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March 21, 2001

VIA HAND DELIVERY

Blanca S. Bayo, Director
Division of Records and Reporting
Betty Easley Conference Center
4075 Esplanade Way
Tallahassee, Florida 32399-0870

Re: Docket No.: 000121-TP

Dear Ms. Bayo:

On behalf of Z-Tel Communications, Inc., I am enclosing the original and 15 copies of the Rebuttal Testimony of George S. Ford.

Please return a date stamped copy of this letter and the testimony to me. Thank you for your assistance in this matter.

Yours truly,

Joseph A. McGlothlin

JAM/kmr
Enclosure

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BUREAU OF RECORDS

MCWHIRTER, REEVES, MCGLOTHLIN, DAVIDSON, DECKER, KAUFMAN, ARNOLD & STEEN, P.A.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re:
Investigation into the Establishment of
Operations Support Systems Permanent
Performance Measures for Incumbent Local
Exchange Telecommunications Companies

Docket No. 000121-TP
Filed: March 21, 2001

_____/

REBUTTAL TESTIMONY

OF

GEORGE S. FORD, PH.D.

ON BEHALF OF

Z-TEL COMMUNICATIONS, INC.

1   **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**
2   **REBUTTAL TESTIMONY OF GEORGE S. FORD, PH.D.**
3   **ON BEHALF OF**
4   **Z-TEL COMMUNICATIONS**
5   **DOCKET NO. 000121-TP**
6   **MARCH 21, 2001**
7
8
9   **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

10   A. My name is George Ford. My business address is Z-Tel Communications, 601 South Harbour

11   Island Boulevard, Tampa, Florida 33602.

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

13   A. My testimony responds to certain portions of the direct testimony of BellSouth witnesses Dr.

14   Edward Mulrow, Mr. David Coon, and Ms. Cynthia Cox. Specifically, I will address the

15   following issues: a) the legal authority of this Commission to design and implement a self-

16   effectuating performance plan; b) when the performance plan should be initiated; c) the

17   aggregation of cell-level statistics; d) the choice of delta; e) the competitive entry volume

18   adjustment; f) the absolute cap on payments; g) the root-cause trigger; h) the penalties applying

19   to late, incomplete, or inaccurate reports; and i) the balancing computations for percent measures.

20   I will address each of these issues in order.

21   **Q. HAS MS. COX OFFERED THE APPROPRIATE CRITERIA FOR SELECTING THE**

22   **METRICS AND THE PAYMENT LEVELS FOR A PERFORMANCE ASSESSMENT**

23   **PLAN?**

24   A. No. BellSouth witness Cox offers her layperson's understanding of the extent of the

25   Commission's legal authority to devise and implement a performance assessment plan–which she

1   describes in limiting terms-- then conveys BellSouth's willingness to nevertheless "voluntarily

2   submit" to a program "provided the metrics are appropriate." (At page 4.) The clear implication

3   of her statement is that BellSouth believes it has veto power over any parameter that the

4   Commission selects.

5   **Q. HOW DO YOU RESPOND TO THIS STATEMENT BY MS. COX?**

6   A. First, setting aside for a moment the issue of the extent of the Commission's authority in the

7   area, I suspect that any willingness to "voluntarily accept" a performance assessment program

8   professed by BellSouth is related more to its expectation that the FCC will require a performance

9   assessment plan as a condition of 271 approval rather than to any magnanimity on BellSouth's

10   part. That being said, while I am not an attorney, I have been advised by counsel that, as a result

11   of case law construing the 1996 Act, a strong basis exists to support the Commission's legal

12   authority to adopt such a plan. My understanding is that under this very different view, which will

13   be developed in legal briefs, the implementation of the performance assessment program would

14   be a function of the Commission's authority, and not one of BellSouth's grace.

15   Specifically, I have been made aware that in MCI v. BellSouth, 112 F.Supp.2d 1286 (U.S.D.Ct,

16   N.Dist. Fl, 2000) the case involving the review of an arbitration of the dispute between MCI and

17   BellSouth, the United States District Court for the Northern District of Florida rejected the notion

18   that state law precludes the Commission from arbitrating a request for a compensation provision.

19   With respect to the Commission's ability to adopt a generic solution in lieu of individual

20   arbitrations, I am also informed that, in the context of the decision to implement UNE pricing

21   through a generic investigation, the Commission said, "We agree. . .that certain important pricing

22   issues should be examined on a more generic basis in light of the experience in the marketplace

3

1   with the our (sic) previously ordered prices. <u>Nothing in state or federal law prohibits a generic</u>

2   <u>approach to addressing these issues.</u>" (Order No. PSC-99-1078-PCO-TP, issued May 26, 1999,

3   at pages 6-7)(emphasis added).

4   Again, I am not an attorney, and I offer no legal opinion as to the impact of these matters. I am

5   confident that this legal issue will be fully developed and resolved at the appropriate time.

