Kentucky ~~Georgia~~ SEEM Administrative Plan

Self-Effectuating Enforcement Mechanism (SEEM)

Proposed - Version 1.5 ~~**Version 1.2**~~

December 16, 2002 ~~**Issue Date: July 22, 2003**~~

Contents

1: Administrative Plan

1.1 Scope

This Administrative Plan ("Plan") includes Service Quality Measurements ("SQM") with corresponding Self Effectuating Enforcement Mechanisms ("SEEM") to be implemented by BellSouth pursuant to the Orders issued by the Georgia Public Service Commission on January 12, 2001 and May 7, 2001, in Docket 7892-U, and adopted by the Kentucky Public Service Commission (the "Commission") in its Order dated October 19, 2001, Case No. 2001-105.

All exhibits referred to in this plan are located on the BellSouth Performance Measurement Reports website at: https://pmap.bellsouth.com

1.2 Reporting

In providing services pursuant to the Interconnection Agreements between BellSouth and each CLEC, BellSouth will report its performance to each CLEC in accordance with BellSouth's SQMs and applicable SEEMs, which are posted on the Performance Measurement Reports website.

BellSouth will make performance reports available to each CLEC on a monthly basis. The reports will contain information collected in each performance category and will be available to each CLEC via the Performance Measurements Reports website. BellSouth will also provide electronic access to the CLEC specific raw data, when possible, underlying the SQMs via the Performance Measurements website.

Preliminary SQM reports will be posted on the Performance Measurements Reports website by 8:00 A.M. EST on the 21st day of each month, or the first business day after the 21st, for the previous month's performance. Final validated SQM reports will be posted by 8:00 A.M. EST on the last day of the month, or the first business day thereafter. Final validated SQM reports not posted within 24 hours of this time will be considered late for late penalty purposes.

Final validated SEEM reports will be posted by 8:00 A.M. EST on the 15th day of the month, or the first business day thereafter, following the final validated SQM report.

BellSouth shall pay penalties to the Commission, in the aggregate, for late and incomplete reports on the following progressive sliding scale: 1 -7 days - $5,000; 8-15 days - $10,000; 16-30 day - $40,000; 31+ days - $5,000 per day.

Such penalty shall be made to the Commission or its designee within fifteen (15)

calendar days of the end of the reporting month in which the final publication date of the report or the report revision occurs.

Tier-2 SEEMs payments and Administrative fines and penalties for late and incomplete reports will be sent electronically transferred, to the Commission on or before the 15th of the month.

BellSouth shall retain the performance measurement raw data files for a period of 18 months and further retain the data used in PMAP to produce monthly reports for a period of three years.

BellSouth will provide documentation of late and incomplete occurrences during the reporting month that data is posted to the website. The notations may be viewed on the Performance Measurements website from the PMAP home page on the Current Month Site Updates link.

1.3 Review of Measurements

Beginning in December 2002 and annually thereafter BellSouth will review the SQMs and the SEEMS. All modifications to the SQMs will be approved by the Commission. Each CLEC may provide input regarding any suggested additions, deletions or other modifications to the SQMs or the SEEMS. BellSouth will provide notice of all changes to the SQMs via the Performance Measurement Reports website.

~~Periodically BellSouth will review the SQM and the SEEM. All modifications to the SQM and SEEM will be approved by the Commission. Each CLEC may provide input regarding any suggested additions, deletions or other modifications to the SQM or the SEEM. BellSouth will provide notice of all changes to the SQM and SEEM via the Performance Measurement Reports website.~~

BellSouth acknowledges that the Commission reserves the right to modify the SQMs or the SEEMS plan at any time it deems necessary upon Commission order.

1.4 Enforcement Mechanisms

1.4.1 Definitions

Enforcement Measurement Elements – the performance measurements identified as SEEM measurements within the SQM.

Enforcement Measurement Benchmark – a competitive level of performance negotiated by BellSouth used to evaluate the performance of BellSouth and each CLEC where no analogous retail process, product or service is feasible.

Enforcement Measurement Compliance – comparing performance levels provided to

BellSouth retail customers with performance levels provided by BellSouth to the CLEC customer.

Test Statistic and Balancing Critical Value – the means by which enforcement will be determined using statistically valid equations. The Test Statistic and Balancing Critical Value are set forth in Exhibit C located on the Performance Measurements Reports website, incorporated herein by this reference.

Cell – a grouping of transactions at which like-to-like comparisons are made. For example, all BellSouth retail POTS services, for residential customers, requiring a dispatch in a particular wire center, at a particular point in time will be compared directly to CLEC resold services for residential customers, requiring a dispatch, in the same wire center, at a particular point in time. When determining compliance, these cells can have a positive or negative Test Statistic. See Exhibit C located on the Performance Measurements Reports website, incorporated herein by this reference.

Affected Volume – that proportion of the total impacted CLEC volume or CLEC Aggregate volume for which remedies will be paid.

Delta – a measure of the meaningful difference between BellSouth performance and CLEC performance. For individual CLECs the Delta value shall be .50 and for the CLEC aggregate the Delta value shall be .35.

Parity Gap – refers to the incremental departure from a compliant-level of service. This is also referred to as "diff" in the Statistical paper located at Exhibit C located on the Performance Measurements Reports website, incorporated herein by this reference.

Tier-1 Enforcement Mechanisms – self-executing liquidated damages paid directly to each impacted CLEC when BellSouth delivers non-compliant performance of any one of the Tier-1 Enforcement Measurement Elements for any month as calculated by BellSouth.

Tier-2 Enforcement Mechanisms – assessments paid directly to the Kentucky Public Service Commission or its designee. Tier 2 Enforcement Mechanisms are triggered by three consecutive monthly failures in which BellSouth performance is out of compliance or does not meet the benchmarks for the aggregate of all CLEC data as calculated by BellSouth for a particular Tier-2 Enforcement Measurement Element.

Tier-3 Enforcement Mechanisms – the voluntary suspension of additional marketing and sales of long distance services triggered by excessive repeat failures of those specific submeasures as defined in Exhibit B located on the Performance Measurements Reports website, incorporated herein by this reference until BellSouth performance improves.

1.4.2 Application

The application of the Tier-1, Tier-2 and Tier-3 Enforcement Mechanisms does not foreclose other legal and regulatory claims and remedies available to each CLEC.

Payment of any Tier-1 or Tier-2 Enforcement Mechanisms shall not be considered as an admission against interest or an admission of liability or culpability in any legal, regulatory or other proceeding relating to BellSouth's performance. The payment of any Tier-1 Enforcement Mechanisms to each CLEC shall be credited against any liability associated with or related to BellSouth's service performance.

It is not the intent of the Parties that BellSouth be liable for both Tier-2 Enforcement Mechanisms and any other assessments or sanctions imposed by the Commission. CLECs will not oppose any effort by BellSouth to set off Tier-2 Enforcement Mechanisms from any additional assessment imposed by the Commission.

The Enforcement Mechanisms contained in this Plan have been provided by BellSouth in order to maintain compliance between BellSouth and each CLEC. Therefore, CLECs may not use the existence of this section or any payments of any Tier-1 or Tier-2 Enforcement Mechanisms under this section as evidence that BellSouth has not complied with or has violated any state or federal law or regulation.

1.4.3 Methodology

Tier-1 Enforcement Mechanisms will be triggered by BellSouth's failure to achieve applicable Enforcement Measurement Compliance or Enforcement Measurement Benchmarks for each CLEC for the State of Kentucky for a given Enforcement Measurement Element in a given month. Enforcement Measurement Compliance is based upon a Test Statistic and Balancing Critical Value calculated by BellSouth utilizing BellSouth generated data. The method of calculation is set forth in Exhibit D located on the Performance Measurements Reports website, incorporated herein by this reference.

Tier-1 Enforcement Mechanisms apply on a per transaction basis for each negative cell and will escalate based upon the number of consecutive months that BellSouth has reported non-compliance.

Fee Schedule for Tier-1 Enforcement Mechanisms is shown on the Performance Measurement Reports website in Table-1 of Exhibit A, incorporated herein by this reference. Failures beyond Month 6 will be subject to Month 6 fees.

Tier-2 Enforcement Mechanisms will be triggered by BellSouth's failure to achieve applicable Enforcement Measurement Compliance or Enforcement Measurement Benchmarks for the State for given Enforcement Measurement Elements for three consecutive months based upon a statistically valid equation calculated by BellSouth utilizing BellSouth generated data. The method of calculation is set forth in Exhibit D located on the Performance Measurements Reports website, incorporated herein by

this reference.

Tier- 2 Enforcement Mechanisms apply, for an aggregate of all CLEC data generated by BellSouth, on a per transaction basis for each negative cell for a particular Enforcement Measurement Element.

Fee Schedule for Total Quarterly Tier-2 Enforcement Mechanisms is shown on the Performance Measurement Reports website in Table-2 of Exhibit A, incorporated herein by this reference.

Tier-3 Enforcement Mechanisms will be triggered by BellSouth's failure to achieve Enforcement Measurement Compliance or Enforcement Measurement Benchmarks for the State for given Enforcement Measurement Elements for three consecutive months. The method of calculation for specified submeasures is identical to the method of calculation for Tier-2 Enforcement Mechanisms as described above. The specific submeasures which are the mechanism for triggering and removing a Tier-3 Enforcement Mechanisms are described in Exhibit B on the Performance Measurement Reports website, incorporated herein by this reference.

