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November 22, 2000

VIA HAND DELIVERY

Blanca S. Bayo, Director
Division of Records and Reporting
Betty Easley Conference Center
4075 Esplanade Way
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Re: Docket No.: 000121-TP

Dear Ms. Bayo:

On behalf of Z-Tel Communications, Inc., enclosed for filing and distribution are the original and 15 copies of the following:

> ▸   Z-Tel's Comments on Strawman Proposal.

Please acknowledge receipt of the above on the extra copy of each and return the stamped copies to me. Thank you for your assistance.

Sincerely,

Joe McGlothlin

Joseph A. McGlothlin

JAM/kmr
Enclosure

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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: November 22, 2000

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Z-TEL'S COMMENTS ON STRAWMAN PROPOSAL

Z-Tel Communications, Inc. (Z-Tel), hereby submits the comments of George S. Ford,

Chief Economist for Z-Tel, on the Staff "Strawman Proposal" dated October 27, 2000.
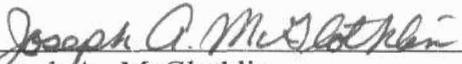
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of Z-Tel's Comments on Strawman

Proposal has been furnished by hand delivery(*) or U.S. mail on this 22nd day of November, to:

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Comments of Z-Tel on the Strawman Proposal as a Performance Assessment Plan for the State of Florida

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I. Introduction

The purpose of this document is to briefly illustrate why the Strawman proposal will fail to ensure just, reasonable, and non-discriminatory performance by BellSouth to the CLECs as required by the 1996 Telecommunications Act. Three reasons for this failure are given. First, the Strawman proposal is far too complex to effectively monitor transactions between BellSouth and the CLECs. This point is not simply rhetorical. The authors of the Strawman proposal, individuals who presumably are most familiar with the statistical procedures that are part of the plan, appear themselves unable to perform accurately the required computations even for simple numerical examples.[1] It is perhaps unwise to rely on a statistical procedure for which errors cannot be eliminated even from hypothetical numerical examples. If simple examples cannot properly be constructed, then the results from actual performance data cannot be trusted.

Second, the balanced critical value approach, in all likelihood, will fail to accomplish its task of balancing Type I and Type II errors under the assumptions set for the in the Strawman proposal. If the balancing approach fails to accomplish this task – a task that justifies the complex computations and additional steps required by the balancing approach -- then employing the approach is senseless. The choice of the "balancing parameter" δ cannot be a bargaining point between the ILEC and CLECs. If δ is not set to the correct value, the balancing aspect of the Strawman procedures are lost and the true Type I and Type II errors will deviate.

Third, and most importantly, by design the Strawman proposal allows for wide disparities in the quality of service provided by BellSouth to itself and to the CLECs. Under fairly typical circumstances, the quality of service difference between the ILEC and CLEC can be very large yet within the bounds of "parity" as defined by the proposal. The 'within parity' differences are so large that they certainly cannot be characterized as non-discriminatory or reasonable. By lowering the standards of parity (i.e., inflating the critical z values), the

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[1] There is the potential that it is my calculations that are incorrect and not those of the Strawman proposal. BellSouth's outline of the computations is cryptic and difficult to follow. However, I am reasonably certain that my computations are correct for the reasons discussed in Section II.

balancing critical approach of the Strawman proposal allows consistent and meaningful discrimination to occur without penalty.

II. The Strawman Proposal is Too Complex

The nature of the relationship between BellSouth and the CLECs requires constant monitoring of transactions by regulatory authorities. BellSouth has powerful incentives to discriminate against CLECs in service quality, thereby reducing the prospects for successful entry into the local exchange market. The performance plan is intended to facilitate the monitoring of performance levels and levy penalties whenever BellSouth provides a CLEC with discriminatory or unreasonable service. The ability of BellSouth, CLECs, and the Florida Public Service Commission ("FLPSC") to administer and monitor the performance plan is critical to the plan's success and the development of competition in Florida's local exchange marketplace. As illustrated by the vain attempt to provide examples of the Strawman calculations, the Strawman proposal is perhaps too complex for effective administration or monitoring.