6   However, in view of the emphasis that BellSouth's non-legal witness places on the proposition

7   that the Commission has little or no authority to implement the plan that is the subject of this

8   docket, and the implied necessity to obtain BellSouth's acquiescence in the result that is

9   associated with that position, I believe it is fair for me to simply inform the Commission of the

10   fact that the position of Z-Tel (and, I am given to understand, other parties) on the legal issue

11   differs drastically from the BellSouth interpretation that witness Cox describes. Finally,

12   regardless of any other considerations, the Commission should base its selection of program

13   parameters on its view of what is needed to accomplish its objectives, and not on what is

14   acceptable to BellSouth.

15   **Q. MS. COX CONTENDS THAT THERE IS NO REASON TO INITIATE THE**

16   **PERFORMANCE PLAN UNTIL AFTER 271 RELIEF IS GRANTED (COX, P. 5). DO**

17   **YOU AGREE?**

18   A. No. The performance plan is an important element of interconnection agreements, and those

19   agreements are in effect today. Because the role of the performance plan is to ensure BellSouth's

20   compliance with the terms of the interconnection agreement, not simply to get BellSouth 271

21   relief, the performance plan should be initiated as soon as possible. Furthermore, while it appears

22   that a performance plan is a condition of 271 relief, the FCC has never stated that a performance

1   plan need not apply until after 271 relief. In fact, the effectiveness of the plan can be assessed

2   more easily if there is evidence as to its actual performance. Such evidence will not be available

3   until after the plan is initiated. Because actual performance is often a focal point of the FCC's

4   scrutiny of a 271 application, the incentives produced by the performance plan should raise the

5   level of BellSouth's performance to a more acceptable standard. Thus, allowing the plan to

6   operate prior to a 271 application should increase the chance of success for that application,

7   assuming the plan is working as intended.

8   **Q. BELLSOUTH WITNESSES MR. COON AND DR. MULROW CONTEND THAT**

9   **CELL-LEVEL STATISTICS SHOULD BE AGGREGATED. DO YOU AGREE?**

10   A. If this Commission accepts the proposed level of disaggregation recommended by BellSouth

11   or the Joint ALECs ("JOINT ALECs"), then as a practical matter some type of aggregation is

12   required. The questions for the Commission relate to the manner and degree of aggregation. As

13   I will explain, BellSouth's proposal goes too far.

14   **Q. IF CELL-LEVEL STATISTICS ARE AGGREGATED, WHAT METHOD SHOULD**

15   **BE USED?**

16   A. The truncated z-score is the only method proposed by parties to this proceeding for

17   aggregating cell-level statistics. Importantly, aggregating cell-level data should not re-introduce

18   the apples-to-oranges problem that disaggregation attempts to purge from the analysis. Excessive

19   aggregation is most likely the consequence of aggregating the results from unlike product types.

20   **Q. WHAT IS THE PROBLEM WITH AGGREGATING STATISTICS ACROSS**

21   **DIFFERENT PRODUCT OR SERVICE TYPES?**

22   A. Consider a hypothetical example. Assume BellSouth provides xDSL and POTS loops to itself

1 in 5 days and, for simplicity, assume that the standard deviation is equal to the mean for both

2 types of loops. Now, assume BellSouth provides an ALEC 30 xDSL loops in an average of 15

3 days and 1,000 POTS loops in an average of 5.1 days. The modified z score for xDSL loops is

4 -10.95, which is a clear indication of discrimination given a Balancing Critical Value of -0.68

5 (assuming Delta is 0.25). The POTS loops are provided at the same interval for BellSouth and

6 the ALEC so the modified z-score is -0.63 and the null-hypothesis of "no discrimination" is

7 accepted (the Balancing Critical Value is -3.95 at a Delta of 0.25).

8 If the two product types are aggregated using the truncated z-score, it is possible that the

9 relatively large weighting of POTS loops (based on sample size) would mask the clear indication

10 of discrimination for xDSL loops. My own estimates of the truncated z-score show that by

11 combining these xDSL and POTS loops, no discrimination will be found for xDSL (POTS) loops

12 (the truncated z is -3.48 and the Balancing Critical Value is -4.80). Clearly, that conclusion is

13 erroneous. The problem is not with the truncated z-score itself, but with the grouping of unlike

14 products into a single statistical procedure.

15 **Q. HOW CAN ONE DETERMINE THAT THE LEVEL OF AGGREGATION**

16 **PROPOSED BY BELLSOUTH IS INAPPROPRIATE?**

17 A. One way to evaluate the reasonableness of the aggregation is to evaluate whether or not two

18 unique products or services are provided in substantially the same manner and have similar

19 overall sample sizes. While I do not have access to any BellSouth performance data, I do have

20 access to aggregate and region-wide Qwest data (Qwest Performance Results, Regional January

21 2000 – October 2000, December 21, 2000).

22 Consider BellSouth's proposal to aggregate the provisioning intervals of different types of loops,

1   including DS0, DS1, and ISDN loops. Using the Qwest data, it is clear that these three products

2   have widely disparate installation intervals, with DS0, DS1, and ISDN intervals in July-00 of

3   14.78 days, 19.08 days, and 34.39 days (respectively). A comparison of mean installation

4   intervals reveals that the installation interval on DS0 loops is 4.3 days shorter than DS1 loops

5   and 19.61 days shorter than ISDN loops (Qwest measure OP-4D, Interval Zone One).