~~Tier-3 Enforcement Mechanisms are triggered when BellSouth consistently fails at the CLEC aggregate level on any 12 of the 26 Tier-3 measurements for 3 consecutive months. BellSouth will voluntarily discontinue marketing long-distance service in Georgia until such time as BellSouth's performance improves. For a Tier-3 failure, BST may begin marketing long distance when all 12 of the 26 failed sub-metrics show favorable results for 3 consecutive months.~~

~~1.4.4 Market penetration adjustment.~~

~~BellSouth shall implement a market penetration adjustment for new and advanced services as follows:~~

~~1. In order to ensure parity and benchmark performance where CLECs order low volumes of advanced and nascent services, BellSouth shall make additional payments to the Commission for deposit in the Georgia State Treasury when there are more than 10 and less than 100 observations for those measures listed below on average statewide for a three-month period.~~

- ~~Percent Missed Installation Appointments~~
  - ~~UNE Loop+Port Combo~~
  - ~~UNE xDSL~~
  - ~~UNE Line Sharing~~
- ~~Average Completion Interval~~
  - ~~UNE Loop+Port Combo~~
  - ~~UNE xDSL~~
  - ~~UNE Line Sharing~~
- ~~Missed Repair Appointments~~
  - ~~UNE Loop+Port Combo~~
  - ~~UNE xDSL~~

- UNE Line Sharing
- Maintenance Average Duration
  - UNE Loop+Port Combo
  - UNE xDSL
  - UNE Line Sharing
- Average Response Time for Loop Make-Up Information
  - UNE Loop+Port Combo
  - UNE xDSL
  - UNE Line Sharing

2. The additional payments referenced in 1, above, shall be made if BellSouth fails to provide parity for the above measurements as determined by the use of the Truncated Z Test and the balancing critical value for 3 consecutive months.
3. If, for the three months that are utilized to calculate the rolling average, there were 100 observations or more on average for the sub-metric, then no additional voluntary payments under this market penetration adjustment provision will be made to Commission for deposit with the State Treasury. However, if during the same time frame there is an average of more than 10 but less than 100 observations for a sub metric on statewide basis, then BellSouth shall calculate the additional payments to the Commission for deposit with the State Treasury by trebling the normal Tier II remedy and applying the method of calculating affected volumes ordered by the Commission.
4. Any payments made under this market penetration adjustment provision are subject to the Absolute Cap set by the Commission.

1.4.4 Payment of Tier-1 and Tier-2 Amounts

If BellSouth performance triggers an obligation to pay Tier-1 Enforcement Mechanisms to a CLEC or an obligation to remit Tier-2 Enforcement Mechanisms to the Commission or its designee, BellSouth shall make payment in the required amount on the day upon which the final validated SEEM reports are posted on the Performance Measurements Reports website as set forth in Section 2.4 above.

For each day after the due date that BellSouth fails to pay a CLEC the required amount, BellSouth will pay the CLEC 6% simple interest per annum.

If a CLEC disputes the amount paid for Tier-1 Enforcement Mechanisms, the CLEC shall submit a written claim to BellSouth within sixty (60) days after the date of the performance measurement report for which the obligation arose. BellSouth shall investigate all claims and provide the CLEC written findings within thirty (30) days after receipt of the claim. If BellSouth determines the CLEC is owed additional amounts, BellSouth shall pay the CLEC such additional amounts within thirty (30) days after its findings along with 6% simple interest per annum.

BellSouth may set off any SEEMS payment to a CLEC against undisputed amounts owed by a CLEC to BellSouth pursuant to the Interconnection Agreement between the parties which have not been paid to BellSouth within ninety (90) days past the

Bill Due Date as set forth in the Billing Attachment of the Interconnection Agreement.

At the end of each calendar year, BellSouth will have its independent auditing and accounting firm certify that the results of all Tier-1 and Tier-2 Enforcement Mechanisms were paid and accounted for in accordance with Generally Accepted Account Principles (GAAP).

1.4.5 Limitations of Liability

BellSouth will not be responsible for CLEC acts or omissions that cause performance measures to be missed or fail, including but not limited to accumulation and submission of orders at unreasonable quantities or times or failure to submit accurate orders or inquiries. BellSouth shall provide each CLEC with reasonable notice of such acts or omissions and provide each CLEC any such supporting documentation.

BellSouth shall not be obligated for Tier-1 or Tier 2 Enforcement Mechanisms for non-compliance with a performance measure if such non-compliance was the result of an act or omission by a CLEC that is in bad faith.

BellSouth shall not be obligated to pay Tier-1 Enforcement Mechanisms or Tier-2 Enforcement Mechanism for non-compliance with a performance measurement if such non-compliance was the result of any of the following: a Force Majeure event as set forth in the General Terms and Conditions of the Interconnection Agreement between BellSouth and each CLEC; an act or omission by a CLEC that is contrary to any of its obligations under its Interconnection Agreement with BellSouth; an act or omission by a CLEC that is contrary to any of its obligations under the Act, Commission rule, or state law; an act or omission associated with third-party systems or equipment.

~~1.4.6 Limitations of Liability~~

~~BellSouth shall not be obligated for Tier 1 or Tier 2 Enforcement Mechanisms that are triggered by causes beyond BellSouth's control and which could not have been avoided by exercise of due care. In the event of a force majeure, BellSouth may file a petition with the Commission seeking to have the monthly service results modified or may file an expedited petition seeking immediate relief from a payment pursuant to the SEEM plan. In the event of such a filing, BellSouth shall have the burden of demonstrating that the performance standard was not met due to causes beyond BellSouth's control and which could not have been avoided by exercise of due care. The filing of such a petition shall not stay payments under the SEEM plan unless otherwise ordered by the Commission.~~

1.4.6 Enforcement Mechanism Cap

BellSouth's total liability for the payment of Tier-1 and Tier-2 Enforcement Mechanisms shall be collectively capped at 44% of net revenue per year for the state of Kentucky.

If projected payments exceed the state cap, a proportional payment will be made to the respective parties.

If BellSouth's payment of Tier-1 and Tier-2 Enforcement Mechanisms would have exceeded the cap referenced in this plan, a CLEC may commence a proceeding with the Commission to demonstrate why BellSouth should pay any amount in excess of the cap. Each CLEC shall have the burden of proof to demonstrate why, under the circumstances, BellSouth should have additional liability.

1.4.7 Audits

All auditing provisions of the Interconnection Agreement between BellSouth and each CLEC shall remain in full force and effect.

1.4.8 Dispute Resolution

Notwithstanding any other provision of the Interconnection Agreement between BellSouth and each CLEC, any dispute regarding BellSouth's performance or obligations pursuant to this Plan shall be resolved by the Commission.

A: Fee Schedule

A.1 Table-1: Liquidated Damages For Tier-1 Measures (Per Affected Item)

Performance Measurment	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Pre-Ordering	$20	$30	$40	$50	$60	$70
Ordering	$40	$50	$60	$70	$80	$90
Provisioning	$100	$125	$175	$250	$325	$500
Provisioning UNE (Coordinated Customer Conversions)	$400	$450	$500	$550	$650	$800
Maintenance and Repair	$100	$125	$175	$250	$325	$500
Maintenance and Repair UNE	$400	$450	$500	$550	$650	$800
LNP	$150	$250	$500	$600	$700	$800
Billing	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00
IC Trunks	$100	$125	$175	$250	$325	$500
Collocation	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Service Order Accuracy	$50	$50	$50	$50	$50	$50

A.2 Table-2: Remedy Payments For Tier-2 Measures

Performance Measurment	Per Affected Item
OSS/Pre-Ordering	$20
Ordering	$60
Provisioning	$300
Provisioning-UNE (Coordinated Customer Conversions)	$875
Maintenance and Repair	$300

Maintenance and Repair-UNE	$875
Billing	$1.00
LNP	$500
IC Trunks	$500
Collocation	$15,000
Change Management	$1,000
Service Order Accuracy	$50

B: SEEM Submetrics

B.1 Tier 1 Submetrics

Table B-1 contains a list of Tier 1 submetrics.

Table B-1: Tier 1 Submetrics

Item No.	SQM Ref	Submetric
1	PO-1	Loop Makeup - Response Time - Manual - Loops
2	PO-2	Loop Makeup - Response Time - Electronic - Loops
3	O-1	Acknowledgement Message Timeliness EDI
4	O-1	Acknowledgement Message Timeliness TAG
5	O-2	Acknowledgement Message Completeness EDI
6	O-2	Acknowledgement Message Completeness TAG
7	O-4	Percent Flow-Through Service Requests (Detail) - Residence
8	O-4	Percent Flow-Through Service Requests (Detail) - Business
9	O-4	Percent Flow-Through Service Requests (Detail) - UNE-P
10	O-4	Percent Flow-Through Service Requests (Detail) - UNE-Other
11	O-4	Percent Flow-Through Service Requests (Detail) - LNP
12	O-8	Reject Interval - Fully Mechanized
13	O-8	Reject Interval - Partially Mechanized
14	O-8	Reject Interval - Non-Mechanized
15	O-9	Firm Order Confirmation Timeliness - Fully Mechanized
16	O-9	Firm Order Confirmation Timeliness - Partially Mechanized
17	O-9	Firm Order Confirmation Timeliness - Non-Mechanized
18	O-9	Firm Order Confirmation Timeliness - IC Trunks
19	O-11	Firm Order Confirmation and Reject Response Completeness - Fully Mechanized
20	P-3	Percent Missed Installation Appointments - Resale POTS
21	P-3	Percent Missed Installation Appointments - Resale Design
22	P-3	Percent Missed Installation Appointments - UNE Loop and Port Combinations
23	P-3	Percent Missed Installation Appointments - UNE Loops
24	P-3	Percent Missed Installation Appointments - UNE xDSL
25	P-3	Percent Missed Installation Appointments - UNE Line Sharing

