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COPY

July 18, 2001

VIA FEDERAL EXPRESS

Mary Cottrell, Secretary
Department of Telecommunications and Energy
One South Station
Boston, Massachusetts 02110

Re: Rebuttal Tesitmony of George S. Ford, Ph.D. on Behalf of Z-Tel Communications, Inc.; MA DTE Case No. 01-20

Dear Secretary Cottrell:

Enclosed for filing please find the original and eight (8) copies of the Rebuttal Testimony of George S. Ford, Ph.D. on Behalf of Z-Tel Communications, Inc. in the above-captioned proceeding. Please date-stamp the enclosed duplicate copy and return it in the enclosed self-addressed stamped envelope.

Respectfully submitted,

Michael B. Hazzard
COUNSEL TO Z-TEL COMMUNICATIONS, INC.

Attachments

cc: Tina W. Chin, Hearing Officer, MA DTE (Two copies)
Marcella Hickey, Hearing Officer, MA DTE (Two copies)
Attached Service List

DC01/HAZZM/155079.1

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Pricing, based upon Total Element Long-Run Incremental Costs, for Unbundled Network Elements and Combinations of Unbundled Network Elements, and the Appropriate Avoided Cost Discount for Verizon New England, Inc. d/b/a Verizon Massachusetts' Resale Services in the Commonwealth of Massachusetts	D.T.E. 01-20

REBUTTAL TESTIMONY OF GEORGE S. FORD

ON BEHALF OF Z-TEL COMMUNICATIONS

Dated: July 18, 2001

PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND RELATED PROFESSIONAL EXPERIENCE.

I received a Ph.D. in Economics from Auburn University in 1994. My graduate work focused on the economics of industrial organization and regulation with course work emphasizing applied price theory and statistics. In 1994, I became an Industry Economist for the Federal Communications Commission's Competition Division. The Competition Division of the FCC was tasked with ensuring that FCC policies were consistent with the goals of promoting competition and deregulation across the communications industries. In 1996, I left the FCC to become a Senior Economist at MCI Worldcom where I was employed for nearly four years. While at MCI Worldcom, I filed declarations and economic studies on a variety of topics with both federal and state regulatory agencies.

I maintain an active research agenda on communications issues and have published research papers in a number of academic journals including the *Journal of Law and Economics*, the *Journal of Regulatory Economics*, and the *Review of Industrial Organization*, among others. I am a co-author of the chapter on local and long distance competition in the *International Handbook of Telecommunications Economics*. I

regularly speak at conferences, both at home and abroad, on the economics of telecommunications markets and regulation.

COULD YOU DESCRIBE Z-TEL'S SERVICE OFFERINGS?

Z-Tel is a Tampa-based, integrated service provider that presently provides competitive local, long distance, and enhanced services to over 300,000 residential consumers in thirty-four states including Massachusetts, New York, Pennsylvania, Texas, Michigan, Georgia, Illinois, and others. Z-Tel plans continued expansion nationally as the unbundled network element platform ("UNE-P") becomes available in additional states at TELRIC rates. The company hopes to offer competitive services to the residential consumers of every state.

Z-Tel does not provide just a simple bundle of traditional telecommunications services; rather the company's services are unique combinations of voice telecommunications services with Web-based software that enables each Z-Tel subscriber to organize his or her communications, including email, voicemail, fax, and even a Personal Digital Assistant (PDA), through a personalized web-page via the Internet. In addition, the personal Z-Line number can be programmed to follow the customer anywhere he or she goes via the "Find Me" feature. Other service features include low long distance rates from home or on-the-road and message notification by phone, email, or pager. Customers can also initiate telephone calls (including conference calls in the near future) over the traditional phone network, using speed-dial numbers from their address book on their personalized web page.

WHAT INTEREST DOES Z-TEL COMMUNICATIONS HAVE IN THIS PROCEEDING?

Z-Tel's service is a bundle of many different communications services including voicemail, email, fax, Internet, PDA support, and local and long distance telecommunications that are combined into an easy-to-use communications control center. An important element of that bundle—the critical gateway to the services—is local exchange telecommunications service. Z-Tel must purchase unbundled network elements (UNEs) from incumbent local exchange carriers (ILECs) like Verizon to provide the local exchange portion of its service offering. At present, Z-Tel's primary means of providing local exchange service provision is through UNE-Platform (UNE-P) offerings. Because Z-Tel is dependent upon the local exchange carrier's UNEs to provide service at this time, Z-Tel has a strong interest in ensuring the rates established for UNEs are both TELRIC compliant and conducive to competitive entry.

WHAT IS THE PURPOSE OF YOUR TESTIMONY?

The purpose of my testimony is to point out and propose remedies for some of the more glaring defects in the Verizon cost model.