6   Furthermore, the sample sizes of these different product types vary widely. About 1,136 DSO

7   loops were installed, compared to 3,040 DS1 and 450 ISDN loops. Clearly, the opportunity to

8   water down discrimination for either DS0 or ISDN loops is present when aggregating these

9   product types. While Qwest data is not BellSouth data, this simple comparison using actual data

10   forces me to question the appropriateness of BellSouth's proposed aggregation across these and

11   other product groups.

12   **Q. WHAT DO YOU RECOMMEND?**

13   A. This Commission should be wary of aggregation across product types. In particular, product

14   types with persistently different service characteristics or sample sizes should not be aggregated.

15   If BellSouth decides to discriminate against one service with small sample sizes, and these

16   services are combined with services with large sample sizes, discrimination may be masked by

17   parity service for products with larger sample sizes. Aggregating up to the submeasure level for

18   the 20 product groups defined in Mr. Coon's testimony (p. 9) is perhaps the easiest way to resolve

19   this issue.

20   **Q. DR. MULROW CONTENDS THAT A FLOOR ON THE BALANCING CRITICAL**

21   **VALUE IS NOT REQUIRED. DO YOU AGREE?**

22   A. I strongly disagree. Something must be done to remedy the large sample size problem of the

1   balancing approach, whether that solution is a floor to the Balancing Critical Value or varying

2   the values of Delta within the Delta Function. Let me first provide a brief background on this

3   issue before discussing why I disagree with Dr. Mulrow. Under the standard statistical analysis

4   of means differences, the modified z-score would be compared to a fixed critical value derived

5   from the chosen significance level of the test. This significance level equals the Type I error rate.

6   If a fixed critical value is used, then we cannot be entirely confident in our determination as to

7   whether the means are different or the same. Two types of errors exist, Type I and Type II errors.

8   Dr. Mulrow, Dr. Bell, and I all discussed these errors in our direct testimony.

9   These statistical errors exist for statistical testing in any context, but they become more important

10   when the results of the statistical test are used to determine whether or not BellSouth must pay

11   an incentive payment. In the case of a Type I error, BellSouth will pay for discrimination even

12   though it did not discriminate. Alternately, for a Type II error, BellSouth will not pay an incentive

13   payment for discrimination that does occur.

14   As described in my direct testimony, the implications of Type I error across multiple tests can be

15   assumed away simply by decreasing the significance level of the test. For example, we could

16   choose a significance level of 0.0001 and feel very certain that no Type I errors will occur even

17   if 500 statistical tests are performed. This approach resolves the issue of BellSouth overpaying

18   incentive payments. Unfortunately, by choosing this small significance level, we bias the test

19   against rejection and increase the Type II error rate. In other words, BellSouth will not make any

20   payments due to statistical errors, but will avoid many payments due to statistical error. The

21   balancing approach resolves this issue by attempting to ensure that every dollar overpaid is

22   matched by a dollar underpaid. The balancing approach is a mitigation scheme for statistical

1   error.

2   **Q. HOW DOES THIS BACKGROUND INFORMATION IMPACT DR. MULROW'S**

3   **CRITICISM OF THE FLOOR?**

4   A. Consider Dr. Mulrow's own numerical example (Mulrow, pp. 20-21). From that example, the

5   Balancing Critical Value is -6.847 for a ALEC sample size of 800. The Type I/Type II error rate

6   for this sample size is 0.000000000004. Bear in mind that the typical or standard significance

7   levels employed by statisticians in a variety of contexts are 0.05 and 0.01. We would have to

8   divide the standard significance level by a factor of over 10 billion to arrive at the significance

9   level generated by Dr. Mulrow's hypothetical using a Delta of 0.50. At this critical value and

10   significance level, we could perform over 26 million statistical test and be 99.99% confident that

11   we would not observe a single Type I or Type II failure [from Excel, CRITBINOM(26000000,

12   0.000000000004, 0.9999) = 0.00]. Excel cannot even compute the implied significance level for

13   Dr. Mulrow's other scenario, an ALEC sample size of 2,500, the Balancing Critical Value of

14   which is -12.347 (Mulrow, p. 21). Even SAS, one of the most powerful statistical programs

15   available, will not compute the significance level of that z-score (SAS returns a significance level

16   of 0.00).

17   **Q. WHAT IS THE SIGNIFICANCE OF THESE DEPARTURES FROM ACCEPTED**

18   **STATISTICAL NORMS TO YOUR OWN PROPOSAL?**

19   A. My point is this: once the Type I/Type II error rate becomes so small that the implications for

20   incentive payments disappear, there are no reasons to continue to mitigate Type I/Type II error.

21   There is good reason <u>not</u> to mitigate beyond that point, however, because allowing the Balancing

22   Critical Value to increase without bound makes a mockery of the statistical test of discrimination.

1   The use of either a floor to the Balancing Critical Value or my proposed Delta Function

2   recognizes the point at which continued mitigation would defeat the purpose of the balancing

3   exercise, and thus preserves both the integrity of the statistical function and the usefulness of the

4   performance assessment plan.

