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April 10, 2003

Mrs. Blanca S. Bayó
Director, Division of the Commission Clerk and
Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket No. 000121A-TP (OSS)

Dear Ms. Bayó:

Enclosed is an original and 15 copies of BellSouth Telecommunications, Inc.'s Response to the "Update to Simplified ALEC Severity Component Proposal and ALEC Coalition Comments on Revised BellSouth Proposal," which BellSouth is filing in response to a request by the Staff. We ask that you file this response in the referenced docket.

A copy of this letter is enclosed. Please mark it to indicate that the original was filed and return the copy to me. Copies have been served to the parties shown on the attached Certificate of Service.

Sincerely,

J. Phillip Carver

J. Phillip Carver

(KA)

Enclosures

cc: All parties of record
Marshall M. Criser, III
Nancy B. White
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DOCUMENT NUMBER DATE

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FPSC-COMMISSION CLERK

CERTIFICATE OF SERVICE
Docket No. 000121A-TP

I HEREBY CERTIFY that a true and correct copy of the foregoing was served via

U. S. Mail this 10th day of April 2003 to the following:

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**(+) Signed Protective
Agreement**

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Assessment of

“Update to Simplified ALEC Severity Component Proposal and ALEC Coalition Comments on Revised BellSouth Proposal” FPSC Docket No. 000121A-TP

We respond to two sections of the ALEC Coalition’s Comments of March 18, 2003. The first addresses the ALEC Coalition’s claim that BellSouth’s proposal is at odds with the Florida Commission’s Order, and the second responds to the claim that BellSouth’s criticisms of the previous ALEC Coalition proposal are incorrect.

I. Response to “Section III: BellSouth’s Proposal Disregards the Florida Commission’s Order.”

The basic flaw in the ALEC Coalition’s argument is that it ignores the function of the parity gap in the BellSouth proposal. That is, in the BellSouth proposal, the parity gap is not used as a statistical measure of severity. Rather, BellSouth shows that the parity gap divided by 4 represents a conservative bound on the number of failed transactions that would have to be corrected to reach parity. Hence, the parity gap divided by four measures failed transactions, not severity.

1. The ALEC Coalition contends that the “new BellSouth proposal still uses a statistical decision rule to assess severity, a concept that was rejected ...” [ALEC Coalition, at 6]. The hypocrisy of this ALEC comment becomes clear when one notes that the only difference between BellSouth’s proposal to define “the parity gap as the difference between the truncated z-score and zero ...” [ALEC Coalition, at 6] and the percent difference in average performance (as proposed by the ALEC coalition - ALEC Coalition, at 5) is the denominator: the standard deviation of the difference in average performance in the BellSouth proposal is replaced by the level of the average ILEC performance in the ALEC proposal. The numerator in the two proposed measures is still the same. Both proposals are based on statistics calculated from the data; however, only the BellSouth proposal measures failed transactions.
2. The ALEC Coalition contends that “the revised BellSouth proposal would produce remedies that are more sensitive to sample size than to the severity of the disparity.” [ALEC Coalition, at 7] However, the revised ALEC proposal leaves remedies sensitive to the *total* number of ALEC transactions, rather than the number of *failed* transactions. This makes no sense. The proper way to construct an enforcement plan is to base it on failures. BellSouth’s plan does just that.
3. Table 2 of the revised ALEC proposal purports to show that the parity gap, as supposedly measured by BellSouth, can actually decrease as the level of disparity increases. This table proves nothing. If the table is constructed correctly, such as by

calculating the BellSouth-proposed parity gap measure *while holding the ALEC volume constant*, then the flaw that the ALEC Coalition supposedly found disappears. It makes no sense for Table 2 to *simultaneously* increase the disparity level and reduce the ALEC sample size. Furthermore, if, by the construction of Tables 1 and 2, the ALEC Coalition is implying that the figures noted on the “Parity Gap (z-score)” columns are representative of the z-statistics that would result from BellSouth’s plan, this is not true since the BellSouth statistical methodology employs cell-level testing, truncation of the positive cells and aggregation of the individual cells. For more on the proper construction of Tables 1 and 2, see Section II below.

