Attachment 2

Kentucky SEEM Administrative Plan (SEEM)

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PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

KENTUCKY SEEM ADMINISTRATIVE PLAN

Kentucky Plan
Version 4.00

Effective Date: March 1, 2011

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Contents

Page

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Administrative Plan

1 Scope

1.1 The Georgia Public Service Commission issued its *Order on Motion to Approve Modifications to Performance Measurement Plan* on December 13, 2010, and this plan includes the same Self Effectuating Enforcement Mechanisms (SEEM) approved by the Georgia Commission. This SEEM is to be implemented by AT&T pursuant to orders issued by the Kentucky Public Service Commission (the "Commission") in Docket No. 2004-00391 (dated June 20, 2005) and in Docket No. 2001-00105 (dated May 11, 2004) instructing AT&T to continue with the Georgia performance plan, along with any future modifications.

1.2 Upon the Effective Date of this Plan, all appendices referred to in this Plan will be located on the AT&T performance measurement website at http://pmap.wholesale.att.com.

2 Reporting

2.1 In providing services pursuant to the Interconnection Agreements between AT&T and each CLEC, AT&T will report its performance to each CLEC in accordance with AT&T's SQM and pay remedies in accordance with the applicable SEEM, which are posted on the AT&T performance measurement website.

2.2 Final validated SEEM reports will be posted on the AT&T performance measurement website on the 15th of the month, following the posting of final validated SQM reports for that data month or the first business day thereafter.

2.3 AT&T shall retain the performance measurement raw data files for a period of 18 months and further retain the monthly reports for a period of three years.

2.4 AT&T will provide documentation of late and reposted SQM and SEEM reports during the reporting month that the data is posted to the website.

3 Review of Measurements and Enforcement Mechanisms

3.1 Review of Measurements

A workshop and/or conference shall be organized and held periodically or at the request of either party for the purpose of evaluating the existing remedies and determining whether any remedies should be deleted, modified or any new remedies added. Provided however, no new remedies shall be added which are already governed by existing remedies. A CLEC may actively participate in this periodic workshop with AT&T, other CLECs, and state regulatory authority representatives.

3.1.1 Administrative Changes

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

AT&T may make administrative changes that do not substantively change the SEEM Plan. Such changes are excluded from the periodic review process noted above. AT&T will provide written notice to the Commission regarding all administrative changes. An administrative change is one that corrects typographical, spelling, grammatical, or computational errors, updates website addresses and incorporates modifications to architecture implemented in an OSS release following the approved Change Management process. Administrative changes will not change the intent or the plan language of the document.

3.2 In the event a dispute arises regarding the ordered modification or amendment to the SQM or SEEM, the parties will refer the dispute to the Kentucky Public Service Commission.

4 Enforcement Mechanisms

4.1 Definitions

4.1.1 *Enforcement Measurement Elements* – performance measurements identified as SEEM measurements within the SEEM Plan.

4.1.2 *Enforcement Measurement Benchmark compliance* – level of performance established by the Commission used to evaluate the performance of AT&T for CLECs where no analogous retail process, product or service is feasible.

4.1.3 *Enforcement Measurement Retail Analog compliance* – comparing performance levels provided to AT&T retail customers with performance levels provided by AT&T to the CLEC customer for measures where retail analogs apply.

4.1.4 *Test Statistic and Balancing Critical Value* – means by which enforcement will be determined using statistical methods. The Test Statistic and Balancing Critical Value are set forth in Appendices C, D, and E of this Plan.

4.1.5 *Cell* – grouping of transactions at which like-to-like comparisons are made. For example, all AT&T retail 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 similar point in time. When determining compliance, these cells can have a positive or negative Test Statistic. See Appendices C, D, and E of this Plan.

4.1.6 *Delta, Psi, Epsilon, and Lambda* – measures of the meaningful difference between AT&T performance and CLEC performance. For individual CLECs, the Delta (δ) value shall be 0.5 and for the CL[illegible]e Delta value shall be 0.35. The value for Psi (ψ) shall be 3 for individual CLECs and 2 for

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

the CLEC aggregate. The value for Epsilon (ε) will be 2.5 for both individual CLECs and the CLEC aggregate. The value of Lambda (λ) shall be 1 for both individual CLECs and the CLEC aggregate.