5   **Q. DR. MULROW CLAIMS THAT IF A FLOOR ON THE BALANCING CRITICAL**

6   **VALUE IS USED, BELLSOUTH MAY PAY A PENALTY EVEN THOUGH THE LEVEL**

7   **OF SERVICE IT PROVIDES TO THE ALEC DOES NOT REPRESENT A MATERIAL**

8   **DIFFERENCE. IS THIS TRUE?**

9   A. No. Dr. Mulrow's argument has no merit because his "determination" of materiality is

10   completely arbitrary.

11   **Q. PLEASE EXPLAIN.**

12   A. Dr. Mulrow's criticism of the floor presumes that we know what is or is not material, and no-

13   one in this proceeding has claimed to know exactly what is or is not material – *including* Dr.

14   Mulrow. In response to the question, "Have the statisticians determined the appropriate value for

15   'Delta'?", Dr. Mulrow responds: "No. While statistical science can be used to evaluate the impact

16   of different choices of these parameters, there is not much that an appeal to statistical principles

17   can offer in directing specific choices. Specific choices should be made based on

18   economic/business judgment (Mulrow, p. 19)." (Similarly, Mr. Coon admits that "[a]lthough the

19   parties have proposed different values for Delta, there is little in the way of hard information upon

20   which this business judgment can be made") (Coon, p. 33). If, in fact, "there is little hard

21   information" upon which to base a value for Delta, then reducing the value of Delta once Type

22   I/Type II error becomes too trivial to matter is difficult to criticize with anything but arbitrary

1   arguments.

2   **Q. CAN YOU ILLUSTRATE YOUR POINT?**

3   A. Yes. Again, consider the numerical example provided by Dr. Mulrow. However, make one

4   modification: let the delta value be 0.15 instead of his assumption of 0.50. With that one change,

5   the "trigger point" becomes 3.30 so that discrimination is found at all sample sizes. The floor has

6   no impact. Furthermore, Dr. Mulrow confuses the "trigger point" with the definition of

7   materiality. Given a Delta of 1.00, the "trigger point" is one-half the defined level of materiality.

8   **Q. HOW DOES THIS MODIFICATION REFUTE DR. MULROW'S CLAIM**

9   **REGARDING MATERIALITY?**

10   A. Placing a floor on the Balancing Critical Value is tantamount to changing the value of Delta.

11   When you consider that "materiality" rests on the assumption of Delta, Dr. Mulrow's criticism

12   of the floor (or the Delta Function for that matter) loses any validity even by his own standards.

13   Because materiality is defined by Delta, and the floor is identical to a change in Delta, statistical

14   principles, according to Dr. Mulrow, offer little guidance on the appropriateness of the floor.

15   **Q. DOES DR. MULROW'S CRITICISM OF THE FLOOR APPLY TO THE DELTA**

16   **FUNCTION?**

17   A. No. The Delta Function that I propose does not place a floor on the Balancing Critical Value,

18   but rather alters the choice of Delta, so the comments will not apply directly. Notably, Dr.

19   Mulrow's criticism of the floor is that the "floor will inappropriately prevent the 'Balancing

20   Critical Value' from changing, as it should (Mulrow, p. 20)." Unlike the floor, my proposed Delta

21   Function does not prevent the Balancing Critical Value from changing as sample size increases.

22   Furthermore, as just discussed, the Delta Function is a method to choose the value of Delta.

1 Because there is no hard information on selecting Delta, then there can be no hard information

2 upon which to criticize the Delta Function.

3 **Q. DO YOU AGREE WITH DR. MULROW THAT STATISTICAL PRINCIPLES OFFER**

4 **NO GUIDANCE ON CHOOSING DELTA?**

5 A. No. As discussed above and in my direct testimony and briefly here, statistical principles can

6 provide useful guidance on the choice of Delta. Specifically, because the Type I and Type II error

7 rates are impacted by the choice of Delta, statistical principles can indicate whether or not the

8 choice of Delta is reasonable in the context of a test for equal treatment of the ALECs.

9 **Q. RELATIVE TO A FIXED CRITICAL VALUE, DOES THE DELTA FUNCTION YOU**

10 **PROPOSE BENEFIT ALECS AT THE COST OF BELLSOUTH?**

11 A. No. My Delta Function controls the Type I/Type II error rates at both large and small samples.

12 For example, compared to a Delta value of 0.25, the Balancing Critical Value based on the Delta

13 Function is larger for any sample size less than about 175 data points. For sample sizes larger

14 than about 175 data points, the Balancing Critical Value based on the Delta Function is smaller

15 relative to a fixed Delta of 0.25. This relationship is illustrated graphically in my

16 Exhibit___(GSF-7), attached.

17 **Q. IN YOUR OPINION, SHOULD THE COMMISSION USE THE FLOOR OR THE**

18 **DELTA FUNCTION TO MAINTAIN THE INTEGRITY OF THE STATISTICAL TEST**

19 **FOR DISCRIMINATION?**

20 A. While I was somewhat agnostic regarding the choice of the floor or Delta Function in my

21 direct testimony, I believe now that the Delta Function is the preferred choice. The Delta Function

22 is a better compromise between the various proposals for Delta because it allows for the use of

1 a variety of Delta values. Given a lack of hard information on the choice of Delta, choosing a

2 single value is perhaps unwise, particularly if it destroys the integrity of the statistical test of

3 parity.