26	P-3	Percent Missed Installation Appointments - Local Interconnection Trunks
27	P-3	Percent Missed Installation Appointments – LNP -- Standalone
28	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale POTS
29	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale Design
30	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop and Port Combinations
31	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Design
	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Non -Design
32	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL without conditioning
33	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL with conditioning
34	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Enhanced Extended Links/Non-Switched Combinations
35	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Line Sharing
36	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Local Interconnection Trunks
37	P-7	Coordinated Customer Conversions Interval - Unbundled Loops
38	P-7A	Coordinated Customer Conversions - Hot Cut Timeliness % Within Interval and Average Interval - UNE Loops
39	P-7C	Hot Cut Conversions - Percent Provisioning Troubles Received within 7 days of a completed service order - UNE Loops
40	P-8	Cooperative Acceptance Testing - % of xDSL Loops Successfully Passing Cooperative Testing - UNE xDSL
41	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - Resale POTS
42	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - Resale Design
43	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE Loop and Port Combinations
44	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE Loops
45	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE xDSL
46	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE Line Sharing
47	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - Local Interconnection Trunks
48		LNP - Percent Missed Installation Appointments - LNP
	P-11	Service Order Accuracy - Resale
	P-11	Service Order Accuracy - UNE
	P-11	Service Order Accuracy - UNE-P
49	P-13A ~~C~~	LNP - Percent Out of Service < 60 Minutes ~~- LNP~~

50	P-13B	LNP - Percentage of Time BellSouth Applies the 10-digit Trigger Prior to the LNP Order Due Date~~ - LNP~~
51	P-13C~~D~~	LNP - Average Disconnect Timeliness Interval ~~& Disconnect Timeliness Interval Distribution~~ (Non Trigger)~~ - LNP~~
52	M&R-1	Missed Repair Appointments - Resale POTS
53	M&R-1	Missed Repair Appointments - Resale Design
54	M&R-1	Missed Repair Appointments - UNE Loop and Port Combinations
55	M&R-1	Missed Repair Appointments - UNE Loops
56	M&R-1	Missed Repair Appointments - UNE xDSL
57	M&R-1	Missed Repair Appointments - UNE Line Sharing
58	M&R-1	Missed Repair Appointments - Local Interconnection Trunks
59	M&R-2	Customer Trouble Report Rate - Resale POTS
60	M&R-2	Customer Trouble Report Rate - Resale Design
61	M&R-2	Customer Trouble Report Rate - UNE Loop and Port Combinations
62	M&R-2	Customer Trouble Report Rate - UNE Loops
63	M&R-2	Customer Trouble Report Rate - UNE xDSL
64	M&R-2	Customer Trouble Report Rate - UNE Line Sharing
65	M&R-2	Customer Trouble Report Rate - Local Interconnection Trunks
66	M&R-3	Maintenance Average Duration - Resale POTS
67	M&R-3	Maintenance Average Duration - Resale Design
68	M&R-3	Maintenance Average Duration - UNE Loop and Port Combinations
69	M&R-3	Maintenance Average Duration - UNE Loops
70	M&R-3	Maintenance Average Duration - UNE xDSL
71	M&R-3	Maintenance Average Duration - UNE Line Sharing
72	M&R-3	Maintenance Average Duration - Local Interconnection Trunks
73	M&R-4	Percent Repeat Troubles within 30 days - Resale POTS
74	M&R-4	Percent Repeat Troubles within 30 days - Resale Design
75	M&R-4	Percent Repeat Troubles within 30 days - UNE Loop and Port Combinations
76	M&R-4	Percent Repeat Troubles within 30 days - UNE Loops
77	M&R-4	Percent Repeat Troubles within 30 days - UNE xDSL
78	M&R-4	Percent Repeat Troubles within 30 days - UNE Line Sharing
79	M&R-4	Percent Repeat Troubles within 30 days - Local Interconnection Trunks
80	B-1	Invoice Accuracy
81	B-2	Mean Time to Deliver Invoices - CRIS
82	B-2	Mean Time to Deliver Invoices - CABS
83	B-3	Usage Data Delivery Accuracy
84	TGP-2	Trunk Group Performance - CLEC Specific - CLEC trunk group
85	C-3	Collocation Percent of Due Dates Missed - All Collocation Arrangements

B.2 Tier 2 Submetrics

Table B-2 contains a list of Tier 2 submetrics.

Table B-2: Tier 2 Submetrics

Item No	SQM Ref	Submetric
1	OSS-1	Average Response Interval and Percent Within Interval (Pre-Ordering/Ordering) - LENS
2	OSS-1	Average Response Interval and Percent Within Interval (Pre-Ordering/Ordering) - TAG
3	OSS-2	OSS Availability (Pre-Ordering/Ordering) - Regional per OSS Interface
4	OSS-3	OSS Availability (Maintenance & Repair) - Regional per OSS Interface
5	PO-1	Loop Makeup - Response Time - Manual - Loops
6	PO-2	Loop Makeup - Response Time - Electronic - Loops
7	O-1	Acknowledgement Message Timeliness - EDI
8	O-1	Acknowledgement Message Timeliness - TAG
9	O-2	Acknowledgement Message Completeness EDI
10	O-2	Acknowledgement Message Completeness TAG
11	O-3	Percent Flow-through Service Requests (Summary)- Residence
12	O-3	Percent Flow-Through Service Requests (Summary)- Business
13	O-3	Percent Flow-Through Service Requests (Summary)- UNE-P
14	O-3	Percent Flow-Through Service Requests (Summary)- UNE-Other
15	O-3	Percent Flow-Through Service Requests (Summary)- LNP
16	O-8	Reject Interval- Fully Mechanized
17	O-8	Reject Interval- Partially Mechanized
18	O-8	Reject Interval- Non-Mechanized
19	O-9	Firm Order Confirmation Timeliness- Fully Mechanized
20	O-9	Firm Order Confirmation Timeliness- Partially Mechanized
21	O-9	Firm Order Confirmation Timeliness- Non-Mechanized
22	O-9	Firm Order Confirmation Timeliness- IC Trunks
23	O-11	Firm Order Confirmation and Reject Response Completeness - Fully Mechanized
24	P-3	Percent Missed Installation Appointments - Resale POTS
25	P-3	Percent Missed Installation Appointments - Resale Design
26	P-3	Percent Missed Installation Appointments - UNE Loop and Port Combinations
27	P-3	Percent Missed Installation Appointments - UNE Loops
28	P-3	Percent Missed Installation Appointments - UNE xDSL

29	P-3	Percent Missed Installation Appointments - UNE Line Sharing
30	P-3	Percent Missed Installation Appointments - Local Interconnection Trunks
31	P-3	Percent Missed Installation Appointments – LNP - Standalone
32	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Local Interconnection Trunks
33	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale Design
34	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale POTS
35	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Line Sharing
36	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop and Port Combinations
37	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Design
	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Non-Design
38	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL without conditioning
39	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL with conditioning
40	P-4 ~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Enhanced Extended Links/Non-Switched Combinations
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49	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE xDSL
50	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - UNE Line Sharing
51	P-9	Percent Provisioning Troubles within 30 days of Service Order Completion - Local Interconnection Trunks
52	P-11	Service Order Accuracy - Resale
53	P-11	Service Order Accuracy - UNE
54	P-11	Service Order Accuracy - UNE-P
55	P-13A ~~C~~	LNP - Percent Out of Service < 60 Minutes ~~- LNP~~

56	P-13B	LNP - Percentage of Time BellSouth Applies the 10-digit Trigger Prior to the LNP Order Due Date~~ - LNP~~
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58	M&R-1	Missed Repair Appointments - Resale POTS
59	M&R-1	Missed Repair Appointments - Resale Design
60	M&R-1	Missed Repair Appointments - UNE Loop and Port Combinations
61	M&R-1	Missed Repair Appointments - UNE Loops
62	M&R-1	Missed Repair Appointments - UNE xDSL
63	M&R-1	Missed Repair Appointments - UNE Line Sharing
64	M&R-1	Missed Repair Appointments - Local Interconnection Trunks
65	M&R-2	Customer Trouble Report Rate - Local Interconnection Trunks
66	M&R-2	Customer Trouble Report Rate - Resale Design
67	M&R-2	Customer Trouble Report Rate - Resale POTS
68	M&R-2	Customer Trouble Report Rate - UNE Line Sharing
69	M&R-2	Customer Trouble Report Rate - UNE Loop and Port Combinations
70	M&R-2	Customer Trouble Report Rate - UNE Loops
71	M&R-2	Customer Trouble Report Rate - UNE xDSL
72	M&R-3	Maintenance Average Duration - Resale POTS
73	M&R-3	Maintenance Average Duration - Resale Design
74	M&R-3	Maintenance Average Duration - UNE Loop and Port Combinations
75	M&R-3	Maintenance Average Duration - UNE Loops
76	M&R-3	Maintenance Average Duration - UNE xDSL
77	M&R-3	Maintenance Average Duration - UNE Line Sharing
78	M&R-3	Maintenance Average Duration - Local Interconnection Trunks
79	M&R-4	Percent Repeat Troubles within 30 days - Resale POTS
80	M&R-4	Percent Repeat Troubles within 30 days - Resale Design
81	M&R-4	Percent Repeat Troubles within 30 days - UNE Loop and Port Combinations
82	M&R-4	Percent Repeat Troubles within 30 days - UNE Loops
83	M&R-4	Percent Repeat Troubles within 30 days - UNE xDSL
84	M&R-4	Percent Repeat Troubles within 30 days - UNE Line Sharing
85	M&R-4	Percent Repeat Troubles within 30 days - Local Interconnection Trunks
86	B-1	Invoice Accuracy
87	B-2	Mean Time to Deliver Invoices - CRIS
88	B-2	Mean Time to Deliver Invoices - CABS
89	B-3	Usage Data Delivery Accuracy
90	TGP-1	Trunk Group Performance - CLEC Aggregate
91	C-3	Collocation Percent of Due Dates Missed - All Collocation Arrangements

92	CM-1	Timeliness of Change Management Notices - Region
93	CM-3	Timeliness of Documents Associated with Change - Region
94	CM-6	Percent of Software Errors Corrected in X (10, 30, 45) Business Days - Severity 2 - Region
95	CM-7	Percent of Change Requests Accepted or Rejected Within 10 Days - Region
96	CM-11	Percent of Change Requests Implemented Within 60 Weeks of Prioritization - Region

B.3 Tier 3 Submetrics

Table B-3 contains a list of Tier 3 submetrics.