4.1.7 *Tier-1 Enforcement Mechanisms* – self-executing fees paid directly to each CLEC when AT&T delivers non-compliant performance of any one of the Tier-1 Enforcement Measurement Elements for any month as calculated by AT&T.

4.1.8 *Affiliate* – person that (directly or indirectly) owns or controls, is owned or controlled by, or is under common ownership or control with, another person. For purposes of this paragraph, the term "own" means to own an equity interest (or the equivalent thereof) of more than 10 Percent.

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

4.1.10 *Cell Ranking* – placing cells in rank order from highest to lowest, where the cell with the most negative Z-Score is ranked highest and the cell with the least negative Z-Score is ranked lowest.

4.1.11 *Cell Correction* – method for determining the quantity of transactions to be remedied, referred to as "affected volume," wherein the cell-level Z-Score for the highest ranked cell is first changed to zero ("corrected") and then the next highest, progressively, until the overall level truncated Z-Score is equal to the Balancing Critical Value or zero as required by the Remedy Calculation Procedures. Either all of the transactions in a corrected cell are remedied or a prorated share (determined through interpolation) is remedied.

4.2 Application

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

4.2.2 Payment of any Tier-1 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 AT&T's performance and the payment of any Tier-1 Enforcement Mechanisms shall not be used as evidence that AT&T has not complied with or has violated any state or federal law or regulation.

4.3 Methodology

4.3.1 Tier-1 Enforcement Mechanisms will be triggered by AT&T's failure to achieve applicable Enforcement Measurement Compliance or Enforcement Measurement Benchmark for each CLEC for the State of Kentucky for a given Enforcement Measurement Element in [illegible] Enforcement Measurement Compliance is based upon a Test Statistic and Balancing

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Critical Value calculated by AT&T utilizing AT&T generated data. The method of calculation is set forth in Appendices C, D, and E of this Plan.

4.3.1.1 All OCNs and ACNAs for individual CLECs will be consolidated for purposes of calculating transaction-based failures.

4.3.1.2 When a measurement has five or more transactions for the CLEC, calculations will be performed to determine remedies according to the methodology described in the remainder of this document.

4.3.1.3 Tier-1 Enforcement Mechanisms apply on a per transaction basis and will escalate based upon the number of consecutive months that fail for each Enforcement Mechanism Element for which AT&T has reported non-compliance. Failures beyond Month 6 will be subject to Month 6 fees. All transactions for an individual CLEC will be consolidated for purposes of calculating Tier-1 Enforcement Mechanisms.

4.3.1.4 For submetrics that are assessed based on Enforcement Measurement Retail Analog compliance criteria, the fee paid for a particular submetric that failed at the Tier-1 level will be differentiated based on two criteria. First, the Tier-1 fee paid will be based on whether the same submetric that failed at the Tier-1 level (CLEC-specific) also failed at the CLEC aggregate level in the same month. Second, the Tier-1 fee paid will be based on whether the transactions in the cells to be remedied correct the overall truncated Z-Score from the region below the Balancing Critical Value ("BCV") to the BCV or from the BCV to zero. Depending on which of these criteria apply, a different multiplier will be applied to the Fee Schedule (shown in Appendix A, Table 1: Fee Schedule for Tier-1 Per Transaction Fee Determination) to determine the amount of the Tier-1 payments. The chart below shows the applicable multipliers:

CLEC Aggregate Performance	**Per Transaction Fee Below BCV**	**Per Transaction Fee Between BCV and 0**
Passes	(Fee)*(3/2)	(Fee)*(1/3)
Fails	(Fee)*(3)	(Fee)*(2/3)

No multiplier applies for the Billing Invoice Accuracy measure.

4.3.1.5 For submetrics that are assessed based on Enforcement Measurement Benchmark compliance criteria the fee paid for a particular submetric that failed at the Tier-1 level will be differentiated based on whether the same submetric that failed at the Tier-1 level CLEC-specific) also failed at the CLEC aggregate level in the same month. A different multiplier will be applied to

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

the Fee Schedule (shown in Appendix A, Table 1: Fee Schedule for Tier-1 Per Transaction Fee Determination) to determine the amount of the Tier-1 payments. The chart below shows the applicable multipliers:

CLEC Aggregate Performance	Per Transaction Fee
Passes	(Fee)*(3/2)
Fails	(Fee)*(5/2) for Ordering and Flow Through (Fee)*(3) for all other benchmark measures

4.3.2 The Market Penetration Adjustments will be applied based on the following provisions to enhance competition for nascent products. In order to ensure parity and benchmark performance where CLECs order low volumes of advanced and nascent services, AT&T will make additional Tier-1 payments where performance standards for the following measures are not met, if the measurement applies to the nascent service.