4 Furthermore, BellSouth witness Mr. Coon notes: "the appropriate approach is to select a Delta,

5 use that Delta for a certain time period, analyze the results, and only then make a permanent

6 selection of the parameter Delta (Coon, p. 40)." The Delta Function will provide more

7 information with which to analyze the impact of alternative choices of Delta, since it specifies

8 alternative values for Delta.

9 **Q. IN YOUR DIRECT TESTIMONY, YOU INDICATED THERE ARE VALID**

10 **REASONS TO MAKE DELTA SMALLER AT LARGER SAMPLE SIZES. DOES**

11 **BELLSOUTH'S TESTIMONY INDICATE ANY OTHER REASONS TO BASE THE**

12 **DELTA VALUE ON SAMPLE SIZE?**

13 A. Yes. Dr. Mulrow notes that in Louisiana the statisticians thought a smaller value of delta might

14 be used for Tier II. Dr. Mulrow explains, "the reasoning behind this [lower delta value for Tier

15 II] is that when one combines all ALEC transactions together, poor service to a few small

16 ALECs' could be masked by better service to the rest of the ALECs. One way to try to avoid such

17 masking is to use a small materiality threshold (Mulrow, p. 22)." This explanation is immaterial

18 to the issue. You could decrease Delta to 0.00 and not resolve the problem of aggregating small

19 ALECs with large ALECs. The only way to eliminate a problem caused by aggregation is to

20 disaggregate.

21 My own investigation on this matter revealed that the real reason the Delta was lowered for Tier

22 II in Louisiana is that the larger sample sizes endemic to Tier II produce unreasonably large

1   critical values. Because lowering Delta reduces the Balancing Critical Value for large sample

2   sizes, the decision was made to reduce Delta for Tier II. The Delta Function performs this task

3   automatically, protecting the integrity of the statistical test of parity for both Tier I and Tier II.

4   **Q. DR. MULROW STATES IN HIS TESTIMONY THAT THE BALANCING**

5   **APPROACH "ALLOWS YOU TO DETERMINE WHETHER AN OBSERVED**

6   **DIFFERENCE IS STATISTICALLY SIGNIFICANT AND MATERIAL ALL AT THE**

7   **SAME TIME (MULROW, P. 13)." IS THIS TRUE?**

8   A. Only if Delta (i.e., materiality) is specified properly can you test both materiality and statistical

9   significance. By BellSouth's own admission, we cannot have great confidence in the choice of

10   Delta because there is "no hard evidence" upon which to base that choice (other than the effects

11   on the statistical test of parity as I have described in my testimony).

12   In truth, balancing and materiality are entirely separable concepts. We can balance the errors at

13   any choice of Delta. The true Type I and Type II error rates can only be balanced if we know

14   exactly what the true means difference is. This "true" Delta probably will vary by measure, by

15   month, and by cell-level. Even if we knew, by divine intervention, what the true means difference

16   was for a particular measure, month, ALEC, cell-level, and so forth, we would then be required

17   to decide whether or not the true difference in means is "material."

18   We also could specify a statistical test of materiality without introducing the concept of

19   balancing. For example, we could simply perform a means difference test where we do not test

20   for a zero difference in means, but a "material" difference in means. For this test of "materiality,"

21   the numerator of the modified z-score is simply the difference in BellSouth and ALEC

22   performance minus some value indicating "materiality' (i.e., $X_C - X_I - m$, where X_C is the ALEC

14

1   mean, X_j is BellSouth's mean, and m is the difference in means that is determined to be material).

2   If we employ a fixed critical value of 1.65 (a 5% significance level) to determine statistical

3   significance, we test for materiality without balancing statistical errors. In other words, Type II

4   error will not equal Type I error, but a test of materiality is being performed. As a theoretical

5   matter, balancing and materiality can be entirely independent.

6   **Q. WHY THEN, IN BELLSOUTH AND JOINT ALEC TESTIMONY, ARE**

7   **MATERIALITY AND BALANCING SO CLOSELY ASSOCIATED?**

8   A. The two concepts are combined only to provide some justification for the choice of Delta. On

9   the question of balancing, about the only thing we really know about balancing statistical error

10 is that Type II error is larger at smaller sample sizes than at larger sample sizes. Consequently,

11 the only real requirement of the balancing approach is that this relationship flow through to the

12 statistical analysis. The balancing procedure recommended by BellSouth and the Joint ALECs

13 has this property. On the question of materiality, about the only thing we really know is that the

14 larger is Delta, the greater we depart from a true test of parity service. Given that the balancing

15 procedures satisfy the relationship between sample size and Type II error, the choice of Delta is

16 based on what we think is an acceptable deviation from parity and what we believe are reasonable

17 Type I and Type II error rates. Because Section 251(c)(2)(C) of the Telecommunications Act

18 requires that BellSouth provide service the ALECs that is "at least equal in quality to that

19 provided by the local exchange carrier to itself or to any subsidiary, affiliate, or any other party

20 to which the carrier provides interconnection (emphasis added)," deviations from parity should

21 be minimized to the greatest extent possible.