WHAT ARE THE DEFECTS OF THE VERIZON MODEL?

Four defects are addressed in my testimony: (1) the use of the Forward-looking Conversion factor ("FLC"); (2) the calculation of per-minute rates; (3) the selection of the weighted average cost-of-capital; and (4) the choice of discounts that are applied to

switching investment. I recommend specific remedies for each of these defects: (a) the FLC should be set equal to 1.00; (b) the number of minutes used to convert investment into per-minute rates should be increased by about 23%; (c) the weighted average-cost-of-capital should be set equal to 10.3%; and (d) the discount on switching investment should be more heavily weighted toward the replacement discount and less so the growth discount.

Appropriate Values for the Forward-Looking to Current Factor

GENERALLY, HOW ARE EXPENSES CALCULATED IN THE VERIZON COST MODEL?

In the Verizon model, expenses are computed as a percentage of investment using the Annual Cost Factors. For the investment ACFs, the ACF is defined as the ratio of historical expenses (EH) to historical investment (IH). This ratio (EH/IH) indicates how many dollars of expenses are incurred for each dollar of investment. TELRIC expenses (ET) are then determined by multiplying TELRIC investments (IT) by the ACF [ET = IT·(HE/IH)]. In some cases, historical expenses may be adjusting slightly for productivity and other adjustments when computing the ACF. There are also expense and revenue ACFs, which are defined as the ratio of historical expenses to either historical expenses (of another type) or revenues. Importantly, Verizon makes some adjustments to TELRIC investments prior to applying the ACF.

DOES VERIZON ADJUST HISTORICAL EXPENSES WHEN COMPUTING THE ACFS?

Yes, it appears some adjustments are made, but they do not appear to be significant. Verizon Panel Testimony at 57. As Verizon has stated, "[i]t is not Verizon's position that the forward-looking expenses used in the calculation of annual cost factors are significantly lower than current booked expenses." Verizon's reply to discovery request CC 10-4, June 25, 2001, D.T.E. 01-20 (Part A). In other words, the ACFs can be considered a rough approximation of, or not significantly different from, historical expenses divided by historical investments.

WHAT ADJUSTMENTS DOES VERIZON MAKES TO TELRIC INVESTMENTS PRIOR TO APPLYING THE ACF?

Verizon employs a factor called the Forward-Looking Conversion factor ("FLC"), or Forward-Looking to Current factor, when computing expenses. In effect, TELRIC investment is divided by the FLC prior to being multiplied by the ACF to produce an estimate of TELRIC expenses. This additional calculation increases TELRIC investment to a level consistent with historical investment (IT/FLC = IH), so that the final expense figure is based on the application of the ACF to historical investment rather than TELRIC investment. In effect, the TELRIC investment is de-TELRICed by the FLC when computing expenses.

WHAT EFFECT DOES THE APPLICATION OF THE FLC HAVE ON EXPENSES?

As shown in detail in Attachment A, the application of the FLC increases expenses to a level equal to historical expenses. Rather than specifying expenses commensurate with TELRIC investment, expenses are set equal to historical levels (or levels not significantly lower than historical levels).

SO THE EXPENSE LEVELS IN THE VERIZON COST STUDY ARE HISTORICAL EXPENSES, NOT FORWARD-LOOKING?

Yes; that is the result of applying the FLC. This factor, as its name suggests – i.e., "forward-looking to current factor" -- converts forward-looking investment to current (i.e., historical) investment prior to computing expenses.

VERIZON STATES THAT THE FLC IS USED TO ADJUST THE ACF, NOT INVESTMENT. IS THAT MATERIAL TO YOUR TESTIMONY?

No. First, Verizon justifies the need for the FLC not because the ACF is understated, but because the ACF is multiplied by a "lower TELRIC investment." Verizon's reply to discovery request CC 10-4, June 25, 2001, D.T.E. 01-20 (Part A). Thus, it appears that Verizon's FLC is aimed more at altering investment than the ACF. Nevertheless, the issue of what is being adjusted by the FLC is immaterial to the end result: multiplication is commutative. Regardless of how you interpret the application of the FLC, the end result is that the FLC de-TELRICs the TELRIC investment for the purpose of calculating expenses.

VERIZON ARGUES THAT WITHOUT THE FLC, EXPENSES WILL BE UNDERSTATED BECAUSE TELRIC INVESTMENT IS TOO LOW. IS THIS CORRECT?