4. The ALEC Coalition charges that there is “no theoretical justification for the factor of $\frac{1}{4}$ used to translate the parity gap calculation into a volume proportion ...” [ALEC Coalition, at 8] Beyond making a few assertions in this regard, the ALEC Coalition does not address the entire BellSouth discussion of its linear programming exercise which demonstrates why the parity gap and $\frac{1}{4}$ factor provide a conservative bound to the number of failed transactions.
5. The ALEC Coalition follows up with an example of how the BellSouth plan allegedly fails to account for differences in the disparity level from one affected customer to another—it suggests that the remedy payment should be different for a customer that experiences “more” inferior service than for one that experiences “less” inferior service. The ALEC Coalition believes that “without accounting for the actual order completion intervals [in its example], the concept of affected transactions is hollow.” [ALEC Coalition, at 8] It is important to remember that the performance plan was never intended to provide remedies to (or for) *individual* affected customers. Rather, remedy payments—made to ALECs, individually or collectively—are supposed to be based on differences in *average* performance (for the entire volume of ALEC and ILEC transactions). The sense in which BellSouth uses the term “affected volume” is the number of failed transactions (irrespective of which customer is affected) that need to be corrected in order to pass the truncated z-score test. Besides, the ALEC Coalition’s own revised proposal makes no distinction among individual affected transactions; it too relies on average performance levels.
6. The ALEC Coalition accuses the BellSouth plan of limiting “the sensitivity of remedies to the actual disparity in service performance by capping the remedies ...” [ALEC Coalition, at 9]. Whatever the merit of capping penalties, it is an odd complaint coming from the ALEC Coalition, considering that their simplified proposal requires specification of disparity, a minimum payment and a maximum payment [ALEC Coalition, at 6]. Additionally, the ALECs’ implication that the remedy amounts are “capped” shows, once again, that the ALECs simply do not understand the function of the penalty calculation. When the parity gap score reaches -4.0 , it simply means that the penalty amount is based on all (100%) of the affected transactions. If the ALECs seriously believe this is a flaw, the only conclusion is that the Coalition somehow believes that payments should be based on more transactions than were affected.

II. Proper Construction of Tables 1 and 2 in the ALEC Coalition's Comments

As noted earlier, Tables 1 and 2 in the ALEC Coalition's Comments are flawed, and neither succeeds at making the point that is intended. For example, Table 1 in the ALEC Coalition's Comments is supposed to demonstrate that the "parity gap does not measure disparity." By properly reconstructing Table 1 below, we show that the opposite is, in fact, true. Similarly, Table 2 in the ALEC Coalition's Comments claims to demonstrate that the "parity gap can decrease with increasing disparity." The proper reconstruction of Table 2 below shows that the parity gap always increases with disparity (as is expected), and that Table 2 in the ALEC Coalition's Comments succeeds only at producing the confounding results of changing both the ALEC mean (hence, the average disparity) and the ALEC sample size simultaneously.

A. Reconstruction of Table 1 in the ALEC Coalition's Comments

To demonstrate why Table 1 of the ALEC Coalition's Comments does not support the conclusion that the parity gap does not measure disparity, we re-cast Table 1 in two versions. The first version shows that what the ALEC Coalition has observed in its Table 1 is merely a reflection of the fact that the precision with which the average disparity (or, the difference of means) is measured increases as the ALEC sample size increases, even if nothing else changes. That precision is measured by the standard error of the difference in the two means, and that standard error is simply the standard deviation (of the ALEC and BellSouth transactions) adjusted by a function of the ALEC and BellSouth sample sizes.¹ Thus, all else being equal, as the ALEC sample size increases, the standard error of the difference of means falls (i.e., precision increases). Since that standard error is the denominator in the z-score, any reduction in it must (again, all else being equal) increase the z-score. That is precisely the effect observed by the ALEC Coalition in its Table 1. We show this effect and the consequences for the "affected volume" on which BellSouth must pay penalties in the first version of our reconstruction of Table 1 below. We conclude the following from the first version of the reconstructed Table 1.