- Percent Missed Installation Appointments
- Average Completion Interval
- Missed Repair Appointments
- Maintenance Average Duration
- Average Response Time for Loop Make-up-Response Time-Electronic Information

4.3.2.1 These additional payments will only apply when there are more than 10 and less than 100 average units in service statewide for the preceding three-month period. The additional payments in the form of a market penetration adjustment will be made if AT&T fails to provide parity for the above measurements as determined by the use of the Truncated Z- test and the balancing critical value or fails to meet the established benchmark.

4.3.2.2 AT&T shall calculate the new Tier-1 payments, which include the market penetration adjustment by applying the normal method of calculating affected volumes as ordered by the Commission and trebling the normal Tier-1 remedy.

4.3.2.3 If, for the three months of data, there were 100 observations or more on average for the submetric, then no additional payments under this market penetration adjustment provision will be made. Further, market penetration adjustments shall no longer apply if 24 months have elapsed since the first unit of the nascent service was installed.

4.3.2.4 CLECs may file a petition with the Commission in order to add a

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Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

service to the list of services for which the market penetration adjustment may apply.

4.3.2.5 Any payments made under this market penetration adjustment provision are subject to the Absolute Cap set by the Commission.

4.3.3 For Tier-1 evaluations, the retail analog or benchmark is the same as for the SQM. See the SQM for SEEM retail analogs and benchmarks.

4.4 Payment of Tier-1 Amounts

4.4.1 If AT&T performance triggers an obligation to pay Tier-1 Enforcement Mechanisms to a CLEC, AT&T shall make payment in the required amount on the day upon which the final validated SEEM reports are posted on the AT&T website as set forth in Section 2.2 above.

4.4.2 For each day after the due date that AT&T pays a CLEC less than the required Tier-1 remedy, AT&T will pay the CLEC 6% simple interest per annum on the difference between the required amount and the amount previously paid. The underpayment and interest will be paid to the CLEC in the next month's payment cycle.

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

4.4.4 Any adjustments for underpayment or overpayment of calculated Tier-1 remedies will be made consistent with the terms of AT&T's Policy On Reposting Of Performance Data and Recalculation of SEEM Payments, as set forth in Appendix F of this document. If any circumstance necessitating remedy adjustments should occur that is not specifically addressed in the Reposting Policy, such adjustments will be made consistent with the terms defined in Paragraph 7 of the Reposting Policy.

4.4.5 Any adjustments for underpayment or overpayment will be made in the next month's payment cycle after the recalculation is made. The final current month reports will reflect the final paid 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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TARIFF BRANCH
Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

4.4.5.1 If a SEEM overpayment is made to a CLEC, and AT&T's SEEM liability calculated and payable to that CLEC in the next month's payment cycle is insufficient to offset the amount of overpayment, then within 30 days of AT&T's request, the CLEC shall repay the amount necessary to satisfy the remaining SEEM overpayment balance. If the CLEC is unable to repay the overpayment at that time, the CLEC may contact AT&T for payment arrangements.

4.4.6 Where there is a SEEM adjustment, in addition to the submetric, data month(s), and adjustment amount, AT&T will include an adjustment code on the CLEC specific Tier-1 reports on the AT&T performance measurement website. Then, on a separate document on the AT&T performance measurement website, this code will be cross-referenced with a brief narrative description of the adjustment. These codes and descriptions will be applicable to all states where an adjustment was applied. If there are multiple adjustment codes, the code explanation document can be accessed on the AT&T performance measurement website that will contain all of the codes and the narrative descriptions for each code. An explanation of the cause of the adjustment and the data months impacted by the adjustment will be included in the narrative.

4.5 Limitations of Liability

4.5.1 AT&T will not be obligated to pay Tier-1 Enforcement Mechanisms for non-compliance with a performance measure if such non-compliance results from a CLEC's acts or omissions that cause failed or missed performance measures. These acts or omissions include but are not limited to, accumulation and submission of orders at unreasonable quantities or times, failure to follow publicly available procedures, or failure to submit accurate orders or inquiries. AT&T shall provide each CLEC and the Commission with reasonable notice of, and supporting documentation for, such acts or omissions. Each CLEC shall have 10 business days from the filing of such Notice to advise AT&T and the Commission in writing of its intent to challenge, through the dispute resolution provisions of this plan, the claims made by AT&T. AT&T shall not be obligated to pay any amounts subject to such disputes until the dispute is resolved.