Not unless you believe TELRIC investment is set too low, and that question should be left for the calculation of TELRIC investment and not "made up for" by Verizon in the expense calculation. For the most part, Verizon contends that the difference between TELRIC investment and historical investment is solely a function of price reductions for the exact same equipment, though this position is incompatible with Verizon's own testimony. The TELRIC construct requires that the investment be based on "the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers." Verizon Panel at 17. Furthermore, "technology choices are not constrained by any 'embedded' technology already present in the network." Verizon Panel at 16. Thus, TELRIC investment is not exactly the same as historical investment, and it does not follow that expenses will remain at historical levels for TELRIC investment.

Furthermore, Verizon has provided no evidence that the prices in its study are artificially reduced below market prices. In fact, Verizon claims quite the opposite. For example, Verizon states that its switching investment is based on "detailed information of all switching equipment (hardware) purchases Verizon made during the past year (2000)." Verizon Panel at 151. Because "below market prices" are not employed in the study, the "price justification" for the FLC is meritless.

SHOULD THE FLC APPLIED TO INVESTMENTS BE ELIMINATED?

Yes, for two reasons. First, the FLC is nothing more than an attempt by Verizon to revisit the decision about the level of TELRIC investment. Second, if the FLC is applied, then the resulting expense level is equal to *historical expenses* (or not significantly lower than historical expenses). Historical expenses are not appropriate for a forward-looking cost analysis.

IS IT POSSIBLE THAT THE CORRECT VALUE OF THE FLC EXCEEDS 1.00?

Yes. Note that some parties, including the New York Commission and the Administrative Law Judge conducting the UNE cost proceeding in New York, have argued that the ratio of historical expenses to historical investment, applied to TELRIC investment, results in an overstatement of TELRIC expenses. New York Recommended Decision at 44. If this Department holds the same view with respect to the application of the ACF to TELRIC investment, then the FLC must be set to a level greater than 1.00.

WHAT DO YOU RECOMMEND WITH REGARD TO APPLYING THE FLC TO THE INVESTMENT ACFS?

I recommend that the FLC be set equal to 1.00, which is equivalent to its elimination. By doing so, the historical relationship between expenses and investment, adjusted for productivity, is used to determine TELRIC expenses. This approach seems reasonable.

IS THE FLC APPLIED TO THE COMMON OVERHEAD ACF?

Yes. Verizon applies the FLC when computing the Common Overhead expenses.

IS THE APPLICATION OF THE FLC TO COMMON OVERHEAD APPROPRIATE?

No. First, the argument against the FLC for common overhead is the same as the argument above for the investment ACFs. Because TELRIC expenses are not understated when the FLC is set equal to 1.00, overhead expenses are not understated when the Common Overhead ACF is applied to TELRIC expenses. Second, Verizon applies the FLC for Common Overhead to expenses that have already been adjusted by the investment FLC. In other words, some expenses are twice-FLCed. While Verizon does reduce the FLC for those expenses previously adjusted by the FLC, it still applies an FLC (with a value less than 1.00) to those expenses, thus increasing those expenses above historical levels.

HOW IS THE FLC APPLIED TO EXPENSES IN ORDER TO COMPUTE COMMON OVERHEAD?

The Common Overhead ACF is applied to all expenses. Some of these expenses already have been adjusted by the FLC when the factor was first applied to TELRIC investment. Other expenses haven not. For those that have not, Verizon argues that the standard FLC (i.e., 0.80) should be applied to those expenses. Verizon Panel at 62. For those expenses that already are inflated by the FLC, Verizon applies a lower, "weighted-average FLC." Verizon Panel at 62. As shown in Attachment A, the effect of this second application of

the FLC is to compute Common Overhead based on expenses that exceed historical expense levels. Obviously, the FLC is a perverse concept.

DOES THE USE OF A WEIGHTED-AVERAGE FLC ELIMINATE THE PROBLEM OF APPLYING THE FLC TWICE?

No. Even if you accept the FLC as valid, applying it twice is inappropriate. When the FLC is applied first to TELRIC investment, this application increases TELRIC expenses to the historical expense level. Obviously, if an FLC (of less than one) is applied to expenses a second time, expenses are increased above the historical level. The application of the FLC the first time is wrong; applying it twice is absurd.

In fact, the application of the weighted-average FLC contradicts Verizon's own testimony. Verizon's Panel states "it would be inappropriate to apply a forward-looking adjustment to the ACF_{COH} for the portion of the identified costs that at already reflect a apply a [sic] forward-looking adjustment." Verizon Panel p. 61. Yet, Verizon then states "[i]f the study contains expenses that have already been adjusted with a FLC Factor, then the ACF_{COH} with the weighted average adjustment is appropriate." Verizon Panel at 62. Thus, Verizon argues that the FLC should not be and should be applied at the same time.

IS THERE ANY LEGITIMACY TO THE WEIGHTED-AVERAGE FLC?