- The affected volume increases: an average difference of 1 (from the ALEC mean minus the BellSouth mean) across 300 ALEC transactions involves more failed transactions than the same average difference across fewer than 300 (say, 25) ALEC transactions.
- Because the difference of means is measured more precisely as the ALEC sample size increases, a higher percentage of ALEC transactions would have to be corrected in order to pass the parity test.

¹ Specifically, the standard deviation is multiplied by the square root of the sum of the reciprocals of the ALEC and BellSouth sample sizes.

The second version of the reconstructed Table 1 uncovers a subtle but important feature that is not evident from the ALEC Coalition's Table 1. In this version, we observe the effect of increasing the ALEC sample size while, at the same time, holding the precision (or, the standard error of the difference of means) constant. This is achieved by allowing the standard deviation to increase with ALEC sample size in a manner that keeps the precision (as measured above) constant. We note that when the precision is controlled for in this manner, the parity gap (measured by the z-score) also remains unchanged (as is expected). Moreover, even though BellSouth's affected volume increases, it does so in proportion to the ALEC sample size. This has the effect of keeping that affected volume as a percent of the ALEC sample size constant. Thus, we conclude the following:

- For fixed average disparity (here equal to one) and precision, as the ALEC sample size increases, the affected volume also increases in proportion to the ALEC sample size. That is because the same average disparity is applied to more transactions. However, because the precision is also constant, the percent of ALEC transactions that would have to be corrected in order to pass the parity test also remains constant.

Table 1 (Reconstructed) : Parity Gap *Does* Measure Disparity

Version 1									
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
ALEC Mean	BST Mean	Disparity	Std Dev	ALEC Sample Size	BST Sample Size	Std Error	Parity Gap (z-score)	Affected Volume	% of ALEC Sample Size
4	3	1	3	25	320	0.62	1.61	10	40.13
4	3	1	3	50	320	0.46	2.19	27	54.80
4	3	1	3	75	320	0.38	2.60	49	64.96
4	3	1	3	100	320	0.34	2.91	73	72.74
4	3	1	3	200	320	0.27	3.70	185	92.45
4	3	1	3	300	320	0.24	4.15	300	100.00

Version 2									
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
ALEC Mean	BST Mean	Disparity	Std Dev	ALEC Sample Size	BST Sample Size	Std Error	Parity Gap (z-score)	Affected Volume	% of ALEC Sample Size
4	3	1	3.000	25	320	0.62	1.61	10	40.13
4	3	1	4.097	50	320	0.62	1.61	20	40.13
4	3	1	4.856	75	320	0.62	1.61	30	40.13
4	3	1	5.438	100	320	0.62	1.61	40	40.13
4	3	1	6.911	200	320	0.62	1.61	80	40.13
4	3	1	7.751	300	320	0.62	1.61	120	40.13

Shaded columns show results of particular interest.

Column Relationships

Columns (A), (B), (D), (E), and (F) are reproduced from Table 1 (and accompanying assumptions) in the ALEC Coalition’s Comments.

Column (C) has been added and is simply the difference between Column (A) and Column (B). It measures the average disparity (or, difference of means).

Column (G) displays the standard error of the difference of means (as discussed above), given by $(G) = (D) \div \text{SQRT}[(E)^{-1} + (F)^{-1}]$.

Column (H) displays the parity gap (measured by the z-score), given by $(H) = (C) \div (G)$.

Column (I) calculates the affected volume as the lower of 100% of ALEC sample size or $\frac{1}{4}$ of the z-score multiplied by the ALEC sample size. It is given by $(I) = \min(1, (H) \div 4) \times (E)$.

Column (J) shows the affected ALEC volume as a percent of the ALEC sample size. It is given by $(J) = (I) \div (E)$.