4.5.2 AT&T shall not be obligated to pay Tier-1 Enforcement Mechanisms (SEEM payments) for non-compliance with a performance measurement if such non-compliance was the result of any Force Majeure Event that either directly or indirectly prevented, restricted, or interfered with performance as measured by the SQM/SEEM Plan. Such Force Majeure Events include non-compliance caused by reason of fire, flood, earthquake or like acts of God, wars, revolution, civil commotion, explosion, ac[illegible]my, embargo, acts of the government in its sovereign capac[illegible]ies, including

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JEFF R. DEROUEN
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TARIFF BRANCH
Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

without limitation, strikes, slowdowns, picketing, or boycotts, or any other circumstances beyond the reasonable control and without the fault or negligence of AT&T. AT&T, upon giving prompt notice to the Commission and CLECs as provided below, shall be excused from such performance on a day-to-day basis to the extent of such prevention, restriction, or interference; provided, however, that AT&T shall use diligent efforts to avoid or remove such causes of non-performance.

4.5.2.1 To invoke the application of Section 4.5.2 (Force Majeure Event), AT&T will provide written notice to the Commission and post notification of such filing on AT&T's website wherein AT&T will identify the Force Majeure Event, the affected measures, and, if applicable, the impacted wire centers, including affected NPAs and NXXs.

4.5.2.2 No later than ten (10) business days after AT&T provides written notice in accordance with Section 4.5.2.1 affected CLECs must file written comments with the Commission to the extent such CLECs have objections or concerns regarding the application of Section 4.5.2. CLECs will be required to show that the relief is not reasonable under the circumstances.

4.5.2.3 AT&T's written notice of the applicability of Section 4.5.2 shall be presumptively valid and deemed approved by the Commission effective thirty (30) calendar days after AT&T provides notice in accordance with Section 4.5.2.1. The Commission may require AT&T to provide a true-up of SEEM fees to affected CLECs if a Force Majeure Event declaration (or some portion thereof) is found to be invalid by the Commission after it has taken effect.

4.5.2.4 During the pendency of a Force Majeure Event, AT&T shall file with the Commission periodic updates of its restoration/recovery progress and efforts as agreed upon between the Commission Staff and AT&T. The Commission Staff will consider reasonable requests from affected carriers on such updates' contents and frequency, including the need for weekly progress update reports. Additionally, for Force Majeure events directly impacting a geographic area of the network infrastructure, AT&T will post to the AT&T website (https://clec.att.com/clec/shell.cfm?section=2535) periodic updates of its restoration/recovery progress and efforts. AT&T will post at a minimum for the area where Force Majeure has been declared where applicable; the identity of each wire center and associated NPA/NXXs and th[illegible] color coded Area Dispatch Status report; the t[illegible]AT&T pending

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Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

service orders; the total number of CLEC pending service orders; the total number of AT&T pending trouble reports; and the total number of CLEC pending trouble reports.

4.5.2.5 The Force Majeure claim will be presumptively valid for a period of sixty (60) calendar days. After sixty (60) calendar days have elapsed, AT&T shall resume compliance with the Enforcement Mechanisms or file for an extension of the relief period. To the extent CLECs have objections or concerns regarding the extension, CLECs must file written comments with the Commission within ten (10) business days from the request of the extension. CLECs will be required to show that the extended period was not reasonable under the circumstances. AT&T's request for extension shall be presumptively valid and deemed approved by the Commission effective thirty (30) calendar days after AT&T provides notice in accordance with Section 4.5.2.1. The Commission may require AT&T to provide a true-up of SEEM payments to affected CLECs if a Force Majeure Event (or some portion thereof) is found to be invalid by the Commission after it has taken effect.

4.5.3 In addition to these specific limitations of liability, AT&T may petition the Commission to consider relief based upon other circumstances.