22 **Q. HOW DO YOU DEFINE PARITY?**

15

1   A. Parity implies the same or equal level of service, as is required by Section 251(c)(2)(C) of the

2   Act ("at least equal in quality"). The definition of parity is "the quality or state of being equal or

3   equivalent (Merrium-Websters Collegiate Dictionary, www.m-w.com)." Parity, or zero-means

4   difference, is the null hypothesis of the modified z-test. If we were to use a fixed critical value

5   with the modified z, then modified z would be a true test of parity. Instead, the balancing critical

6   value is used to mitigate statistical error, which caused the modified z-test to deviate from a parity

7   test. As long as Type I and Type II errors are large enough to impact the payments, however, we

8   gain something (i.e., mitigation) by deviating from a true test of parity. However, the fact that we

9   may elect to implement a provision that departs from true parity to accommodate the needs of a

10   testing process based on sampling should not cause us to lose sight of the objective–or the need

11   to adhere as closely to that objective as possible. Once Type I and Type II error are too small to

12   matter, we gain nothing by deviating farther from a true test of parity. This latter fact is why I

13   propose that Delta be defined by the Delta Function or that Delta be subject to a floor (or ceiling,

14   depending on the definition of modified z).

15   **Q. DR. MULROW PROVIDES AN EXAMPLE THAT SUGGESTS THAT CHANGING**

16   **DELTA FROM 1.00 TO 0.50 IMPLIES ONLY A 3 HOUR DIFFERENCE ON A 5-DAY**

17   **PROVISIONING INTERVAL (MULROW TESTIMONY, P. 19). IF TRUE, WHY IS THE**

18   **CHOICE OF DELTA SO IMPORTANT?**

19   A. Dr. Mulrow has chosen the assumptions for his numerical example carefully and, I would

20   argue, has employed an unrealistic assumption that assures the result that suits his purpose --

21   which is to indicate that the choice of Delta is trivial. Dr. Mulrow assumes that the mean

22   provisioning interval for residential service is 5 days with a standard deviation of 0.50 days

1 (Mulrow Testimony, pp. 18-9). This distribution for service intervals is exceedingly "tight" and

2 highly inconsistent with data I have seen on provisioning intervals for other ILECs. For example,

3 Qwest region-wide aggregate data indicates that the installation interval for residential lines is

4 7.32 days with a standard deviation of 12.65 days (Qwest Performance Results, Regional January

5 2000 – October 2000, December 21, 2000, using October data). Note that the standard deviation

6 is larger than the mean. This relationship is to be expected for installation intervals, given the fact

7 that some very long intervals typically will be observed (the data will have a long tail). In fact,

8 for the Qwest data, the standard deviation exceeds the mean for over 90% of installation intervals

9 reported in October 2000 for which sufficient data was available to compute the standard

10 deviation. The average ratio of the standard deviation to the mean (the coefficient of variation)

11 was 1.5 across the interval installation measures.

12 **Q. HOW DOES DR. MULROW'S EXAMPLE CHANGE IF YOU ADJUST THE**

13 **STANDARD DEVIATION TO A MORE REASONABLE VALUE?**

14 A. Computing a standard deviation for Dr. Mulrow's assumed 5-day mean using the more

15 realistic relationship between the standard deviation and the mean, say a coefficient of variation

16 of 1.50, a Delta of 1.00 implies a materiality level of 12.5 days (=5+1.5x5x1.00) with a "trigger

17 point" for discriminatory service of 8.75 days (=5+ 1.5x0.5x5x1.00). Thus, using a Delta of 1.00

18 implies that a means difference of 7.5 days is immaterial and that no discrimination exists when

19 BellSouth serves its own customer in 5 days but serves the ALEC customers in 8.75 days (a

20 means difference of 3.75 days). Would BellSouth contend that a difference of 7.5 days on a 5-day

21 interval is not "material?" In my professional opinion, the contention that service over 250%

22 worse than equal is immaterial approaches the absurd.

17

1 Q. BOTH DR. MULROW AND MR. COON ASSERT THAT THERE IS NO NEED FOR

2 THE COMPETITIVE ENTRY VOLUME ADJUSTMENT CONTAINED IN THE

3 STRAWMAN? DO YOU AGREE?

4 A. No. Dr. Mulrow states that "[t]here is no statistical justification for such an adjustment

5 (Mulrow, p. 23)." He is right. There also is no statistical justification for the choice of Delta (at

6 least according to Dr. Mulrow), yet BellSouth proposes one. There is no statistical justification

7 for incentive payments, yet BellSouth proposes such payments. There is no statistical

8 justification, or economic justification for that matter, for a remedy cap. Yet, BellSouth proposes

9 a cap. Dr. Mulrow's statement is immaterial to the need for a volume adjustment.

