 port, features, and per-minute rates.

Table 3. Rates and Costs for End-Office Switching

State	Average Switching Rate per Minute	HCPM Cost Estimate
Texas	0.00262	0.00123
Oklahoma	0.00350	0.00141
Kansas	0.00226	0.00153
Wgt. Average	0.00269	0.00129
Arizona	0.00376	0.00138

Proposed Rates	Aggregate	Per-Minute*
Lower Bound	0.00205	0.00049
Point Estimate	0.00289	0.00133
Upper Bound	0.00343	0.00188

* Assumes no change in port or features charges.

6 The table shows clearly that while the HCPM switching costs are only 7% higher in
7 Arizona than for the reference state, Qwest's proposed switching rates are about 40%
8 higher than the reference state. Thus, Qwest's switching rates should be reduced to satisfy
9 the FCC's relative cost standard.

10 **Q. WHAT SWITCHING RATE WOULD SATISFY THE FCC'S TELRIC TEST?**

11 A. Assuming we target the rate reduction to the per-minute element of switching costs, the
12 Qwest proposed per-minute rate of \$0.00226 should be reduced to \$0.00133. The lower
13 bound on the TELRIC zone of reasonableness allows for a TELRIC compliant switching
14 rate of \$0.00049. This lower bound is nearly identical to the switching rate adopted in
15 Michigan (\$0.0005). Recently, BellSouth itself proposed switching rates of less than \$0.001
16 per minute in Florida and Louisiana. Of course, the lower bound is more conducive to
17 competition than are higher rates.

18 **Q. IS A PER-MINUTE SWITCHING RATE OF \$0.00133 REASONABLE FOR**
19 **QWEST?**

20 A. Yes. In fact, a rate as low as \$0.0005 is supported by the FCC's TELRIC test method.
21 Further, the Oregon Commission has established a switching rate of \$0.00146 for Qwest.

1 Because the switch port and features charges are lower in Oregon than in Arizona, the per-
2 minute rate in Arizona should be lower than in Oregon. Notably, the FCC has not approved
3 Oregon's rates as TELRIC compliant.

4 **Q. WHAT DOES THE FCC'S RELATIVE COST ANALYSIS SAY ABOUT RATES**
5 **BETWEEN ARIZONA AND OREGON?**

6 A. The HCPM indicates that switching costs in Arizona and Oregon essentially are identical
7 (Oregon is about 1% more costly). At an Arizona switching rate of \$0.00133, the average
8 switching cost per minute is about 10% higher in Arizona than in Oregon. Targeting rate
9 reductions to the per-minute rate as before, reducing the Arizona end-office, per-minute
10 switching rate to about \$0.0011 brings Arizona's rates in line with those of Oregon,
11 considering cost differences between the two states.

12 **Q. SHOULD SWITCHING COST REDUCTIONS BE TARGETED TO THE**
13 **PER/MINUTE COMPONENT OF THE RATE?**

14 A. Yes. Switching costs are primarily traffic insensitive. Thus, it makes sense to reduce the
15 per-minute rate to create a more economically rational price structure. Furthermore, switch
16 ports and features are line sensitive rather than usage sensitive. Because the demand for
17 lines is more stable than for usage, and the growth in lines is more stable than the growth in
18 usage, recovering costs through per-line charges reduces the risk of over- or under-recovery
19 of switching costs.

20 **Q. WHAT SWITCHING RATE DO YOU RECOMMEND?**

21 A. Accepting Qwest's proposed port and features charges, the per-minute switching charge
22 should be about \$0.0005 to \$0.00133 per minute. Competition unambiguously is better
23 served by a rate of \$0.0005.

24 **Q. HAVE YOU PERFORMED THE FCC'S TELRIC TEST FOR TANDEM**
25 **SWITCHING?**

26 A. Yes. Table 4 summarizes the UNE rates and costs for tandem switching. As shown in the
27 table, tandem-switching costs in Arizona are about half that of the reference state. However,
28 Qwest's proposed tandem switching rates are over twice as high as the reference state
29 (103% higher).

Table 4. Rates and Costs for Tandem Switching

State	Average Switching Rate per Minute	HCPM Cost Estimate
Texas	0.00079	0.00003
Oklahoma	0.00096	0.00003
Kansas	0.00079	0.00007
Wgt. Average	0.00081	0.00004
Arizona	0.00165	0.00002
Proposed Rates		
Lower Bound	0.00024	
Point Estimate	0.00044	
Upper Bound	0.00061	

1 To satisfy the FCC's TELRIC test, the tandem-switching rate proposed by Qwest needs to
2 be reduced to about 73% of the current rate, or \$0.00044 per minute.

3 **Q. WHAT TANDEM SWITCHING RATE DO YOU RECOMMEND?**

4 A. At most, I believe the tandem-switching rate should lie between \$0.00024 and \$0.00044.
5 Lower rates could be justified. However, fine-tuning the tandem rate at the levels I have
6 recommended will have little effect on the competitiveness of the market because the
7 aggregate tandem-switching costs per customer will be low. However, the move from the
8 non-TELRIC rate of \$0.00165 proposed by Qwest to the cost-based rate less than \$0.00045
9 is not trivial to the development of competition. Assuming 500 minutes of tandem traffic
10 per month for a residential consumer, the reduction of tandem switching to TELRIC in
11 Arizona amounts to about 3% on a \$20 gross margin.⁴

12 **Q. IS IT POSSIBLE TO USE THE FCC'S RELATIVE COST METHODOLOGY TO**
13 **EVALUATE QWEST'S PROPOSED SHARED TRANSPORT RATE?**

14 A. Yes. The computation of rates and costs are provided in Table 5. The cost standard from
15 the HCPM model is Common Transport and Common Transport Transmission, expressed
16 in per-minute terms by dividing the sum of these costs by total DEMS.

⁴ According to Z-Tel's 10-K, the gross profit margin per line is about \$20 per month.

Table 5. Rates and Costs for Shared Transport

State	Average Shared Transport Rate per Minute	HCPM Cost Estimate for Common Transport
Texas	0.000135	0.00004
Oklahoma	0.001647	0.00012
Kansas	0.000988	0.00011
Wgt. Average	0.000425	0.00006
Arizona	0.001573	0.00004

Proposed Rates	
Lower Bound	0.00014
Point Estimate	0.00030
Upper Bound	0.00056

1 Again, the HCPM estimates the cost in Arizona to be less than in the reference state (and
2 equal to that in Texas), but Qwest's rate is well above the rate for the reference state. The
3 cost of transport in Arizona, according to the HCPM, is about 30% less than in the
4 reference state, yet Qwest's proposed rate is nearly 370% higher than the reference state.

5 **Q. WHAT SHOULD THE TRANSPORT RATE IN ARIZONA BE?**

6 A. To satisfy the FCC's TELRIC test, the transport rate should be reduced to \$0.0003. This
7 reduction in rates clearly satisfies the FCC's relative cost analysis, and reduces the cost of
8 transport services for CLECs by about \$1.27 per month for every 1,000 minutes of transport
9 purchased. Thus, by reducing the transport rate, both aspects of the analytical framework
10 are satisfied: the rate is TELRIC compliant and promotes competition.

11 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

12 A. Yes.