4.6 Change of Law

4.6.1 Upon a particular Commission's issuance of an Order pertaining to Performance Measurements or Remedy Plans in a proceeding expressly applicable to all CLECs, AT&T shall implement such performance measures and remedy plans covering its performance for the CLECs, as well as any changes to those plans ordered by the Commission, on the date specified by the Commission. If a change of law occurs which may change AT&T's obligations, parties may petition the Commission within 30 days to seek changes to the SQM and SEEM plans in accordance with such change of law. Performance Measurements and remedy plans that have been ordered by the Commission can currently be accessed via the AT&T performance measurement website. Should there be any difference between the performance measure and remedy plans on AT&T's website and the plans the Commission has approved as filed in compliance with its orders, the Commission-approved compliance plan will supersede as of its effective date.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

4.7 Enforcement Mechanism Cap

4.7.1 AT&T's total liability for the payment of Tier-1 Enforcement Mechanisms shall be collectively and absolutely capped at 36% of net revenues in Kentucky, based upon the most recently reported ARMIS data.

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

4.7.3 If AT&T's payment of Tier-1 Enforcement Mechanisms would have exceeded the cap referenced in this plan, a CLEC may commence a proceeding with the Commission to demonstrate why AT&T should pay any amount in excess of the cap. The CLEC shall have the burden of proof to demonstrate why, under the circumstances, AT&T should have additional liability.

4.8 Audits

4.8.1 AT&T currently provides CLECs with certain audit rights as a part of their individual interconnection agreements. If ordered by the Public Service Commission, AT&T will agree to undergo a SEEM audit. Unless otherwise agreed between AT&T and the Public Service Commission, the audit should be conducted by an independent third party auditor. The results of audits will be made available to all the parties subject to proper safeguards to protect proprietary information. Audits will be conducted under the following specifications:

4.8.1.1 The cost of one audit per version of the SEEM plan shall be borne by AT&T.

4.8.1.2 Should an independent third party auditor be required, it shall be selected by AT&T and the PSC.

4.8.1.3 AT&T and the PSC shall jointly determine the scope of the audit.

4.8.1.4 The PSC may request input regarding selection of the auditor from interested parties.

4.8.2 These audits are intended to provide the basis for the PSCs and CLECs to determine that SEEM produces accurate data that reflect each State's Order for performance measurements.

4.9 Dispute Resolution

4.9.1 Notwithstanding any other provision of the Interconnection Agreement between AT&T and each CLEC, if a dispute arises regarding AT&T's performance or obligations pursuant to this Plan, AT&T and the CLEC shall negotiate in good faith for a period of thirty (30 [illegible] the dispute. If at the conclusion of the 30 day period, AT&T [illegible] are unable to

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EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

reach a resolution, then the dispute shall be resolved by the Commission.

4.10 Regional Coefficients

Some metrics are calculated for the entire AT&T Southeast region, rather than by state. Where these metrics are a Tier-1 SEEM submetric, a regional coefficient is calculated to determine the amount of the remedy for the CLEC in each state. For example, the Acknowledgement Completeness Measurement can be measured for an individual CLEC, but only at the regional level. In several states it is also a Tier-1 SEEM submetric. Thus, if there is a failure in this measurement for a CLEC, it is necessary to determine the amount of remedy for the CLEC in each state. A Regional Coefficient is used to do this. (Appendix E, Section E.4 describes the method of calculating the Regional Coefficients.) The amount of remedy for the CLEC in a state is determined by multiplying the regional affected volume by the Coefficient for the state and by the state fee.

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Bunt Kirtley
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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Appendix A: Fee Schedule