10 Mr. Coon levies two criticisms against the volume adjustment (Coon, p. 51), although both

11 criticisms are the same. Mr. Coon does not contend the volume adjustment itself is bad, but that

12 it may apply to large ALECs rather than just small ALECs. Mr. Coon's point is irrelevant. Mr.

13 Stallcup did not propose the volume adjustment just for small ALECs, but for "situations where

14 the number of transactions are small (Stallcup, p. 22)." The volume adjustment is required

15 because a transactions-based payment system cannot produce large enough incentive payments

16 to alter behavior when sample sizes are small. The transactions-based scheme proposed by

17 BellSouth is biased against small sample sizes and this bias exists whether the service is either

18 nascent or established, or the ALEC is either big or small.

19 Q. IN YOUR OPINION, IS A COMPETITIVE ENTRY VOLUME ADJUSTMENT

20 NEEDED?

21 A. Yes, but I do not think that the Strawman's volume adjustment is adequate or the best method

22 to deal with the problem. Rather, I believe a minimum payment better corrects for the perverse

18

1   incentives at small samples created by the transactions-based payment system. The Joint ALEC's

2   measure-based system is a reasonable approach to remedy the small sample problem.

3   **Q. MR. COON PROPOSES THAT AN ABSOLUTE CAP APPLY TO INCENTIVE**

4   **PAYMENTS. DO YOU AGREE?**

5   A. No. As I discussed in my direct testimony, there are no valid justifications for an absolute cap.

6   The absolute cap is nothing more than an attempt by BellSouth to reduce the consequences of

7   extremely poor performance. A procedural cap, alternately, is a reasonable element of a

8   performance plan and does not create perverse incentives like an absolute cap. Further, Mr. Coon

9   has an interesting view as to what the purpose of the procedural cap is. The purpose of the

10   proceeding initiated by reaching the cap is not to determine what the absolute cap should be, but

11   to determine the cause of such large penalties. If persistently bad performance is the sole cause

12   of large incentive payments, then the Commission may choose to terminate BellSouth's right to

13   market long distance services, increase the incentive payments, or take other remedial actions.

14   **Q. MR. COON ARGUES THAT A SELF-EFFECTUATING ROOT CAUSE ANALYSIS**

15   **IS NOT NECESSARY. DO YOU AGREE?**

16   A. No. A root-cause analysis is a reasonable element of a performance plan, particularly in the

17   first year or so of its operation. In rejecting the need for self-effectuating root-cause analysis, Mr.

18   Coon's commits a common fallacy of logic: he begs the question. Specifically, Mr. Coon states:

19   "Conducting root cause analysis is an administrative process that is both burdensome and

20   unnecessary given that enforcement will provide the incentive to automatically correct significant

21   disparate treatment (Coon, p. 25)." Mr. Coon may be correct about root-cause analysis if in fact

22   the "enforcement will provide the incentive to automatically correct significant disparate

19

1   treatment.," but there is no reason, ex ante, to believe that is true. If the enforcement is not

2   effective, however, then a root-cause analysis triggers an investigation into what the performance

3   plan is lacking. If the root-cause analysis is triggered by repeated or severe discrimination, then

4   there is good evidence that the performance plan is not providing adequate incentive to provide

5   non-discriminatory service.

6   **Q. MR. COON CONTENDS THAT LATE, INCOMPLETE, OR INACCURATE**

7   **REPORTS SHOULD NOT BE PENALIZED? DO YOU AGREE?**

8   A. No, and for numerous reasons. First, Mr. Coon's assertion regarding the absence of monetary

9   harm to the ALECs from late, incomplete, or inaccurate reports is unfounded (Coon, pp. 19, 22).

10   Mr. Coon has no idea what ALECs do, or plan to do, with that information. Second, Mr. Coon's

11   promise that "BellSouth will make every effort" to provide timely, complete, and accurate reports

12   is derisory. If BellSouth promised to "make every effort" to provide non-discriminatory service

13   would we then eliminate incentive payments from the performance plan? I think not.

14   Mr. Coon does make one valid point regarding the incentives to correct reports. Penalties for

15   incorrect reports may discourage BellSouth from reporting inaccuracies (Coon, p. 21). However,

16   there is a way to alter these perverse incentives by using a two-part penalty approach. The first

17   part of the penalty approach mandates that BellSouth pay a penalty equal to $1,000 per day, per

18   report for inaccuracies. The second part of the penalty approach mandates that if an ALEC or the

19   Commission finds an inaccuracy, BellSouth will pay $2,000 per day, per report for inaccuracies.

20   Because the penalty for not reporting inaccuracies is only half that of not reporting them, this

21   penalty approach provides BellSouth an incentive to report data on an accurate basis and

22   encourages BellSouth to make corrections when inaccuracies are discovered.

20

1   A simple, a real-life, example may help illustrate the point. Assume your employer requires you

2   to fill out expense reports on a weekly basis. Your employer also requires you to pay $100 if you

3   find an inaccuracy in your expense report at some later date. Obviously, the incentive created by

4   this policy is to discourage you form reporting an inaccuracy unless you had understated expenses

5   by more than $100. Now, consider your incentives if your employer required you to pay $200 if

6   they found an inaccuracy in your expense report? The resulting incentive is to be more careful

7   when generating the expense report and to report inaccuracies.