Table B-3: Tier 3 Submetrics

Item No	SQM Ref	Submetric
1	P-3	Percent Missed Installation Appointments - Resale POTS
2	P-3	Percent Missed Installation Appointments - Resale Design
3	P-3	Percent Missed Installation Appointments - UNE Loop
4	P-3	Percent Missed Installation Appointments - UNE Loop & Port Combo
5	P-3	Percent Missed Installation Appointments - UNE xDSL (ADSL, HDSL, UCL)
6	P-3	Percent Missed Installation Appointments - UNE Line Sharing
7	P-3	Percent Missed Installation Appointments - Local Interconnection Trunks
8	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale POTS
9	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - Resale Design
10	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop & Port Combo
	P-4~~A~~	Average Comp letion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Design
	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Loop Non -Design
11	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL - Without Conditioning
12	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE xDSL With Conditioning
13	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution - UNE Line Sharing
14	P-4~~A~~	Average Completion Interval (OCI) & Order Completion Interval Distribution – Local Interconnection Trunks
15	M&R-1	Missed Repair Appointments - Resale POTS
16	M&R-1	Missed Repair Appointments - Resale Design

17	M&R-1	Missed Repair Appointments - UNE Loop + Port Combo
18	M&R-1	Missed Repair Appointments - UNE Loops
19	M&R-1	Missed Repair Appointments - UNE xDSL
20	M&R-1	Missed Repair Appointments - UNE Line Sharing
21	M&R-1	Missed Repair Appointments - Local Interconnection Trunks
22	B-1	Invoice Accuracy
23	B-2	Mean Time To Deliver Invoices - CRIS
24	B-2	Mean Time To Deliver Invoices - CABS
25	TGP-1	Trunk Group Performance - CLEC Aggregate
26	C-3	Collocation Percent of Due Dates Missed - All Collocation Agreements
27	CM-1	Timeliness of Change Management Notices - Region
28	CM-3	Timeliness of Documents Associated with Change - Region

C: Statistical Properties and Definitions

C.1 Necessary Properties for a Test Methodology

The statistical process for testing if competing local exchange carriers (CLECs) customers are being treat equally with BellSouth (BST) customers involves more than just a mathematical formula. Three key elements need to be considered before an appropriate decision process can be developed. These are

- the type of data,
- the type of comparison, and
- the type of performance measure.

Once these elements are determined a test methodology should be developed that complies with the following properties.

- *Like-to-Like Comparisons* – When possible, data should be compared at appropriate levels, e.g. wire center, time of month, dispatched, and residential, new orders. The testing process should:
  - Identify variables that may affect the performance measure.
  - Record these important confounding covariates.
  - Adjust for the observed covariates in order to remove potential biases and to make the CLEC and the ILEC units as comparable as possible.
- *Aggregate Level Test Statistic* – Each performance measure of interest should be summarized by one overall test statistic giving the decision maker a rule that determines whether a statistically significant difference exists. The test statistic should have the following properties.
  - The method should provide a single overall index, on a standard scale.
  - If entries in comparison cells are exactly proportional over a covariate, the aggregated index should be very nearly the same as if comparisons on the covariate had not been done.
  - The contribution of each comparison cell should depend on the number of observations in the cell.
  - Cancellation between comparison cells should be limited.
  - The index should be a continuous function of the observations.
- *Production Mode Process* – The decision system must be developed so that it does not require intermediate manual intervention, i.e. the process must be a "black box."
  - Calculations are well defined for possible eventualities.
  - The decision process is an algorithm that needs no manual intervention.
  - Results should be arrived at in a timely manner.
  - The system must recognize that resources are needed for other performance measure-related processes that also must be run in a timely manner.

  - The system should be auditable, and adjustable over time.
- *Balancing* – The testing methodology should balance Type I and Type II Error probabilities.
  - P(Type I Error) = P(Type II Error) for well defined null and alternative hypotheses.
  - The formula for a test's balancing critical value should be simple enough to calculate using standard mathematical functions, i.e. one should avoid methods that require computationally intensive techniques.
  - Little to no information beyond the null hypothesis, the alternative hypothesis, and the number of observations should be required for calculating the balancing critical value.
- *Trimming* – Removing extreme observations from BellSouth and CLEC distributions is needed in order to ensure that a fair comparison is made between performance measures. Three conditions are needed to accomplish this goal. These are:
  - Trimming should be based on a general rule that can be used in a production setting.
  - Trimmed observations should not simply be discarded; they need to be examined and possibly used in the final decision making process.
  - Trimming should only be used on performance measures that are sensitive to "outliers."

C.1.1 Measurement Types

The performance measures that will undergo testing are of four types:

- means
- proportions,
- rates, and
- ratio

While all four have similar characteristics, proportions and rates are derived from count data while means and ratios are derived from interval measurements.

C.2 Testing Methodology – The Truncated Z

Many covariates are chosen in order to provide deep comparison levels. In each comparison cell, a Z statistic is calculated. The form of the Z statistic may vary depending on the performance measure, but it should be distributed approximately as a standard normal, with mean zero and variance equal to one. Assuming that the test statistic is derived so that it is negative when the performance for the CLEC is worse than for the ILEC, a positive truncation is done – i.e. if the result is negative it is left alone, if the result is positive it is changed to zero. A weighted average of the truncated statistics is calculated where a cell weight depends on the volume of BST and CLEC orders in the cell. The weighted average is re-centered by the theoretical mean of a truncated distribution, and this is divided by the standard error of the

weighted average. The standard error is computed assuming a fixed effects model.

C.2.1 Proportion Measures

For performance measures that are calculated as a proportion, in each adjustment cell, the truncated Z and the moments for the truncated Z can be calculated in a direct manner. In adjustment cells where proportions are not close to zero or one, and where the sample sizes are reasonably large, a normal approximation can be used. In this case, the moments for the truncated Z come directly from properties of the standard normal distribution. If the normal approximation is not appropriate, then the Z statistic is calculated from the hypergeometric distribution. In this case, the moments of the truncated Z are calculated exactly using the hypergeometric probabilities.

C.2.2 Rate Measures

The truncated Z methodology for rate measures has the same general structure for calculating the Z in each cell as proportion measures. For a rate measure, there are a fixed number of circuits or units for the CLEC, n_{2j} and a fixed number of units for BST, n_{1j}. Suppose that the performance measure is a "trouble rate." The modeling assumption is that the occurrence of a trouble is independent between units and the number of troubles in n circuits follows a Poisson distribution with mean λ_n where λ is the probability of a trouble in 1 circuit and n is the number of circuits.

In an adjustment cell, if the number of CLEC troubles is greater than 15 and the number of BST troubles is greater than 15, then the Z test is calculated using the normal approximation to the Poisson. In this case, the moments of the truncated Z come directly from properties of the standard normal distribution. Otherwise, if there are very few troubles, the number of CLEC troubles can be modeled using a binomial distribution with n equal to the total number of troubles (CLEC plus BST troubles.) In this case, the moments for the truncated Z are calculated explicitly using the binomial distribution.

C.2.3 Mean Measures

For mean measures, an adjusted "t" statistic is calculated for each like-to-like cell which has at least 7 BST and 7 CLEC transactions. A permutation test is used when one or both of the BST and CLEC sample sizes is less than 6. Both the adjusted "t" statistic and the permutation calculation are described in Appendix D, Statistical Formulas and Technical Description.

C.2.4 Ratio Measures

Rules will be given for computing a cell test statistic for a ratio measure, however, the current plan for measures in this category, namely billing accuracy, does not call for

the use of a Z parity statistic.

D: Statistical Formulas and Technical Description

We start by assuming that any necessary trimming[1] of the data is complete, and that the data are disaggregated so that comparisons are made within appropriate classes or adjustment cells that define "like" observations.

D.1 Notation and Exact Testing Distributions

Below, we have detailed the basic notation for the construction of the truncated z statistic. In what follows the word "cell" should be taken to mean a like-to-like comparison cell that has both one (or more) ILEC observation and one (or more) CLEC observation. Additionally, at the cell level, BellSouth uses the SQM retail analog as a guide to determine the specific products that should be compared in each cell.

L = the total number of occupied cells

j = 1, ,L; an index for the cells

n_{1j} = the number of ILEC transactions in cell j

n_{2j} = the number of CLEC transactions in cell j

n_j = the total number transactions in cell j; $n_{1j} + n_{2j}$

X_{1jk} = individual ILEC transactions in cell j; k = 1, , n_{1j}

X_{2jk} = individual CLEC transactions in cell j; k = 1, , n_{2j}

Y_{jk} = individual transaction (both ILEC and CLEC) in cell j

$$= \begin{cases} X_{1jk} & k = 1,\ldots,n_{1j} \\ X_{2jk} & k = n_{1j}+1,\ldots,n_j \end{cases}$$

1 When it is determined that a measure should be trimmed, a trimming rule that is easy to implement in a production setting is:

Trim the ILEC observations to the largest CLEC value from all CLEC observations in the month under consideration.