Table 1: Fee Schedule for Tier-1 Per Transaction Fee Determination

Performance Measure	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
OSS/Pre-Ordering	$10.00	$15.00	$24.00	$30.00	$36.00	$42.00
Service Order Accuracy	$20.00	$20.00	$24.00	$24.00	$24.00	$24.00
Flow Through - Business	$40.00	$45.00	$60.00	$66.00	$72.00	$78.00
Flow Through - LNP	$40.00	$45.00	$67.50	$74.25	$81.00	$87.75
Flow Through - Residence	$40.00	$45.00	$67.50	$74.25	$81.00	$87.75
Flow Through – UNE-L	$40.00	$45.00	$60.00	$66.00	$72.00	$78.00
FOCT – Fully Mechanized	$20.00	$25.00	$36.00	$42.00	$48.00	$54.00
FOCT – Partially Mechanized	$20.00	$25.00	$40.50	$47.25	$54.00	$60.75
FOCT - Email	$20.00	$25.00	$36.00	$42.00	$48.00	$54.00
FOCT – IC Trunks	$20.00	$25.00	$36.00	$42.00	$48.00	$54.00
Ordering – All Other Metrics	$20.00	$25.00	$36.00	$42.00	$48.00	$54.00
Provisioning – Resale	$40.00	$50.00	$84.00	$120.00	$156.00	$240.00
Provisioning – UNE	$115.00	$130.00	$174.00	$192.00	$228.00	$276.00
Provisioning – UNEP	$55.00	$60.00	$84.00	$90.00	$108.00	$132.00
Provisioning – IC Trunks	$25.00	$30.00	$60.75	$87.75	$108.00	$168.75
Provisioning - LNP	$115.00	$190.00	$462.00	$552.00	$642.00	$738.00
Maintenance and Repair – Resale	$40.00	$50.00	$84.00	$120.00	$156.00	$240.00
Maintenance and Repair – UNE	$115.00	$130.00	$174.00	$192.00	$228.00	$276.00
Maintenance and Repair - UNEP	$55.00	$60.00	$84.00	$90.00	$108.00	$132.00
Maintenance and Repair – IC Trunks	$25.00	$30.00	$54.00	$78.00	$96.00	$150.00
Billing– BIA (see Note 1)	2%	2%	2%	2%	2%	2%
Billing – BIT	$7.00	$7.00	$7.00	$7.00	$7.00	$7.00
Billing – BUDT (see Note 2)	$0.046	$0.046	$0.046	$0.046	$0.046	$0.046
Billing – BEC (see Note 3)	$0.07	$0.07	$0.07	$0.07	$0.07	$0.07
Trunk Group Performance	$25.00	$30.00	$54.00	$78.00	$96.00	$150.00
Collocation	$3,165	$3,165	$3,165	$3,165	$3,165	$3,165

Note 1: Reflects percent interest to be paid on adjusted amounts.
Note 2: Amount paid per 1000 usage records.
Note 3: Amount paid per dispute.

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JEFF R. DEROUEN
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TARIFF BRANCH
Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Appendix B: SEEM Submetrics

B.1 Tier-1 Submetrics

Item No.	SQM Ref	Tier-1 Submetric
1	LMT	PO-2 Loop Makeup – Response Time – Electronic - Loop
2	AKC	O-2 Acknowledgement Message Completeness - Acknowledgments
3	FT	O-3 Percent Flow-Through Service Requests – Business
4	FT	O-3 Percent Flow-Through Service Requests – LNP
5	FT	O-3 Percent Flow-Through Service Requests – Residence
6	FT	O-3 Percent Flow-Through Service Requests – UNE-L (includes UNE-L with LNP)
7	FT	O-3 Percent Flow-Through Service Requests – UNE-P
8	RI	O-8 Reject Interval – Fully Mechanized
9	RI	O-8 Reject Interval – Partially Mechanized
10	RI	O-8 Reject Interval – Email
11	FOCT	O-9 Firm Order Confirmation Timeliness - Fully Mechanized
12	FOCT	O-9 Firm Order Confirmation Timeliness - Partially Mechanized
13	FOCT	O-9 Firm Order Confirmation Timeliness - Email
14	FOCT	O-9 Firm Order Confirmation Timeliness – Local Interconnection Trunks
15	FOCC	O-11 FOC & Reject Response Completeness – Fully Mechanized
16	FOCC	O-11 FOC & Reject Response Completeness – Partially Mechanized
17	FOCC	O-11 FOC & Reject Response Completeness – Email
18	MIA	P-3 Percent Missed Installation Appointments – Resale POTS
19	MIA	P-3 Percent Missed Installation Appointments – Resale Design
20	MIA	P-3 Percent Missed Installation Appointments – UNE Loop and Port Combinations
21	MIA	P-3 Percent Missed Installation Appointments – UNE Loo[illegible]