Table 1 below is a reproduction of a table found in Exhibit D of the Strawman document. Even a cursory examination of the table reveals a problem. Specifically, the balancing critical value (C_B) of –0.21 cannot be correct. The balancing critical value can be *approximated* by the formula:

$$C_B = \frac{-\delta}{2\sqrt{1/n_c}} = -\delta \cdot 0.5\sqrt{n_c} \tag{1}$$

where n_c is the CLEC sample size.[2] By solving Equation (1) for n_c and setting $\delta = 0.5$, it can be shown that a balancing critical value of –0.21 implies a CLEC sample size of 0.70 (less than one observation). In fact, there are 310 relevant sample points for the CLEC in the example, indicating the balancing critical value should be about –4.40.[3] Actual computation of the balancing critical value, following the guidelines outlined by BellSouth, produces a balanced critical value of -4.20.[4] The computed C_B in the Strawman document is *20 times* too small.

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[2] I am assuming that $\lambda = 1$ and the ILEC sample size is large enough that $1/n_I$ is small enough to ignore.

[3] In the truncated Z procedure, only cells with negative Z values are included. Only 310 of the 600 observations in the table are associated with negative Z values.

[4] See, e.g., *Statstical Techniques for the Analysis and Cmoparison of Performance Measurement Data*, submitted to the Louisiana Public Service Commission, Docket U-22252, Subdocket C (March 1, 2000).

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Table 1:

Example: CLEC-1 Order Completion Interval (OCI) for Resale POTS

	n_I	n_c	I_c	OCI_I	OCI_c	Z^T_{CLEC1}	C_B	Parity Gap	Volume Proportion	Affected Volume
State	50000	600	600	5days	7days	-1.92	-0.21	1.71	0.4275	
Cell						Z_{CLEC1}				
1		150	150	5	7	-1.994				64
2		75	75	5	4	0.734				
3		10	10	2	3.8	-2.619				4
4		50	50	5	7	-2.878				21
5		15	15	4	2.6	1.345				
6		200	200	3.8	2.7	0.021				
7		30	30	6	7.2	-0.600				13
8		20	20	5.5	6	-0.065				9
9		40	40	8	10	-0.918				17
10		10	10	6	7.3	-0.660				4
										133

Using the 'correct' balancing critical value and the Z^T_{CLEC1} value in the Strawman document, a finding of parity is rendered and the parity gap is zero. Note, however, that Z^T_{CLEC1} also is incorrectly computed. The truncated Z for the CLEC is –3.32, not –1.92 as stated in the Strawman document. The 'correct' truncated Z also shows parity service and the parity gap is zero. The finding of parity hardly seems appropriate given that three cells, including 250 CLEC observations, have statistically significant means differences of either 40% or 90%.[5]

III. Choosing δ and Balancing Type I and Type II Errors

The goal of the balanced critical value approach is to generate equal probability levels of Type I and Type II error. The balancing critical value approach balances the true errors *if and only if* the value δ is both *known* and *constant* and equal to 0.50. If δ is either not known, not constant across measures or time, or not equal to 0.50, then the true Type I and Type II errors will not be balanced and the additional complexity of the balanced critical procedure, relative to a more straightforward statistical approach, is not warranted.

Obviously, the choice of δ is fundamental to the balanced critical value approach; δ is not a bargaining parameter. If specified incorrectly, the whole balancing critical value procedure falls apart and the gain from additional complexity of the approach is lost; the true Type I and Type II errors will be unequal and the power of the procedure to detect discrimination attenuated.

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[5] The significance levels are no less than $\alpha = 0.024$ and is based on the modified z-test. Note that the SBC-Texas style performance plan, despite is many flaws, would produce 18 occurrences of "affected volume," ignoring the K-table exclusions.

Unfortunately, there is no way to know whether the chosen value of δ is correct or incorrect absent a substantial effort to study its plausible values. It seems highly unlikely and there is no evidence to support that a uniform value of δ = 0.5 is even close to correct. As shown in the next section, a δ of 0.50 clearly favors BellSouth and allows rather severe discrimination to go unpunished.

IV. Strawman Proposal Fails to Punish Discriminatory Service

Without extensive study on the value of δ, the benefit of the balanced critical value approach -- i.e., balanced errors -- is absent. However, the testing impact of the balanced critical value remains. In the table below, approximations of the balanced critical value (from Equation 1) are summarized for various sample sizes and δ values. As shown in the table, a higher value of δ decreases the probability of finding discrimination without any certain offsetting benefits.