Assuming that the FLC was appropriate, which it is not, then the weighted average FLC might apply to all expenses, those previously adjusted and those not previously adjusted, when computing Common Overhead. For example, if the FLC is 0.80 and one-half of the

expenses have been adjusted by the FLC and one-half not, then applying an FLC of 0.90 (0.8·0.5 + 0.5·1.00) to expenses is the correct application (of an incorrect concept). However, that is not what Verizon does; Verizon applies the weighted average FLC to previously adjusted expenses and the full FLC to unadjusted expenses. Verizon not only has incorporated a faulty adjustment (the FLC) in its cost study, it has misapplied the faulty adjustment.

SHOULD THE COMMON OVERHEAD FLC APPLY TO INVESTMENT-RELATED EXPENSES NOT ADJUSTED BY THE FLC?

No. For those expenses that have not been increased by the FLC the first-time, Verizon applies the unadjusted FLC. This application of the FLC is indeed odd, given that Verizon itself argues that the FLC should not apply to these expenses because these expenses are not understated. Verizon states the "capital related components (i.e., Depreciation, RIT, and Property and Other Taxes) should not be adjusted because their associated carrying costs are directly caused by the level of investment identified." Verizon Panel at 58. Yet, when computing Common Overhead, Verizon does adjust these expenses with the FLC. Applying the FLC in this case overstates Common Overhead expenses by 25% (given an FLC of 0.80) for those particular expense elements.

WHAT DO YOU RECOMMEND?

Without question or dispute, even from Verizon, the FLC is nothing more than an attempt to recover historical expenses. Thus, I recommend that all applications of the FLC should

be eliminated from the cost model. This FLC purge can be accomplished by setting every occurrence of the FLC equal to 1.00.

Minutes-of-Use are Understated

VERIZON CONVERTS A NUMBER OF INVESTMENTS IN PER-MINUTE TERMS. DID VERIZON CORRECTLY ESTIMATE THE MINUTES-OF-USE IN ITS CALCULATIONS?

No. Verizon excludes all weekend and holiday traffic in its conversion of investments into per-minute terms. Without dispute, switches are sized to handle the traffic of the busy hour. However, the unbundled switching rate applies to all traffic, including off-peak traffic on the business day, weekends and holidays. Every minute handled by the switch is rated (adjusted for non-conversation time). Therefore the unbundled switching rate must be calculated based on all minutes of traffic and not some subset of traffic as Verizon desires.

PLEASE EXPLAIN HOW VERIZON UNDERSTATED MINUTES-OF-USE.

For switching investments, the calculations are set forth in Verizon Workpaper Part C-2, Section 1, Page 1 of 2 and Part C 3, Section 7, Page 1, and described in the Panel Testimony at pages 158-9. The exact same calculations were used in the New York cost proceeding. According to Verizon, the "usage investment was divided by the busy hour total switch MOU capacity to arrive at a busy hour MOU investment for Usage." Let INV represent usage investment and BHMOU be busy hour MOUs. Next, "total investment

per busy hour MOU was converted to a total cost per busy hour MOU by the application of annual cost factors and investment related loadings." Let F be the factors and loadings, so the total traffic sensitive cost (COST) equals F × INV. After these three steps, the calculations can be summarized as COST/BHMOU. Finally, this "total was converted to an AHD MOU cost by the application of the busy hour to AHD conversion factor." The AHD MOU conversion factor is the ratio of busy hour minutes to actual total minutes of the business day divided by 251 business days per year [(BHMOU/BDMOU)/251].

So, the final formula for traffic sensitive switching cost (TSSC) is

$$TSSC = \frac{COST}{BHMOU} \times \frac{BHMOU/BDMOU}{251}. \qquad (1)$$

Simple algebra shows that Equation (1) is the same as:

$$TSSC = \frac{COST}{BDMOU \times 251}. \qquad (2)$$

Equation (2) simply states the traffic sensitive switching cost (COST) is divided by annual business day minutes only (i.e., business day minutes, BDMOU, multiplied by business days, 251). Thus, Verizon converts traffic sensitive switching costs into cost per business day MOU, not cost per total MOU. Verizon's computation never includes an adjustment from business day MOUs to total MOUs. Therefore, it is impossible for the total minutes to be included in Verizon's calculation.

DID VERIZON MAKE THE SAME ERROR IN NEW YORK?

Yes.

WAS THE ERROR BROUGHT TO THE COMMISSION'S ATTENTION?

Yes, and Verizon attempted to defend the error as reasonable. Judge Linsider was not moved by Verizon's arguments, noting:

> Verizon responds that the use of 251 business days is correct inasmuch as the switch must be designed to handle peak traffic, and peak traffic is realized only on business days. Taking account of weekend and holiday traffic volumes in computing the average would result in a figure too low to handle peak load traffic. Verizon's arguments are misdirected, for the issue here is not how to size the switch but how to spread the costs of a properly sized switch over its usage. Recommended Decision at 146.