B. Reconstruction of Table 2 in the ALEC Coalition's Comments

In attempting to demonstrate that the parity gap can decrease with increasing disparity, Table 2 of the ALEC Coalition's Comments errs by varying not only the ALEC mean (which varies the average disparity) but also the ALEC sample size (which is allowed to increase). These two simultaneous changes produce a confounded set of results which appears to support the ALEC Coalition's claim that the parity gap measure is not reliable because it can seemingly decrease even when the average disparity increases. This result is both counter-intuitive and spurious. That is because it disappears when the average disparity and the ALEC sample size are varied one at a time.

In the reconstructed Table 2 below, note that as the ALEC mean (hence, average disparity) alone is increased, the parity gap increases along with it. On the other hand, for a given ALEC mean (and average disparity), as the ALEC sample size increases, the parity gap increases with it as well. Thus, as both the ALEC mean and the ALEC sample size are increased, the parity gap increases at a faster rate than with either the disparity or the sample size being increased alone. These results are clearly as expected. The contra-indicative finding from Table 2 of the ALEC Coalition's Comments arises from increasing the ALEC mean and decreasing the ALEC sample size at the same time.²

² The same contra-indicative result can arise from simultaneously decreasing the ALEC mean and increasing the ALEC sample size. More generally, this finding can arise when these two parameters are allowed to move in opposite directions. All the ALEC Coalition's Table 2 shows is that the parity gap can decrease with falling precision as ALEC sample size decreases (see discussion for Table 1 above) and increase simultaneously as the average disparity increases. In the scenarios depicted by the ALEC Coalition's Table 2, the net effect is for the parity gap to decrease. That does not prove, however, that the parity gap (or z-score) is unreliable for reflecting the average level of disparity or for setting remedies.

Table 2 (reconstructed): Parity Gap Does *Not* Decrease with Increasing Disparity

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
ALEC Mean	BST Mean	Disparity	Std Dev	ALEC Sample Size	BST Sample Size	Std Error	Parity Gap (z-score)
4.00	3	1.00	3	25	320	0.62	1.61
4.10	3	1.10	3	25	320	0.62	1.77
4.35	3	1.35	3	25	320	0.62	2.17
4.50	3	1.50	3	25	320	0.62	2.41
4.70	3	1.70	3	25	320	0.62	2.73
5.00	3	2.00	3	25	320	0.62	3.21
4.00	3	1.00	3	50	320	0.46	2.19
4.10	3	1.10	3	50	320	0.46	2.41
4.35	3	1.35	3	50	320	0.46	2.96
4.50	3	1.50	3	50	320	0.46	3.29
4.70	3	1.70	3	50	320	0.46	3.73
5.00	3	2.00	3	50	320	0.46	4.38
4.00	3	1.00	3	100	320	0.34	2.91
4.10	3	1.10	3	100	320	0.34	3.20
4.35	3	1.35	3	100	320	0.34	3.93
4.50	3	1.50	3	100	320	0.34	4.36
4.70	3	1.70	3	100	320	0.34	4.95
5.00	3	2.00	3	100	320	0.34	5.82
4.00	3	1.00	3	300	320	0.24	4.15
4.10	3	1.10	3	300	320	0.24	4.56
4.35	3	1.35	3	300	320	0.24	5.60
4.50	3	1.50	3	300	320	0.24	6.22
4.70	3	1.70	3	300	320	0.24	7.05
5.00	3	2.00	3	300	320	0.24	8.30

Shaded column shows results of particular interest (namely, the parity gap). Column relationships are as described above (see the reconstructed Table 1).

III. Response to “Section II: BellSouth’s Criticisms of the Previous ALEC Proposal are Inappropriate.”

The ALEC Coalition complains that NERA’s criticisms of the previous Coalition proposal should be rejected for three reasons:

- many of NERA’s assumptions contradict the Commission’s Order,
- the Coalition has changed its proposal so that NERA’s complaint about the complexity of the previous proposal is moot, and

- NERA's criticism was based on a "misrepresentation" of the ALEC plan [ALEC Coalition, at 3].