That is, no CLEC values are removed; all ILEC observations greater than the largest CLEC observation are trimmed.

$\Phi^{-1}(\cdot)$ = the inverse of the cumulative standard normal distribution function

For Mean Performance Measures the following additional notation is needed.

$\overline{X}_{1j}$ = The ILEC sample mean of cell j

$\overline{X}_{2j}$ = The CLEC sample mean of cell j

s_{1j}^2 = The ILEC sample variance in cell j

s_{2j}^2 = The CLEC sample variance in cell j

$\{y_{jk}\}$ = a random sample of size n_{2j} from the set of $Y_{j1},\ldots,Y_{jn_j}$ >; k = 1, ,n_{2j}

M_j = The total number of distinct pairs of samples of size n_{1j} and n_{2j};

$$= \binom{n_j}{n_{1j}}$$

The exact parity test is the permutation test based on the "modified Z" statistic. For large samples, we can avoid permutation calculations since this statistic will be normal (or Student's t) to a good approximation. For small samples, where we cannot avoid permutation calculations, we have found that the difference between "modified Z" and the textbook "pooled Z" is negligible. We therefore propose to use the permutation test based on pooled Z for small samples. This decision speeds up the permutation computations considerably, because for each permutation we need only compute the sum of the CLEC sample values, and not the pooled statistic itself.

A permutation probability mass function distribution for cell j, based on the "pooled Z" can be written as

$$PM(t) = P(\sum_k y_{jk} = t) = \frac{\textit{the number of samples that sum to } t}{M_j}$$

and the corresponding cumulative permutation distribution is

$$CPM(t) = P(\sum_k y_{jk} \le t) = \frac{\textit{the number of samples with sum } \le t}{M_j}$$

For Proportion Performance Measures the following notation is defined

a_{1j} = The number of ILEC cases possessing an attribute of interest in cell j

a_{2j} = The number of CLEC cases possessing an attribute of interest in cell j

a_j = The number of cases possessing an attribute of interest in cell j; $a_{1j} + a_{2j}$

The exact distribution for a parity test is the hypergeometric distribution. The hypergeometric probability mass function distribution for cell j is:

$$HG(h) = P(H = h) = \begin{cases} \dfrac{\binom{n_{1j}}{h}\binom{n_{2j}}{a_j - h}}{\binom{n_j}{a_j}}, & \max(0, a_j - n_{2j}) \le h \le \min(a_j, n_{1j}) \\ 0 & \text{otherwise} \end{cases}$$

and the cumulative hypergeometric distribution is:

$$CHG(x) = P(H \le x) = \begin{cases} 0 & x < \max(0, a_j - n_{2j}) \\ \sum_{h=\max(0, a_j - n_{1j})}^{x} HG(h), & \max(0, a_j - n_{2j}) \le x \le \min(a_j, n_{1j}) \\ 1 & x > \min(a_j, n_{1j}) \end{cases}$$

For Rate Measures, the notation needed is defined as

b_{1j} = The number of ILEC base elements in cell j

b_{2j} = The number of CLEC base elements in cell j

b_j = The total number of base elements in cell j; $b_{1j} + b_{2j}$

$\hat{r}_{1j}$ = The ILEC sample rate of cell j; n_{1j}/b_{1j}

$\hat{r}_{2j}$ = The CLEC sample rate of cell j; n_{2j}/b_{2j}

q_j = The relative proportion of ILEC elements for cell j; b_{1j}/b_j

The exact distribution for a parity test is the binomial distribution. The binomial probability mass function distribution for cell j is

$$BN(k) = P(B = k) = \begin{cases} \binom{n_j}{k} q_j^k (1-q_j)^{n_j-k}, & 0 \le k \le n_j \\ 0 & \text{otherwise} \end{cases}$$

and the cumulative binomial distribution is

$$CBN(x) = P(B \le x) = \begin{cases} 0 & x < 0 \\ \sum_{k=0}^{x} BN(k), & 0 \le x \le n_j \\ 1 & x > n_j \end{cases}$$

For Ratio Performance Measures the following additional notation is needed.

U_{1jk} = additional quantity of interest of an individual ILEC transaction in cell j; k = 1, , n_{1j}

U_{2jk} = additional quantity of interest of an individual CLEC transaction in cell j; k = 1, , n_{2j}

$\hat{R}_{ij}$ = the ILEC (I = 1) or CLEC (i = 2) ratio of the total additional quantity of interest to the base transaction total in cell j, i.e., $\sum_k U_{ijk} \Big/ \sum_k X_{ijk}$

D.2 Calculating the Truncated Z

The general methodology for calculating an aggregate level test statistic is outlined below.

D.2.1 Calculate Cell Weights (W_j)

A weight based on the number of transactions is used so that a cell, which has a larger number of transactions, has a larger weight. The actual weight formulae will depend on the type of measure.

Mean or Ratio Measure

$$W_j = \sqrt{\frac{n_{1j} n_{2j}}{n_j}}$$

Proportion Measure

$$W_j = \sqrt{\frac{n_{2j}n_{1j}}{n_j} \cdot \frac{a_j}{n_j} \cdot \left(1 - \frac{a_j}{n_j}\right)}$$

Rate Measure

$$W_j = \sqrt{\frac{b_{1j}b_{2j}}{b_j} \cdot \frac{n_j}{b_j}}$$

D.2.2 Calculate a Z Value (Z_j) for each Cell

A Z statistic with mean 0 and variance 1 is needed for each cell.

- If $W_j = 0$, set $Z_j = 0$.
- Otherwise, the actual Z statistic calculation depends on the type of performance measure.

Mean Measure

$$Z_i = \Phi^{-1}(\alpha)$$

where α is determined by the following algorithm.

If $\min(n_{1j}, n_{2j}) > 6$, then determine α as

$$\alpha = P(t_{n_{1j}-1} \le T_j)$$

that is, α is the probability that a t random variable with $n_{1j} - 1$ degrees of freedom, is less than

$$T_j = \begin{cases} t_j + \frac{g}{6}\left(\frac{n_{1j}+2n_{2j}}{\sqrt{n_{1j}\,n_{2j}(n_{1j}+n_{2j})}}\right)\left(t_j^2 + \frac{n_{2j}-n_{1j}}{n_{1j}+2n_{2j}}\right) & t_j \ge t_{minj} \\ t_j + \frac{g}{6}\left(\frac{n_{1j}+2n_{2j}}{\sqrt{n_{1j}\,n_{2j}(n_{1j}+n_{2j})}}\right)\left(t_{minj}^2 + \frac{n_{2j}-n_{1j}}{n_{1j}+2n_{2j}}\right) & \text{otherwise} \end{cases}$$

where

$$t_j = \frac{\bar{X}_{1j} - \bar{X}_{2j}}{s_{1j}\sqrt{\frac{1}{n_{1j}} + \frac{1}{n_{2j}}}}$$

$$t_{minj} = \frac{-3\sqrt{n_{1j} n_{2j} n_j}}{g(n_{1j} + 2n_{2j})}$$

and g is the median value of all values of

$$\gamma_{1j} = \frac{n_{1j}}{(n_{1j}-1)(n_{1j}-2)} \sum_k \left(\frac{X_{1jk} - \bar{X}_{1j}}{s_{1j}} \right)^3$$

with for $n_{1j} > n_{3q}$ all values of j. n_{3q} is the 3 quartile of all values of n_{1j}.

Note, that t_j is the "modified Z" statistic. The statistic T_j is a "modified Z" corrected for the skewness of the ILEC data.

If $\min(n_{1j}, n_{2j}) \leq 6$, and

- $M_j \leq 1{,}000$ (the total number of distinct pairs of samples of size n_{1j} and n_{2j} is 1,000 or less).
  - Calculate the sample sum for all possible samples of size n_{2j}.
  - Rank the sample sums from smallest to largest. Ties are dealt by using average ranks.
  - Let R_0 be the rank of the observed sample sum with respect all the sample sums.

$$\alpha = 1 - \frac{R_0 - 0.5}{M_j}$$

- $M_j > 1{,}000$
  - Draw a random sample of 1,000 sample sums from the permutation distribution.
  - Add the observed sample sum to the list. There are a total of 1001 sample sums. Rank the sample sums from smallest to largest. Ties are dealt by using average ranks.
  - Let R_0 be the rank of the observed sample sum with respect all the sample sums.

$$\alpha = 1 - \frac{R_0 - 0.5}{1001}$$

Proportion Measure

$$Z_j = \frac{n_j a_{1j} - n_{1j} a_j}{\sqrt{\frac{n_{1j} n_{2j} a_j (n_j - a_j)}{n_j - 1}}}$$