WHAT ADJUSTMENTS DID THE NEW YORK COMMISSION MAKE?

The Recommended Decision adjusted the calculation of minutes (i.e., Equation (2) above) to include all minutes. Under the industry standard of weekend traffic being one-half weekday traffic, the computation of total minutes can be accomplished by increasing the 251 days in the denominator of Equation (2) to 308 days; the difference being one-half of the remaining 114 days per year.

WHAT IS THE IMPACT OF THIS CHANGE?

The change reduces usage-sensitive rates by 22.7% (= 57/251).

WHAT DO YOU RECOMMEND?

While it is appropriate to use busy hour traffic to size the switch and determine investment, the per-minutes rates should be determined by dividing the TELRIC cost by all minutes of use (MOU) to which the rate will apply. Verizon should be required to restate all usage sensitive rates to reflect the average rates for all MOU and not just business day MOU. The effect should be a 22.7% reduction in all usage sensitive rates.

Verizon Overstates Substantially the Weighted Average Cost of Capital

VERIZON PROPOSES A WEIGHTED AVERAGE COST OF CAPITAL OF 12.6%. AT&T WITNESS HIRSCHLIEFER PROPOSES A WEIGHTED AVERAGE COST OF CAPITAL OF 9.54%. WHICH VALUE DO YOU BELIEVE IS MORE REASONABLE?

I estimate Verizon's WACC to be around 9.75%. This estimate is based on CAPM using the following assumptions:

(a) Verizon's assumed cost of debt of 6.9% (Mass. TELRIC Study 2001, Section #3 Inputs, Subsection #3.2 Capital Parameters, Page 1 of 1);

(b) Verizon's assumed debt-to-equity mix of 0.25 to 0.75 (Mass. TELRIC Study 2001, Section #3 Inputs, Subsection #3.2 Capital Parameters, Page 1 of 1);

(c) the current yield on a 30-year bond of 6.26 (Hirshliefer, Att. JH6);

(d) a market risk premium of 5.81% (see Attachment b) (this risk premium of 5.81% is slightly larger than the 5.5% risk premium recommended by Damodaran (Aswath Damodaran, Damodaran on Valuation, John Wiley & Sons: New York, 1994, p. 22); and

(e) Verizon's BARRA Beta of 0.77 (Hirshleifer at Exhibit 5).

Obviously, 12.6% is considerably larger than this estimate of the WACC; Hirschliefer's estimate of 9.54% is much closer. A more sophisticated analysis may support a higher or lower number than my estimation, but a difference of nearly 300 basis points, as proposed by Verizon, seems to me to be an unreasonably large deviation from my textbook calculation.

WHAT CAUSES THE LARGE DEVIATIONS AMONG THE PARTIES IN THE PROPOSED WACCS?

The cost of equity explains the vast majority of the differences between the WACCs proposed by Verizon and AT&T. Between the two parties, the assumed cost of debt, the debt-equity mix, and the techniques used are similar. However, Verizon purports that its cost of equity is 14.50%, whereas AT&T estimates a cost of equity for Verizon of 10.60%. My approximation of the cost of equity using the CAPM is 10.7%.

WHY DO YOU BASE YOUR ESTIMATE ON THE CAPM?

The CAPM model is tied to the efficient market hypothesis, which holds that at any given time, security prices fully reflect all available information. This "available information"

will include the existing and prospective levels of competition in the Verizon region. Thus, the Beta incorporates all information about the going-forward risk profile of Verizon. In other words, we have a very good estimate of the cost of equity that fully accounts for the expected level of competition in the local exchange market.

In fact, since the Beta is for the entire corporation, it is probably overstated. About 90% of Verizon's revenues come from local telecommunications (68%) and wireless services (22%). Verizon 2000 Annual Report. Sprint PCS and Nextel, both pure wireless plays, have Betas of 3.07 and 2.15, respectively. Thus, the local telecommunications segment of Verizon must be substantially less risky, even accounting for future competition, than the corporate entity as a whole.

IS THE CAPM MODEL WIDELY ACCEPTED TECHNIQUE?