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EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Item No.	SQM Ref	Tier-1 Submetric
22	MIA	P-3 Percent Missed Installation Appointments – UNE EELS
23	MIA	P-3 Percent Missed Installation Appointments – UNE Loops – Non-Design
24	MIA	P-3 Percent Missed Installation Appointments – UNE xDSL and Line Splitting
25	MIA	P-3 Percent Missed Installation Appointments – UNE Line Sharing
26	MIA	P-3 Percent Missed Installation Appointments – LNP Standalone
27	MIA	P-3 Percent Missed Installation Appointments – Local Interconnection Trunks
28	OCI	P-4 Order Completion Interval (OCI) – Resale POTS
29	OCI	P-4 Order Completion Interval (OCI) – Resale Design
30	OCI	P-4 Order Completion Interval (OCI) – UNE Loop and Port Combinations
31	OCI	P-4 Order Completion Interval (OCI) – UNE Loop Design
32	OCI	P-4 Order Completion Interval (OCI) – UNE Loop Non-Design
33	OCI	P-4 Order Completion Interval (OCI) – UNE xDSL and Line Splitting– without conditioning
34	OCI	P-4 Order Completion Interval (OCI) – UNE xDSL and Line Splitting– with conditioning
35	OCI	P-4 Order Completion Interval (OCI) – UNE Line Sharing Dispatch
36	OCI	P-4 Order Completion Interval (OCI) – UNE Line Sharing – Non-Dispatch
37	OCI	P-4 Order Completion Interval (OCI) – Local interconnection Trunks
38	OCI	P-4 Order Completion Interval (OCI) – UNE EELS
39	CCI	P-7 Coordinated Customer Conversions – Hot Cut Durations
40	CCT	P-7A Coordinated Customer Conversions – Hot Cut Timeliness Percent within Interval
41	NCDD	P-7D Non-Coordinated Customer Conversions – Percent Completed and Notified on Due Date
42	PPT	P-9 Provisioning Trouble Rate – Resale POTS
43	PPT	P-9 Provisioning Trouble Rate – Resale Design
44	PPT	P-9 Provisioning Trouble Rate – UNE Loop and Port Combinations
45	PPT	P-9 Provisioning Trouble Rate – UNE Loops - Design
46	PPT	P-9 Provisioning Trouble Rate – UNE Loops – Non-Des

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Bunt Kirtley
EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Item No.	SQM Ref	Tier-1 Submetric
47	PPT	P-9 Provisioning Trouble Rate – UNE xDSL and Line Splitting
48	PPT	P-9 Provisioning Trouble Rate – UNE Line Sharing - Dispatch
49	PPT	P-9 Provisioning Trouble Rate – UNE Line Sharing – Non-Dispatch
50	PPT	P-9 Provisioning Trouble Rate – Local Interconnection Trunks
51	SOA	P-11 Service Order Accuracy
52	LOOS	P-13B LNP – Percent Out of Service < 60 Minutes - LNP
53	LAT	P-13C LNP Percent of Time AT&T Applies the 10-Digit Trigger Prior to the LNP Order Due Date – LNP – (Standalone)
54	LDT	P-13D LNP – Disconnect Timeliness (Non-Trigger)
55	MRA	MR-1 Percent Missed Repair Appointment – Resale POTS
56	MRA	MR-1 Percent Missed Repair Appointment – Resale Design
57	MRA	MR-1 Percent Missed Repair Appointment – UNE Loop and Port Combinations
58	MRA	MR-1 Percent Missed Repair Appointment – UNE Loops Design
59	MRA	MR-1 Percent Missed Repair Appointment – UNE EELS
60	MRA	MR-1 Percent Missed Repair Appointment – UNE Loops Non-Design
61	MRA	MR-1 Percent Missed Repair Appointment – UNE xDSL and Line Splitting
62	MRA	MR-1 Percent Missed Repair Appointment – UNE Line Sharing
63	MRA	MR-1 Percent Missed Repair Appointment – Local Interconnection Trunks
64	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – Resale POTS
65	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – Resale Design
66	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – UNE Loop and Port Combinations
67	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – UNE Loops Design
68	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – UNE Loops Non-Design
69	CTRR-NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports – UNE xDSL and Line Splitting