Rate Measure

$$Z_j = \frac{n_{1j} - n_j q_j}{\sqrt{n_j q_j (1 - q_j)}}$$

Ratio Measure

$$Z_j = \frac{\hat{R}_{1j} - \hat{R}_{2j}}{\sqrt{V(\hat{R}_{1j})\left(\frac{1}{n_{1j}} + \frac{1}{n_{2j}}\right)}}$$

$$Z_j = \frac{\hat{R}_{1j} - \hat{R}_{2j}}{\sqrt{V(\hat{R}_{1j})\left(\frac{1}{n_{1j}} + \frac{1}{n_{2j}}\right)}} \quad \sum_k \left(U_{1jk} - \hat{R}_{1j} X_{1jk}\right)^2 = \sum_k U_{1jk}^2 - 2\hat{R}_{1j} \sum_k \left(U_{1jk} X_{1jk}\right) + \hat{R}_{1j}^2 \sum_k X_{1jk}^2$$

$$V(\hat{R}_{1j}) = \frac{\sum_k \left(U_{1jk} - \hat{R}_{1j} X_{1jk}\right)^2}{\bar{X}_{1j}^2 (n_{1j} - 1)} = \frac{\sum_k U_{1jk}^2 - 2\hat{R}_{1j} \sum_k \left(U_{1jk} X_{1jk}\right) + \hat{R}_{1j}^2 \sum_k X_{1jk}^2}{\bar{X}_{1j}^2 (n_{1j} - 1)}$$

D.2.3 Obtain a Truncated Z Value for each Cell (Z^*_j)

To limit the amount of cancellation that takes place between cell results during aggregation, cells whose results suggest possible favoritism are left alone. Otherwise the cell statistic is set to zero. This means that positive equivalent Z values are set to 0, and negative values are left alone. Mathematically, this is written as

$$Z_j^* = \min(0, Z_j)$$

D.2.4 Calculate the Theoretical Mean and Variance

Calculate the theoretical mean and variance of the truncated statistic under the null hypothesis of parity, $E(Z^*_j \mid H_0)$ and $Var(Z^*_j \mid H_0)$. To compensate for the truncation in step 3, an aggregated, weighted sum of the Z^*_j will need to be centered and scaled properly so that the final aggregate statistic follows a standard normal distribution.

- If $W_j = 0$, then no evidence of favoritism is contained in the cell. The formulae for calculating $E(Z^*_j \mid H_0)$ and $Var(Z^*_j \mid H_0)$ cannot be used. Set both equal to 0.
- If $\min(n_{1j}, n_{2j}) > 6$ for a mean measure, $\min\left\{a_{1j}\left(1 - \frac{a_{1j}}{n_{1j}}\right), a_{2j}\left(1 - \frac{a_{2j}}{n_{2j}}\right)\right\} > 9$ for a proportion measure, $\min\left(n_{1j}, n_{2j}\right) > 15$ and $n_j q_j (1 - q_j) > 9$ for a rate measure, or n_{1j} and n_{2j} are large for a ratio measure then

$$E(Z_j^* \mid H_0) = -\frac{1}{\sqrt{2\pi}}$$

and

$$\mathrm{Var}(Z_j^* \mid H_0) = \frac{1}{2} - \frac{1}{2\pi}$$

- Otherwise, determine the total number of values for Z^*_j. Let z_{ji} and θ_{ji}, denote the values of Z^*_j and the probabilities of observing each value, respectively.

$$\mathrm{E}(Z_j^* \mid H_0) = \sum_i \theta_{ji} z_{ji}$$

and

$$\mathrm{Var}(Z_j^* \mid H_0) = \sum_i \theta_{ji} z_{ji}^2 - \left[\mathrm{E}(Z_j^* \mid H_0) \right]^2$$

The actual values of the z's and θ's depends on the type of measure.

Mean Measure

$$N_j = \min(M_j, 1{,}000), \; i = 1, \ldots, N_j$$

$$z_{ji} = \min\left\{0, \Phi^{-1}\left(1 - \tfrac{R_i - 0.5}{N_j}\right)\right\} \quad \text{where } R_i \text{ is the rank of sample sum i}$$

$$\theta_j = \frac{1}{N_j}$$

Proportion Measure

$$z_{ji} = \min\left\{0, \frac{n_j \, i - n_{1j} \, a_j}{\sqrt{\frac{n_{1j} \, n_{2j} \, a_j \, (n_j - a_j)}{n_j - 1}}}\right\}, \quad i = \max(0, a_j - n_{2j}), \ldots, \min(a_j, n_{1j})$$

$$\theta_{ji} = \mathrm{HG}(i)$$

Rate Measure

$$z_{ji} = \min\left\{0, \frac{i - n_j \, q_j}{\sqrt{n_j \, q_j (1 - q_j)}}\right\}, \quad i = 0, \ldots, n_j$$

$$\theta_{ji} = \mathrm{BN}(i)$$

Ratio Measure

The performance measure that is in this class is billing accuracy. If a parity test were used, the sample sizes for this measure are quite large, so there is no need for a small sample technique. If one does need a small sample technique, then a re-sampling method can be used.

D.2.5 Calculate the Aggregate Test Statistic (Z^T)

$$Z^T = \frac{\sum_j W_j Z_j^* - \sum_j W_j E(Z_j^* | H_0)}{\sqrt{\sum_j W_j^2 Var(Z_j^* | H_0)}}$$

The Balancing Critical Value

There are four key elements of the statistical testing process:

- the null hypothesis, H_0, that parity exists between ILEC and CLEC services
- the alternative hypothesis, H_a, that the ILEC is giving better service to its own customers
- the Truncated Z test statistic, Z^T, and
- a critical value, *c*

The decision rule[1] is

If $Z^T < c$ then accept H_a.

If $Z^T \geq c$ then accept H_0.

There are two types of error possible when using such a decision rule:

Type I Error:	Deciding favoritism exists when there is, in fact, no favoritism.
Type II Error:	Deciding parity exists when there is, in fact, favoritism.

The probabilities of each type of each are:

- **Type I Error**: $\alpha = P(Z^T < c \mid H_0$
- **Type II Error**: $\beta = P(Z^T \geq c \mid H_a)$

We want a balancing critical value, c_B, so that $\alpha = \beta$.

It can be shown that.

1 This decision rule assumes that a negative test statistic indicates poor service for the CLEC customer. If the opposite is true, then reverse the decision rule.

$$c_B = \frac{\sum_j W_j M(m_j, se_j) - \sum_j W_j \frac{-1}{\sqrt{2\pi}}}{\sqrt{\sum_j W_j^2 V(m_j, se_j)} + \sqrt{\sum_j W_j^2 \left(\frac{1}{2} - \frac{1}{2\pi}\right)}}$$

where

$$M(\mu,\sigma) = \mu\,\Phi\left(\frac{-\mu}{\sigma}\right) - \sigma\,\phi\left(\frac{-\mu}{\sigma}\right)$$

$$V(\mu,\sigma) = (\mu^2 + \sigma^2)\Phi\left(\frac{-\mu}{\sigma}\right) - \mu\,\sigma\,\phi\left(\frac{-\mu}{\sigma}\right) - M(\mu,\sigma)^2$$

$\Phi(\cdot)$ is the cumulative standard normal distribution function, and $\phi(\cdot)$ is the standard normal density function.

This formula assumes that Z_j is approximately normally distributed within cell j. When the cell sample sizes, n_{1j} and n_{2j}, are small this may not be true. It is possible to determine the cell mean and variance under the null hypothesis when the cell sample sizes are small. It is much more difficult to determine these values under the alternative hypothesis. Since the cell weight, W_j will also be small (see calculate weights section above) for a cell with small volume, the cell mean and variance will not contribute much to the weighted sum. Therefore, the above formula provides a reasonable approximation to the balancing critical value.

The values of m_j and se_j will depend on the type of performance measure.

Mean Measure

For mean measures, one is concerned with two parameters in each cell, namely, the mean and variance. A possible lack of parity may be due to a difference in cell means, and/or a difference in cell variances. One possible set of hypotheses that capture this notion, and take into account the assumption that transaction are identically distributed within cells is:

H_0: $\mu_{1j} = \mu_{2j}$, $\sigma_{1j}^2 = \sigma_{2j}^2$

H_a: $\mu_{2j} = \mu_{1j} + \delta_j \sigma_{1j}$, $\sigma_{2j}^2 = \lambda_j \sigma_{1j}^2$ $\delta_j > 0$, λ_j

Under this form of alternative hypothesis, the cell test statistic Z_j has mean and standard error given by

$$m_j = \frac{-\delta_j}{\sqrt{\frac{1}{n_{1j}} + \frac{1}{n_{2j}}}}$$

and

$$se_j = \sqrt{\frac{\lambda_j n_{1j} + n_{2j}}{n_{1j} + n_{2j}}}$$

Proportion Measure

For a proportion measure there is only one parameter of interest in each cell, the proportion of transaction possessing an attribute of interest. A possible lack of parity may be due to a difference in cell proportions. A set of hypotheses that take into account the assumption that transaction are identically distributed within cells while allowing for an analytically tractable solution is:

H_0: $\frac{p_{2j}(1-p_{1j})}{(1-p_{2j})p_{1j}} = 1$

H_a: $\frac{p_{2j}(1-p_{1j})}{(1-p_{2j})p_{1j}} = \psi_j$ $\psi_j > 1$ and j = 1, ,L.

These hypotheses are based on the "odds ratio." If the transaction attribute of interest is a missed trouble repair, then an interpretation of the alternative hypothesis is that a CLEC trouble repair appointment is ψ_j times more likely to be missed than an ILEC trouble.