Yes. There are criticisms of the CAPM, as there are of virtually every scientific technique from Carbon-14 dating to least-squares regression. Nevertheless, the CAPM is widely accepted and employed. In fact, the discounted cash flow ("DCF") method is often viewed as less robust than is the CAPM method for estimating the cost of equity. According to Copeland, Koller, and Murri:

> To estimate the opportunity cost of equity capital, we currently recommend using the capital asset pricing model (CAPM) or the arbitrage pricing model (APM). Both approaches have problems associated with their application. For example, they are subject to measurement problems. But they are theoretically correct; they are risk-adjusted and account for expected inflation. In contrast, many other approaches to computing the

> cost of equity are conceptually flawed. For example, the dividend yield model, the earnings-to-price ratio model, and the dividend yield model with a growth term (sometimes called the Gordon growth model) give incorrect results." *Valuation: Measuring and Managing the Value of Companies*, 2nd ed. by T. Copeland, T. Koller, and J. Murri, 1996, at p. 265.

Note that the DCF method is the same as the Gordon growth model. Similarly, Brealey and Meyers note: "the constant-growth DCF formula is an extremely useful rule of thumb, but no more than that. Naïve trust in the formula has led many financial analyst to silly conclusions." Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, 6th. Ed., McGraw Hill (2000), p. 69. Damodaran offers some criticisms of the DCF and CAPM (Ch. 3).

Recognizing the shortcomings in particular methods, including the CAPM and DCF, is no reason to shelf the techniques. The limitations of the techniques should be considered in context. I employ the CAPM because the value of Beta, according to the efficient market hypothesis, reflects the market's expectation about the impact of competition on Verizon's risk and thus its cost of capital.

ARE THERE OTHER REASONS TO REJECT VERIZON'S PROPOSED WACC OF 12.6?

Yes. As recently as April of this year, the FCC indicated that a WACC of 12.16 was too large for cost studies. In the Massachusetts 271 Order, the FCC stated:

> Commenters have raised legitimate concerns regarding some of the inputs used by Massachusetts in calculating its loop rates. In particular, we note that the Massachusetts Department utilized a cost of capital of 12.16 percent. This is higher than the cost of capital that the Massachusetts Department has used in setting Verizon's local rates and substantially higher than the cost of capital employed by any of the other states in Verizon's region." MA 271 Order, April 16, 2001, ¶ 38.

Despite the FCC questioning the legitimacy of a cost of capital as large as 12.16%, Verizon is now seeking approval for a cost of capital exceeding that level.

VERIZON PROVIDES SERVICE IN A NUMBER OF STATES. AT WHAT LEVEL HAVE OTHER STATE COMMISSIONS SET THE COST OF CAPITAL?

As shown in the Table 1, the WACCs set in other states averages 10.23%, with an average cost of equity of 12.14%. Notably, the average debt-to-equity ratio is 40-to-60. Across these ten states, the percent difference between the WACCs proposed by Hirshleifer, Verizon, and myself are 7%, 23%, and 5%, respectively. Obviously, the WACC proposed by Verizon is most unlike the WACCs selected in other states. Despite a considerably higher weight assigned to the cost of equity, the estimates of Mr. Hirshleifer and myself are not substantially different (on average) from the WACCs proposed in other states.

Table 1. Cost of Capital			
PA	9.83	NH	10.60
DE	10.28	RI	9.50
NJ	10.40	VT	9.99
MD	10.10		
VA	10.12	Hirshleifer	9.54
WV	11.25	Ford	9.75
NY	10.20	Verizon	12.6
State Average		10.23	
Sample Average		10.31	
Source: Verizon Response to ATT 10-3.			

WHAT WACC DO YOU RECOMMEND THE DEPARTMENT ADOPT IN THIS PROCEEDING?

I recommend the Department adopt a WACC of 9.75%, based on the inputs described above. This WACC incorporates expectations of the degree and nature of competition in local telecommunications.

If the Department declines to adopt a WACC of 9.75%, it should in any event not select a rate higher than 10.3%. Mr. Hirshleifer estimates a WACC of 9.54%, and I have estimated a WACC of about 9.75%. Verizon, supported by the testimony of witness Vander Weide, proposes a WACC of 12.6%. Pooling these three estimates with the decisions of the ten states in Table 1, the sample average WACC is 10.3%. While there is sufficient evidence on the record to support a WACC below 10%, the sample average WACC of 10.3% is based on the estimates of over 13 unique entities.

Verizon's Assumed Switch Discounts are Inappropriate

HAS VERIZON APPLIED THE CORRECT DISCOUNTS TO SWITCHING INVESTMENT?

No. Verizon has chosen a discount level consistent with an embedded network. The purpose of a TELRIC study is to construct a local telecommunications network from scratch, using the best available technology and the existing locations of the wire centers. Verizon's Megabid contract, effective when Verizon was purchasing large quantities of digital switches, provides an excellent analogy to the TELRIC study. For this reason, the discounts in the Megabid contract are most useful in the present context.

WHAT WAS THE STRUCTURE OF SWITCH CONTRACTS?