8   **Q. ARE THERE OTHER MEANS BY WHICH TO DEAL WITH LATE, INCOMPLETE,**

9   **OR INACCURATE REPORTS?**

10   A. If the two-part penalty approach outlined above is implemented, Z-Tel would not object to

11   allowing BellSouth to provide one late, incomplete, or inaccurate report, as long as any problems

12   are resolved within 15 days of the due date, every six months. This "grace" would be provided

13   whether Z-Tel or BellSouth finds the inaccuracies in the reports. Or, perhaps more simply,

14   BellSouth could receive 15 grace days every six months (about 2.5 days per month). This

15   alternate approach gives BellSouth a 15-day leeway in a single month, or 2.5 days every month,

16   or 7.5 days for two months, or any other combination of 15 days.

17   **Q. HOW ARE PERCENTAGE/PROPORTION MEASURES TREATED IN THE SEEM**

18   **PLAN?**

19   A. It is unclear to me how measures defined in percentage terms will be handled by the SEEM

20   plan. For SEEM, the description of the calculations are, for the most part, too cryptic to decipher.

21   For the Joint ALEC plan, Dr. Bell provides some numerical illustrations of percent measures

22   under the Joint ALEC plan (Bell Direct Testimony, p. 11-13). From what I know about the Joint

1   ALEC calculations, I was able to reproduce Dr. Bell's table. The Joint ALEC's calculation for

2   percent measures produces an almost identical Balancing Critical Value for percent measures as

3   for interval measures across the full range of sample sizes. Thus, to simplify the calculations, the

4   simple formula for the Balancing Critical Value for interval measures could be used to produce

5   the Balancing Critical Value for percent measures.

6   Whether or not the Balancing Critical Value for intervals is used for all measures, I believe the

7   Joint ALEC approach should be adopted by the Commission because that approach employs the

8   Delta value. The SEEM procedure may employ a different parameter Psi rather than Delta.

9   Because SEEM does not describe the calculations for percentage measures in an intelligible

10   manner, I cannot be certain that this alternative parameter is required. One thing I am sure about,

11   however, is that no-one's testimony has addressed the appropriate value for Psi. Thus, any

12   procedure requiring an assumption about Psi should be rejected outright.

13   **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14   A. Yes.

15

Figure 1. Balancing Critical Value Comparison
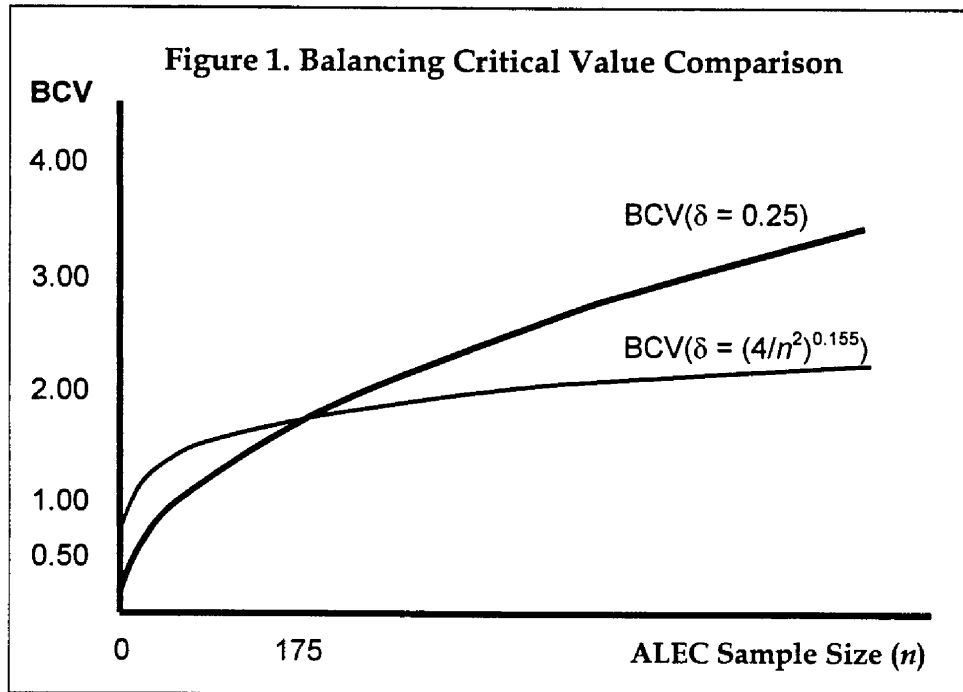
CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Rebuttal Testimony of George S. Ford, Ph.D. has been furnished by hand delivery(*) or U.S. mail on this 21st day of March, 2001 to:

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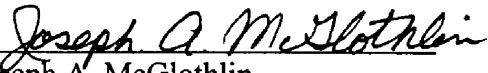125 S. Gadsden Street, Suite 200
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