Under this form of alternative hypothesis, the within cell asymptotic mean and variance of a_{1j} are given by[1]

$$E(a_{1j}) = n_j \pi_j^{(1)}$$

$$var(a_{1j}) = \frac{n_j}{\frac{1}{\pi_j^{(1)}} + \frac{1}{\pi_j^{(2)}} + \frac{1}{\pi_j^{(3)}} + \frac{1}{\pi_j^{(4)}}}$$

where

1 Stevens, W. L. (1951) Mean and Variance of an entry in a Contingency Table. *Biometrica*, 38, 468-470.

$$\pi_j^{(1)} = f_j^{(1)}\left(n_j^2 + f_j^{(2)} + f_j^{(3)} - f_j^{(4)}\right)$$
$$\pi_j^{(2)} = f_j^{(1)}\left(-n_j^2 - f_j^{(2)} + f_j^{(3)} + f_j^{(4)}\right)$$
$$\pi_j^{(3)} = f_j^{(1)}\left(-n_j^2 + f_j^{(2)} - f_j^{(3)} + f_j^{(4)}\right)$$
$$\pi_j^{(4)} = f_j^{(1)}\left(n_j^2\left(\tfrac{2}{\psi_j} - 1\right) - f_j^{(2)} - f_j^{(3)} - f_j^{(4)}\right)$$
$$f_j^{(1)} = \frac{1}{2n_j^2\left(\frac{1}{\psi_j} - 1\right)}$$
$$f_j^{(2)} = n_j n_{1j}\left(\tfrac{1}{\psi_j} - 1\right)$$
$$f_j^{(3)} = n_j a_j\left(\tfrac{1}{\psi_j} - 1\right)$$
$$f_j^{(4)} = \sqrt{n_j^2\left[4n_{1j}\left(n_j - a_j\right)\left(\tfrac{1}{\psi_j} - 1\right) + \left(n_j + \left(a_j - n_{1j}\right)\left(\tfrac{1}{\psi_j} - 1\right)\right)^2\right]}$$

Recall that the cell test statistic is given by

$$Z_j = \frac{n_j a_{1j} - n_{1j} a_j}{\sqrt{\frac{n_{1j} n_{2j} a_j (n_j - a_j)}{n_j - 1}}}$$

Using the equations above, we see that Z_j has mean and standard error given by

$$m_j = \frac{n_j^2 \pi_j^{(1)} - n_{1j} a_j}{\sqrt{\frac{n_{1j} n_{2j} a_j (n_j - a_j)}{n_j - 1}}}$$

and

$$se_j = \sqrt{\frac{n_j^3 (n_j - 1)}{n_{1j} n_{2j} a_j (n_j - a_j)\left(\frac{1}{\pi_j^{(1)}} + \frac{1}{\pi_j^{(2)}} + \frac{1}{\pi_j^{(3)}} + \frac{1}{\pi_j^{(4)}}\right)}}$$

Rate Measure

A rate measure also has only one parameter of interest in each cell, the rate at which a phenomenon is observed relative to a base unit, e.g. the number of troubles per available line. A possible lack of parity may be due to a difference in cell rates. A set of hypotheses that take into account the assumption that transaction are identically

distributed within cells is:

H_0: $r_{1j} = r_{2j}$

H_a: $r_{2j} = \varepsilon_j r_{1j}$ $\varepsilon_j > 1$ and j = 1, ,L.

Given the total number of ILEC and CLEC transactions in a cell, n_j, and the number of base elements, b_{1j} and b_{2j}, the number of ILEC transaction, n_{1j}, has a binomial distribution from n_j trials and a probability of

$$q_j^* = \frac{r_{1j} b_{1j}}{r_{1j} b_{1j} + r_{2j} b_{2j}}$$

Therefore, the mean and variance of n_{1j}, are given by

$$E(n_{1j}) = n_j q_j^*$$
$$\text{var}(n_{1j}) = n_j q_j^* (1 - q_j^*)$$

Under the null hypothesis

$$q_j^* = q_j = \frac{b_{1j}}{b_j}$$

but under the alternative hypothesis

$$q_j^* = q_j^a = \frac{b_{1j}}{b_{1j} + \varepsilon_j b_{2j}}$$

Recall that the cell test statistic is given by

$$Z_j = \frac{n_{1j} - n_j q_j}{\sqrt{n_j q_j (1 - q_j)}}$$

Using the relationships above, we see that Z_j has mean and standard error given by

$$m_j = \frac{n_j \left(q_j^a - q_j \right)}{\sqrt{n_j q_j (1 - q_j)}} = (1 - \varepsilon_j) \frac{\sqrt{n_j b_{1j} b_{2j}}}{b_{1j} + \varepsilon_j b_{2j}}$$

and

$$se_j = \sqrt{\frac{q_j^a(1-q_j^a)}{q_j(1-q_j)}} = \sqrt{\varepsilon_j}\,\frac{b_j}{b_{1j}+\varepsilon_j b_{2j}}$$

Ratio Measure

As with mean measures, one is concerned with two parameters in each cell, the mean and variance, when testing for parity of ratio measures. As long as sample sizes are large, as in the case of billing accuracy, the same method for finding m_j and se_j that is used for mean measures can be used for ratio measures.

D.2.6 Determining the Parameters of the Alternative Hypothesis

In this section we have indexed the alternative hypothesis of mean measures by two sets of parameters, λ_j and δ_j. Proportion and rate measures have been indexed by one set of parameters each, ψ_j and ε_j respectively. A major difficulty with this approach is that more than one alternative will be of interest; for example we may consider one alternative in which all the δ_j are set to a common non-zero value, and another set of alternatives in each of which just one δ_j is non-zero, while all the rest are zero. There are very many other possibilities. Each possibility leads to a single value for the balancing critical value; and each possible critical value corresponds to many sets of alternative hypotheses, for each of which it constitutes the correct balancing value.

The formulas we have presented can be used to evaluate the impact of different choices of the overall critical value. For each putative choice, we can evaluate the set of alternatives for which this is the correct balancing value. While statistical science can be used to evaluate the impact of different choices of these parameters, there is not much that an appeal to statistical principles can offer in directing specific choices. Specific choices are best left to telephony experts. Still, it is possible to comment on some aspects of these choices:

Parameter Choices for λ_j – The set of parameters λ_j index alternatives to the null hypothesis that arise because there might be greater unpredictability or variability in the delivery of service to a CLEC customer over that which would be achieved for an otherwise comparable ILEC customer. While concerns about differences in the variability of service are important, it turns out that the truncated Z testing which is being recommended here is relatively insensitive to all but very large values of the λ_j. Put another way, reasonable differences in the values chosen here could make very little difference in the balancing points chosen.

Parameter Choices for δ_j – The set of parameters δ_j are much more important in the choice of the balancing point than was true for the λ_j. The reason for this is that they directly index differences in average service. The truncated Z test is very sensitive to any such differences; hence, even small disagreements among experts in the choice of the δ_j could be very important. Sample size matters here too. For example, setting all

the δ_j to a single value – $\delta_j = \delta\angle$ might be fine for tests across individual CLECs where currently in Georgia the CLEC customer bases are not too different. Using the same value of δ for the overall state testing does not seem sensible. At the state level we are aggregating over CLECs, so using the same δ as for an individual CLEC would be saying that a "meaningful" degree of disparity is one where the violation is the same (δ) for each CLEC. But the detection of disparity for any component CLEC is important, so the relevant "overall" δ should be smaller.

Parameter Choices for ψ_j *or* ε_j – The set of parameters ψ_j or ε_j are also important in the choice of the balancing point for tests of their respective measures. The reason for this is that they directly index increases in the proportion or rate of service performance. The truncated Z test is sensitive to such increases; but not as sensitive as the case of δ for mean measures. Sample size matters here too. As with mean measures, using the same value of ψ or ε for the overall state testing does not seem sensible.

The three parameters are related however. If a decision is made on the value of δ, it is possible to determine equivalent values of ψ and ε. The following equations, in conjunction with the definitions of ψ and ε, show the relationship with delta.

$$\delta = 2 \cdot \arcsin(\sqrt{\hat{p}_2}) - 2 \cdot \arcsin(\sqrt{\hat{p}_1})$$

$$\delta = 2\sqrt{\hat{r}_2} - 2\sqrt{\hat{r}_1}$$

The bottom line here is that beyond a few general considerations, like those given above, a principled approach to the choice of the alternative hypotheses to guard against must come from elsewhere.

Decision Process

Once Z^T has been calculated, it is compared to the balancing critical value to determine if the ILEC is favoring its own customers over a CLEC's customers.

This critical value changes as the ILEC and CLEC transaction volume change. One way to make this transparent to the decision-maker, is to report the difference between the test statistic and the critical value, *diff* = Z^T - c_B. If favoritism is concluded when $Z^T < c_B$, then the *diff* < 0 indicates favoritism.

This makes it very easy to determine favoritism: a positive *diff* suggests no favoritism, and a negative *diff* suggests favoritism.