We responded to the first complaint in section I. The third ("NERA used the wrong equations to reach its conclusions about the ALEC penalty function." [ALEC Coalition, at 6]) is equally incorrect. The counter-intuitive results from the original ALEC proposal's remedy payment function (pointed out by NERA) do indeed go away if the correction stated by the ALEC Coalition is made. However, in its earlier analysis, NERA simply used the payment function formula that appeared in the ALEC Coalition's own slide presentation (see slide on "The Payment Function: FINAL") to the FPSC. The error (or typo) was in the original ALEC Coalition document itself.

Finally, the ALEC Coalition's new proposal does not answer all of NERA's criticisms:

1. "Remedies must be sufficient on low ALEC volumes to discourage anti-competitive behavior." [ALEC Coalition, at 3] The single most important contention of the ALEC Coalition here is that "the gain to ILECs (or harm to ALECs) cannot be confined to failed transactions." Instead, the ALEC Coalition believes that current failed transactions can have future adverse consequences for ALECs and, therefore, remedies must be set to account for more than simply current adverse consequences. In principle, there is no problem with that view other than the fact that, in order to believe this view and apply it to a penalty plan, one must also believe that every failure always results in future adverse consequences. It simply goes to the level of penalty associated with a failed transaction. Two thoughts in this connection.
 - To the extent that adverse consequences (present or future) of failed transactions can be identified and quantified, there is nothing in economic theory that precludes the setting of remedies to compensate for those consequences. That shouldn't mean, however, that remedies should be set for transactions that did not fail in the first place. In addition, to be consistent in the belief that current poor performance always has a quantifiable negative economic consequence, one must also assume that good performance by BellSouth should always have a quantifiable positive economic benefit. However BellSouth's Truncation of the positive cells (indicating good performance) does not permit the positive economic benefit.
 - The hypothetical example concocted by the ALEC Coalition [at 4] cannot justify their proposed approach to setting remedies. In the example, 300 failed transactions had larger consequences. But sometimes 300 failed transactions have smaller consequences, in terms of lost ALEC customers. Using an extreme example that would rarely (or never) occur to help shape an enforcement plan that is intended to be used in average, daily realistic situations is simply not appropriate - unless one also believes houses in Tallahassee should be designed to withstand a tidal wave. Penalties set on the average consequences of failed transactions cannot be wrong in principle.

2. “NERA complained that the previous ALEC proposal depended on eight parameters with no theoretical justification” and “The BellSouth proposal contains as many, or more, parameters than the previous ALEC proposal.” [ALEC Coalition, at 5] This characterization of the NERA complaint and the comparison with the BellSouth proposal is wrong.
- The point of NERA’s criticism of the ALEC proposal was not that the number of parameters in that proposal (8) was too large, but rather that a huge number (up to over 65,000) of arbitrary configurations of those parameters could be entertained without any mechanism to restrict that number ahead of time in any sensible way.
 - “The simplified ALEC plan only involves three inputs.” The revised ALEC proposal does retain only three parameters: (1) a disparity level, (2) a minimum payment p_{\min} , and (3) a maximum payment p_{\max} . The proposal claims that defining the disparity level as simply the percentage difference in average performance levels should be uncontroversial.³ However, this measure provides no information whatsoever about the number of failed transactions, i.e., the number of transactions that need to be corrected to bring BellSouth back into compliance with set performance standards. Thus, such a measure is not intrinsically transaction-based, as it—and the remedy payment function—is supposed to be.
 - The ALEC Coalition’s “simplified” remedy payment function [at Figure 1] has two components. Starting with p_{\min} , it adds an amount that increases with two quantities: (1) the disparity level, measured by the percentage difference in average performance and (2) the square root of the number of ALEC transactions. Once again, this is the same tenuous basis for making remedy payments “transaction-based,” i.e., by making it an arbitrary function of the square root of the number of ALEC transactions. Just like the original ALEC proposal, the penalty function is not related to transactions in any meaningful way.
 - Several noteworthy features about the revised remedy payment function.
 - It seems to suggest that a minimum remedy payment (equal to p_{\min}) would apply even when the disparity level is zero. However, even taking the more plausible view that the formula only applies if measured disparity is first found to be statistically significant, there are some confusing implications of the formula.