Switch vendors offered a bifurcated discount structure in which the purchase of a new switch is subject to a larger discount than the purchase of an upgrade to an existing switch. Verizon Panel at 135.

DOES VERIZON EMPLOY THIS BIFURCATED DISCOUNT STRUCTURE IN ITS COST STUDY?

No. Verizon uses the discounts that apply only to its current purchases of switching equipment. Since Verizon is not currently deploying a large number of replacement switches, as a TELRIC model requires, the discount is biased downward toward the growth discount. Verizon Panel at 130. Verizon's explanation for the application of the "growth" discount is that most of the necessary deployment of digital switches has already occurred so that current switching investment is primarily related to upgrades for

existing switches. Verizon Panel at 140. Verizon's embedded plant is not relevant to the issue of TELRIC.

IS VERIZON'S CURRENT SWITCHING INVESTMENT RELEVANT TO THE TELRIC STUDY?

No. Again, the purpose of the TELRIC study is to construct a local telecommunications network from scratch, using the best available technology and the existing locations of the wire centers. Verizon's selection of the switching discount is based on incremental additions to its existing, embedded switching plant. While TELRIC is an incremental cost concept, it is not incremental in the sense purported by Verizon. Incremental, within the TELRIC construct, implies the change in total cost caused by providing the entire element, not the change in total cost required to maintain or upgrade an existing, embedded facility.

SHOULD A TELRIC STUDY EMPLOY THE REPLACEMENT DISCOUNT OR THE GROWTH DISCOUNT?

Within the TELRIC construct, the switching investment should be sufficient for the expected level of demand over the planning horizon. Thus, the replacement discount should be used. However, if growth is expected to occur annually, a weighted average of the replacement discount and the growth discount is perhaps appropriate. As shown in Attachment C, reasonable weights for the replacement and growth discounts are 0.92 and 0.08, respectively. These weights are appropriate under the assumption that the annual growth investment is 5% of the replacement investment over a 3-year planning horizon.

Verizon Panel at 55. Over a 5-year planning cycle, the weights are 0.87 for replacement and 0.13 for growth. Verizon Cost Study, Section #3 Inputs, Subsection 3.5 Demand, Page 2 of 2. Even over a 10-year planning cycle, the replacement discount is weighted at 72% and the growth discount at 18%. Allen E. Sovereign Direct Exhibit AES-1. If either the replacement or growth discount is chosen to represent the average switching discount, it is clear from this analysis that the replacement discount is a better estimate.

VERIZON CONTENDS THAT THE DISCOUNTS IT NOW RECEIVES FOR SWITCHING EQUIPMENT ARE APPROPRIATE FOR DETERMINING TELRIC SWITCHING COSTS. DO YOU AGREE?

No. The goal is to estimate what the discounts levels for a carrier constructing a local telecommunications network from scratch. The Megabid discounts are perhaps the best estimate of the discounts applicable to such a build-out.

WHAT DO YOU RECOMMEND?

I recommend that the Megabid discounts be used, and that either the replacement discount or a weighted average of the replacement (with weight 0.94) and growth discounts (with weight 0.06) be employed. Even if replacement and growth discounts from some source other than the Megabid contracts are used, the weighting scheme I have described can be used to generate an overall discount for switch investment.

DOES THIS CONCLUDE YOUR TESTIMONY?

Yes.

ATTACHMENT A:

Effects of the FLC

One method by which to compute expenses in the forward-looking cost model is to use the historical relationship between expenses and investment as a proxy for the forward-looking relationship of the two. The ratio of historical expenses (E_H) and historical investment (I_H) is multiplied by forward-looking investment (I_T) to produce TELRIC expenses (E_T):

$$E_T = \frac{E_H}{I_H} \times I_T . \quad (1)$$

In the terminology of Verizon's cost study, E_H/I_H is the annual cost factor ("ACF"). Note that (in Verizon's study) E_H in Equation (1) is not exactly equal to historical expenses, but "[i]t is not Verizon's position that the forward-looking expenses used in the calculation of annual cost factors are significantly lower than current booked expenses (Verizon's reply to discovery request CC 10-4, June 25, 2001, D.T.E. 01-20 (Part A)." Thus, I assume equality of E_H to historical expenses.

Verizon defines the forward-looking to current cost factor as the ratio of forward-looking investment to historical investment. The FLC is then applied to the computation of expenses by division, so that Equation (1) is

$$E_T = \frac{E_H / I_H \times I_T}{I_T / I_H} . \quad (2)$$

Rearranging terms, we have

$$E_T = \frac{E_H}{I_H}\frac{I_H}{I_T}\frac{I_T}{1} = E_H, \tag{3}$$

which simply states that Verizon's estimate of "forward-looking" expenses is equal to historical expenses. Verizon, in effect, has de-TELRICed the expense estimates.