Table 2. Balanced Critical Values

N_{CLEC}	C_B ($\delta = 0.10$)	C_B ($\delta = 0.25$)	C_B ($\delta = 0.50$)	C_B ($\delta = 1.00$)
10	0.16	-0.40	-0.79	-1.58
50	0.35	-0.88	-1.77	-3.54
100	0.50	-1.25	-2.50	-5.00
500	1.12	-2.80	-5.59	-11.18
1000	1.58	-3.95	-7.91	-15.81
5000	3.54	- 8.84	-17.68	-35.36
10000	5.00	-12.50	-25.00	-50.00
20000	7.07	-17.68	-35.36	-70.71

One question conspicuously left unasked and unanswered in the Strawman proposal is that even if the balancing approach successfully balances the true Type I and Type II errors, at what level does it do so? Typically, hypothesis tests are conducted using a significance level of 5%. Rarely, if ever, is a significance level lower than 1% used. The Federal Communications Commission approved a 5% significance level for statistical tests in the New York and Texas 271 Orders.

To compute the significance level of the balanced critical value, consider the balancing critical value approximations from Table 2 for a sample size of 500. For a δ of 0.25, the balancing critical value is -2.80 and the significance level is 0.003 or about 16 times lower than the typical 5% critical value. Given δ = 0.5 (as recommended in the Strawman proposal), the Type I and II errors are

balanced at a critical value of -5.59 and a significance level of 0.00000002 or about 2.5 million times smaller than the typical, FCC approved, and textbook 5% significance level. I am unaware of any theoretical or applied statistical study that recommends using a significance level of 0.00000002 for a hypothesis test. Table 3 summarizes significance levels of the Strawman proposal (with $\delta = 0.5$) for various sample sizes.

		Table 3. Significance Levels of the Hypothesis Test	
N_{CLEC}	C_B	Significance Level of Hypothesis Test (α)
10	-0.79	0.22
50	-1.77	0.042
100	-2.50	0.007
500	-5.59	0.000000019
1000	-7.91	0.0000000000000035
5000	-17.68	0.000000000000000000000000000000000000000000000000000000000000000000035
1000 0	-25.00	0.00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
2000 0	-35.36	0.000000000000000000000000000000000000000000000000000000000000000000000000000000000000

The reason such a low significance level is not used is that the testing impact of a significance level of 0.00000002 is significant. For example, assume the ILEC mean repair interval is 3 days with a standard deviation of 6. The ILEC sample size is infinite (to simplify the calculations) and the CLEC sample size is 500. Using the critical z value of 5.59 (with $\alpha = 0.00000002$), the ILEC regularly can provide the CLEC an average level of service equal to 1.5 days longer than it provides itself and still be "in parity." A mean repair interval 1.5 days longer than the ILEC's 3-day interval is clearly discriminatory and any procedure that finds otherwise is seriously flawed.[6] At the standard significance level of 5% ($\alpha = 0.05$, $z^* = -1.65$), the largest acceptable (in parity) CLEC mean is 3.4 days.[7] As illustrated in Table 4, more discrimination is allowed the higher is δ, which, in turn, increases the critical value and lowers the significance level. Unless the FLPSC believes that consumers view 4.5 days as equivalent to 3 days, the Commission should reject the Strawman proposal.

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[6] Only if the standard deviation was very large would such disparity be deemed acceptable.

[7] Even an extra half-day (or 0.4 days) likely will be detected by consumers.

Table 4. Implication of Alternative Value for δ

	ILEC Data (μ, σ, n) = (3 days, 6 days, ∞)		
δ	C_B	α	Acceptable CLEC Mean
0.10	-1.12	0.13	3.3 days
0.25	-2.8	0.003	3.8 days
0.50	-5.59	0.00000002	4.5 days
1.00	-11.18	0.00000000000000000000000002	6.0 days

V. Conclusion

As shown in this document, the Strawman proposal is both ill suited and too complex to monitor BellSouth's compliance with §251(c)(3) of the 1996 Telecommunications Act. As illustrated by Exhibit D of the Strawman proposal, it will be difficult for the FLPSC and CLECs to monitor effectively the computation of penalties since even simple numerical examples are (apparently) difficult to construct. The complexity of the balanced critical value approach is unwarranted given that there is no guarantee that Type I and Type II errors will be, in fact, balanced. Even if the errors are balanced, odds are the errors are balanced at an inappropriately low significance level. At the significance levels that will be common under the Strawman approach, BellSouth will be free to provide discriminatory and unreasonable service levels to the CLECs without fear of punishment. The Strawman proposal will serve BellSouth well, but impede the development of competition in the State of Florida.