³ Given that purely random sampling variation can generate any such “disparity level,” I am assuming (although the ALEC Coalition doesn’t say so) that the ALEC proposal would measure the alleged disparity in that manner only if the difference in average performance were first found to be statistically significant using the truncated z-test.

- Literally interpreted, the formula suggests that the payment would be equal to the maximum, p_{\max} , when the disparity is “one,” i.e., for a *one* percent difference in means. This wouldn’t make any sense. It is more likely that the maximum payment is reached when the disparity measure is “one” in the sense of a 100% difference in means. Even then, what if the two means differed by *more* than 100%? Would that mean that the payment should then *exceed* p_{\max} ? In what sense is p_{\max} the “maximum” payment then? The ALEC proposal says nothing about whether the remedy payment is capped at p_{\max} , although it criticizes the BellSouth proposal for setting a cap on such a payment [ALEC Coalition, at 9].
- The maximum payment p_{\max} is a pure function of the (square root of) the number of ALEC transactions (given the starting minimum payment level). While this, in the ALEC Coalition’s view, makes the remedy payment transaction-based, it is based on the *total*, rather than the *failed*, number of ALEC transactions. Hence, p_{\max} increases with the total number of ALEC transactions without any regard whatsoever to whether those transactions were all or partly in compliance with set performance standards. This makes no sense at all, mainly because that provides a perverse incentive to BellSouth to keep its maximum payment down by keeping ALEC volumes down. Yet, the ALEC Coalition is not shy to criticize the revised BellSouth plan for allegedly providing exactly that incentive [ALEC Coalition, at 10].
- The ALEC remedy payment function, which purports to be transaction based, uses the current per-measurement plan fee schedule for the minimum payment function. This continues to produce exorbitant payments, far exceeding even an extreme interpretation of the damage caused by a failure. As an example, assume BellSouth has a 1% disparity in the installation of a single UNE-P line, the payment would be \$4550. This is an absurd penalty when compared to the monthly recurring rate of slightly more than \$12 for UNE-P in Florida.

IV. The Degree of Disaggregation in a Transaction-based Plan

One of the important lessons to emerge from our detailed analysis and reconstruction of the ALEC Coalition’s Tables 1 and 2 is that larger sample sizes (brought about by increasing the number of ALEC transactions) produce beneficial gains in the precision with which the average disparity is estimated. This, in turn, leads to improved estimates of the parity gap. This property has important implications for whether a performance assessment plan should be transaction-based (with greater aggregation of measurements) or measurement-based (with significantly lower aggregation), as BellSouth’s plan in Florida is presently set up.

When measurements are taken at a highly disaggregated level (as under the present plan), the number of measures involved is significantly large but the number of observations made on each measure is often quite small. Parity tests and measurements of the parity gap conducted in these circumstances result in a large number of individual calculations based on relatively sparse data and, therefore, sacrifice precision.

In contrast, a transactions-based plan that aggregates multiple measurements up to the transaction level benefits from significant gains in precision and the determination of parity gaps. At the level of a transaction, the significantly larger number of available observations increases the power of statistical tests for the detection of disparity and leads to more reliable determinations of remedy payments. Therefore, from the standpoint of statistical testing for disparity and setting penalties, a transaction-based plan at a higher level of aggregation is clearly superior to a measurement-based plan at a lower level of aggregation.

V. Summary

In sum, the important differences in principle between the parties appear to be two. First, the new ALEC Coalition plan retains the major flaw of the old one: it is not transactions-based, and it is certainly not failed-transactions-based. This defect is fundamental and is the root cause of much of the counter-intuitive behavior of the penalty function. Second, much of the ALEC Coalition's problem with the BellSouth proposal is its refusal to recognize the role of the parity gap divided by 4 as a bound on the number of failed transactions.