E: BST SEEM Remedy Calculation Procedures

E.1 Tier-1 Calculation For Retail Analogs

1. Calculate the overall test statistic for each CLEC; $z^{T}_{CLEC\text{-}1}$ (Per Statistical Methodology - by Dr. Mulrow)
2. Calculate the balancing critical value ($^{c}B_{CLEC\text{-}1}$) that is associated with the alternative hypothesis (for fixed parameters δ, Ψ, or ε)
3. If the overall test statistic is equal to or above the balancing critical value, stop here. That is, if $^{c}B_{CLEC\text{-}1} < z^{T}_{CLEC\text{-}1,}$ stop here. Otherwise, go to step 4.
4. Calculate the Parity Gap by subtracting the value of step 2 from that of step 1. ABS ($z^{T}_{CLEC\text{-}1} - {}^{c}B_{CLEC\text{-}1}$)
5. Calculate the Volume Proportion using a linear distribution with slope of . This can be accomplished by taking the absolute value of the Parity Gap from step 4 divided by 4; ABS (($z^{T}_{CLEC\text{-}1} - {}^{c}B_{CLEC\text{-}1}$) / 4). All parity gaps equal or greater to 4 will result in a volume proportion of 100%.
6. Calculate the Affected Volume by multiplying the Volume Proportion from step 5 by the Total Impacted CLEC-$_1$ Volume (I_c) in the negatively affected cell; where the cell value is negative.
7. Calculate the payment to CLEC-1 by multiplying the result of step 6 by the appropriate dollar amount from the fee schedule.
8. Then, CLEC-1 payment = Affected $Volume_{CLEC1}$ * $$from Fee Schedule

E.1.1 Example: CLEC-1 Missed Installation Appointments (MIA) for Resale POTS

Note – the statistical results are only illustrative. They are not a result of a statistical test of this data.

	n_I	N_C	I_c	MIA_I	MIA_C	$z^{T}_{CLEC\text{-}1}$	C_B	Parity Gap	Volume Proportion	Affected Volume
State	50000	600	96	9%	16%	-1.92	-0.21	1.71	0.4275	
Cell						$z_{CLEC\text{-}1}$				
1		150	17	0.091	0.113	-1.994				8

2		75	8	0.176	0.107	0.734				
3		10	4	0.128	0.400	-2.619				2
4		50	17	0.158	0.340	-2.878				8
5		15	2	0.245	0.133	1.345				
6		200	26	0.156	0.130	0.021				
7		30	7	0.166	0.233	-0.600				3
8		20	3	0.106	0.150	-0.065				2
9		40	9	0.193	0.225	-0.918				4
10		10	3	0.160	0.300	-0.660				2
										29

where n_I = ILEC observations and n_C = CLEC-1 observations

Payout for CLEC-1 is (29 units) * ($100/unit) = $2,900

E.1.2 Example: CLEC-1 Order Completion Interval (OCI) for Resale POTS

	n_I	n_C	I_c	OCI_I	OCI_C	z^T_{CLEC-1}	C_B	Parity Gap	Volume Proportion	Affected Volume
State	50000	600	600	5days	7days	-1.92	-0.21	1.71	0.4275	
Cell						z_{CLEC-1}				
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

where n_I = ILEC observations and n_C = CLEC-1 observations

Payout for CLEC-1 is (133 units) * ($100/unit) = $13,300

E.2 Tier-2 Calculation For Retail Analogs

1. Tier-2 is triggered by three consecutive monthly failures of any Tier 2 Remedy Plan sub-metric.
2. Therefore, calculate monthly statistical results and affected volumes as outlined in steps 2 through 6 for the CLEC Aggregate performance. Determine average monthly affected volume for the rolling 3-month period.
3. Calculate the payment to State Designated Agency by multiplying average monthly volume by the appropriate dollar amount from the Tier-2 fee schedule.
4. Therefore, State Designated Agency payment = Average monthly volume * $$from Fee Schedule

E.2.1 Example: CLEC-A Missed Installation Appointments (MIA) for Resale POTS

State	n_I	n_C	I_c	MIA_I	MIA_C	z^T_{CLEC-A}	C_B	Parity Gap	Volume Proportion	Affected Volume
Month 1	180000	2100	336	9%	16%	-1.92	-0.21	1.71	0.4275	
Cell						z_{CLEC-A}				
1		500	56	0.091	0.112	-1.994				24
2		300	30	0.176	0.100	0.734				
3		80	27	0.128	0.338	-2.619				12
4		205	60	0.158	0.293	-2.878				26
5		45	4	0.245	0.089	1.345				
6		605	79	0.156	0.131	0.021				
7		80	19	0.166	0.238	-0.600				9
8		40	6	0.106	0.150	-0.065				3
9		165	36	0.193	0.218	-0.918				16
10		80	19	0.160	0.238	-0.660				9
										99

where n_I = ILEC observations and n_C = CLEC-A observations

Assume Months 2 and 3 have the same affected volumes. Payout 99 units * $300/unit = $29,700.

If the above example represented performance for each of months 1 through 3, then

E.2.2 Example: CLEC-A Missed Installation Appointments for 1Q00

State	Miss	Remedy Dollars
Month 1	X	$29,700
Month 2	X	$29,700
Month 3	X	$29,700
1Q00		$89,100

E.3 Tier-1 Calculation For Benchmarks

1. For each CLEC, with five or more observations, calculate monthly performance results for the State.
2. CLECs having observations (sample sizes) between 5 and 30 will use Table I below. The only exception will be for Collocation Percent Missed Due Dates.

Table I

- Small Sample Size Table (95% Confidence)

Sample Size	Equivalent 90% Benchmark	Equivalent 95% Benchmark	Sample Size	Equivalent 90% Benchmark	Equivalent 95% Benchmark
5	60.00%	80.00%	18	77.78%	83.33%
6	66.67%	83.33%	19	78.95%	84.21%
7	71.43%	85.71%	20	80.00%	85.00%
8	75.00%	75.00%	21	76.19%	85.71%
9	66.67%	77.78%	22	77.27%	86.36%
10	70.00%	80.00%	23	78.26%	86.96%
11	72.73%	81.82%	24	79.17%	87.50%
12	75.00%	83.33%	25	80.00%	88.00%
13	76.92%	84.62%	26	80.77%	88.46%
14	78.57%	85.71%	27	81.48%	88.89%
15	73.33%	86.67%	28	78.57%	89.29%

16	75.00%	87.50%	29	79.31%	86.21%
17	76.47%	82.35%	30	80.00%	86.67%

3. If the percentage (or equivalent percentage for small samples) meets the benchmark standard, stop here. Otherwise, go to step 4.
4. Determine the Volume Proportion by taking the difference between the benchmark and the actual performance result.
5. Calculate the Affected Volume by multiplying the Volume Proportion from step 4 by the Total Impacted CLEC-$_1$ Volume.
6. Calculate the payment to CLEC-1 by multiplying the result of step 5 by the appropriate dollar amount from the fee schedule.
7. CLEC-1 payment = Affected Volume$_{CLEC-1}$ * $$from Fee Schedule

E.3.1 Example: CLEC-1 Percent Missed Due Dates for Collocations

	n_C	Benchmark	MIA_C	Volume Proportion	Affected Volume
State	600	10%	13%	.03	18

Payout for CLEC-1 is (18 units) * ($5000/unit) = $90,000

E.4 Tier-1 Calculation For Benchmarks (In The Form Of A Target)

1. For each CLEC with five or more observations calculate monthly performance results for the State.
2. CLECs having observations (sample sizes) between 5 and 30 will use Table I above.
3. Calculate the interval distribution based on the same data set used in step 1.
4. If the 'percent within' (or equivalent percentage for small samples) meets the benchmark standard, stop here. Otherwise, go to step 5.
5. Determine the Volume Proportion by taking the difference between benchmark and the actual performance result.
6. Calculate the Affected Volume by multiplying the Volume Proportion from step 5 by the Total CLEC-$_1$ Volume.
7. Calculate the payment to CLEC-1 by multiplying the result of step 6 by the appropriate dollar amount from the fee schedule.

CLEC-1 payment = Affected Volume$_{CLEC1}$ * $$from Fee Schedule

E.4.1 Example: CLEC-1 Reject Timeliness

	n_C	Benchmark	Reject Timeliness	Volume Proportion	Affected Volume

State	600	95% within 1 hour	93% within 1 hour	.02	12

Payout for CLEC-1 is (12 units) * ($100/unit) = $1,200

E.5 Tier-2 Calculations For Benchmarks

Tier-2 calculations for benchmark measures are the same as the Tier-1 benchmark calculations, except the CLEC Aggregate data having failed for three months.

F: Reposting Of Performance Data and Recalculation of SEEM Payments

This appendix contains BellSouth's Policy On Reposting Of Performance Data and Recalculation of SEEM Payments.

BellSouth will make available reposted performance data as reflected in the Service Quality Measurement ("SQM") reports and the Monthly State Summary ("MSS") report and recalculate Self-Effectuating Enforcement ("SEEM") payments using the Parity Analysis and Remedy Information System (PARIS), to the extent technically feasible, under the following circumstances:

1. Those measures included in a state's specific SQM plan with corresponding sub-metrics are subject to reposting.
2. Performance sub-metric calculations that result in a shift in the performance in the aggregate from an "in parity" condition to an "out of parity" condition will be available for reposting.
3. Performance sub-metric calculations with benchmarks that are in an "out of parity" condition will be available for reposting whenever there is a $\geq$ 2% deviation in performance at the sub-metric level.
4. Performance sub-metric calculations with retail analogs that are in an "out of parity" condition will be available for reposting whenever there is a .5 change in the z-score at the sub-metric level.
5. Performance data will be available with the updated data for a maximum of three months in arrears. Performance data charts (MSS Charts) that incorporate updated data will only be generated as part of the normal monthly production cycle. A notice will be placed on the PMAP website advising CLECs when reposted data is available.
6. When updated performance data has been made available for reposting or when a payment error in PARIS has been discovered, BellSouth will recalculate applicable SEEM payments. Where technically feasible, SEEM payments will be subject to recalculation for a maximum of three months in arrears from the date updated performance data was made available or the date when the payment error was discovered.
7. Any adjustments for underpayment of Tier 1 and Tier 2 calculated remedies will be made consistent with the terms of the state-specific SEEM plan, including the payment of interest. Any 7. adjustments for overpayment of Tier 1 and Tier 2 remedies will be made at BellSouth's discretion.
8. Any adjustments for underpayments will be made in the next month's payment cycle after the recalculation is made. The final current month PARIS reports will reflect the transmitted dollars, including adjustments for prior months where applicable. Questions regarding the adjustments should be made in accordance with the normal process used to address CLEC questions related to SEEM payments.

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