To compute Common Overhead, Verizon again applies the FLC to computed expenses. If the identified expenses are already adjusted by the FLC, then a weighted-average FLC is applied. Let the weighted-average FLC be $k(I_T/I_H)$, where k is some number greater than 1.00 so that the weighted-average FLC is larger (i.e., closer to 1.00) than the actual FLC. Also, let the Common Overhead ACF be ACF_{COH}. Taking the expenses from Equation (3), we see that Common Overhead expense for the adjusted expenses is

$$E_{COH} = ACF_{COH}\left(E_H \frac{I_H}{kI_T}\right), \tag{4}$$

where I_H/kI_T is greater than 1.00 (otherwise, the weighted-average FLC would equal or exceed 1.00). Thus, Common Overhead expenses are computed based on an expense level exceeding historical expenses.

For those expenses where Verizon contends the FLC should not be applied (e.g., Depreciation, RIT, and Property and Other Taxes), Verizon computes the "correct" level of expenses based on investment as

$$E_T^* = \frac{E_H}{I_H} \times I_T, \tag{5}$$

where the asterisk (*) indicates the expenses are not adjusted by the FLC. When calculating Common Overhead expenses, however, Verizon applies the FLC so that:

$$E^{*}_{COH} = ACF_{COH}\left(E^{*}_{T}\frac{I_H}{I_T}\right). \quad (6)$$

Because I_H/I_T exceeds 1.00, Equation (6) shows that the Verizon is increasing expenses above what the company admits to being the "correct" level of expenses prior to applying the Common Overhead ACF. Given an FLC of 0.80, the overstatement of Common Overhead is 25% ($I_H/I_T = 1.25$).

ATTACHMENT B:

Market Risk Premium

Market Risk Premium			
Year	Stocks	Treasury Bond	Premium
1970	4%	17%	-13%
1971	14%	10%	4%
1972	19%	3%	16%
1973	-14%	4%	-18%
1974	-26%	2%	-28%
1975	37%	4%	33%
1976	24%	16%	8%
1977	-7%	1%	-8%
1978	7%	-1%	7%
1979	19%	1%	18%
1980	32%	-3%	35%
1981	-5%	8%	-13%
1982	20%	33%	-12%
1983	22%	3%	19%
1984	6%	14%	-8%
1985	31%	26%	6%
1986	18%	24%	-6%
1987	6%	-5%	11%
1988	17%	8%	8%
1989	31%	18%	14%
1990	-3%	6%	-9%
1991	30%	15%	15%
1992	7%	9%	-2%
1993	10%	14%	-4%
1994	1%	-8%	9%
1995	37%	23%	14%
1996	24%	1%	22%
1997	32%	10%	22%
1998	28%	15%	13%
1999	21%	-8%	29%
2000	-9%	17%	-26%
	20-year Avg. Premium =	6.55%	
	30-year Avg. Premium =	5.07%	
	Average =	5.81%	

Source: http://www.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html

ATTACHMENT C:

Weighted Average Switch Discount

Let the replacement investment be I_R, the annual and constant growth investment be I_G, the replacement discount be D_R, and the growth discount be D_G. Assume a discount factor of 10%. Generally, the weighted average discount for the switching investment is:

$$D = D_R w_R + D_G w_G \tag{1}$$

where the w are the respective weights ($w_R + w_G = 1.00$). More specifically, the weighted average discount is

$$D = D_R\left(\frac{I_R}{I_R + 0.91I_G + 0.83I_G}\right) + D_G\left(\frac{0.91I_G + 0.83I_G}{I_R + 0.91I_G + 0.83I_G}\right) \tag{2}$$

where the growth investment is discounted to present value. To simply, let the growth investments be a constant proportion of the replacement investment, say k (so that $I_G = kI_R$). Equation (2) can be re-written as

$$D = D_R\left(\frac{1}{1 + 1.174k}\right) + D_G\left(\frac{1.174k}{1 + 1.174k}\right). \tag{3}$$

Assuming k is 0.05, that is annual growth investment is 5% of replacement investment, Equation (3) simplifies to

$$D = D_R(0.94) + D_G(0.06), \tag{4}$$

indicating that the weights for the replacement discount (w_R) and the growth discount (w_G) are 0.94 and 0.06, respectively. For the five and ten-year horizons, increase 1.174 in Equation (3) to 3.04 and 7.61, respectively.

CERTIFICATE OF SERVICE

I, Charles M. Hines III, hereby certify that a true and correct copy of the foregoing **"Rebuttal Testimony of George S. Ford on Behalf of Z-Tel Communications; MA DTE Case No. 01-20"** was delivered this 18th day of July 2001 to the individuals on the following list:

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