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EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Item No.	SQM Ref	Tier-1 Submetric
70	CTRR NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports– UNE Line Sharing
71	CTRR NPRR	MR-2A Customer Trouble Report Rate Net of Provisioning Troubles and Repeat Reports– Local Interconnection Trunks
72	MAD	MR-3 Maintenance Average Duration – Resale POTS
73	MAD	MR-3 Maintenance Average Duration – Resale Design
74	MAD	MR-3 Maintenance Average Duration – UNE Loop and Port Combinations
75	MAD	MR-3 Maintenance Average Duration – UNE Loops Design
76	MAD	MR-3 Maintenance Average Duration – UNE EELS
77	MAD	MR-3 Maintenance Average Duration – UNE Loops Non-Design
78	MAD	MR-3 Maintenance Average Duration – UNE xDSL and Line Splitting
79	MAD	MR-3 Maintenance Average Duration – UNE Line Sharing
80	MAD	MR-3 Maintenance Average Duration – Local Interconnection Trunks
81	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – Resale POTS
82	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – Resale Design
83	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – UNE Loop and Port Combinations
84	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – UNE Loops Design
85	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – UNE Loops Non-Design
86	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – UNE xDSL and Line Splitting
87	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – UNE Line Sharing
88	PRT	MR-4 Percent Repeat Customer Troubles within 30 Days – Local Interconnection Trunks
89	OOS	MR-5 Out of Service (OOS) > 24 hours – Resale POTS
90	OOS	MR-5 Out of Service (OOS) > 24 hours – Resale Design
91	OOS	MR-5 Out of Service (OOS) > 24 hours – UNE Loop and [illegible]

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Item No.	SQM Ref	Tier-1 Submetric
92	OOS	MR-5 Out of Service (OOS) > 24 hours – UNE Loops Design
93	OOS	MR-5 Out of Service (OOS) > 24 hours – UNE Loops Non-Design
94	OOS	MR-5 Out of Service (OOS) > 24 hours – UNE xDSL and Line Splitting
95	OOS	MR-5 Out of Service (OOS) > 24 hours – UNE Line Sharing
96	OOS	MR-5 Out of Service (OOS) > 24 hours – Local Interconnection Trunks
97	BIA	B-1 Invoice Accuracy
98	BIT	B-2 Mean Time to Deliver Invoices - CRIS
99	BIT	B-2 Mean Time to Deliver Invoices - CABS
100	BUDT	B-5 Usage Data Delivery Timeliness
101	BEC	B-10 Percent Billing Adjustment Requests (BAR) Responded to within 45 Business Days - State
102	TGP	TGP Trunk Group Performance
103	MDD	C-3 Collocation Percent of Due Dates Missed

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PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Appendix C: Statistical Properties and Definitions

The statistical process for testing whether AT&T's wholesale customers (Competitive Local Exchange Carriers or CLECs) are being treated equally with AT&T's retail customers involves more than a simple mathematical formula. Three key elements need to be considered before an appropriate decision process can be developed. These are the type of:

- Data
- Comparison
- Performance

This section describes the properties of a test methodology and the truncated Z statistic for three types of measures that compare CLEC's performance to AT&T's retail analog.

C.1 Necessary Properties for a Test Methodology

Once the key elements are determined, a test methodology should be developed that complies with the following properties:

- Like-to-Like Comparisons
- Overall Level Test Statistic
- Production Mode Process
- Balancing

C.1.1 Like-to-Like Comparisons

When possible, data should be compared at appropriate levels, e.g. wire center, time of month, dispatched 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

C.1.2 Overall 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 proportio[illegible]ate, the aggregated index should be very nearly the same [illegible]ns on the covariate had not been done.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

- 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.

C.1.3 Production Mode Process

The decision system must be developed so that it does not require intermediate manual intervention, i.e., the process must be mechanized to the extent possible.

- 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.

C.1.4 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.

C.1.5 Measurement Types

The performance measurements that will undergo testing are of three types: mean, proportion, and rate. All three have similar characteristics. Different types of data are used to calculate them. Table C-1 shows the type of data that is used to derive each measurement type.

Table C-1: Measurement Types and Data

Measurement Type	Data Used to Derive Measure
Mean	Interval Measurements
Proportion	Counts
Rate	Counts

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

C.2 Testing Methodology – The Truncated Z

In summary, many covariates are chosen in order to provide meaningful comparison levels below the submetric level chosen for the parity comparison. This includes such factors as wire center and time of month, as well as order type for provisioning measures. 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's weight depends on the volume of AT&T and CLEC orders in the cell. The weighted average is standardized by subtracting the weighted theoretical mean of the truncated distribution, and this is divided by the standard error of the weighted average. Summaries based on measurement type are given for the calculation of the cell Z statistic.

Additionally, there are measures that are compared to a retail analog at least in part where cell definitions do not exist that permit assignment of data for these measures to cells so the truncated Z statistic cannot be calculated. These measures are:

- Average Answer Time (M&R)
- Billing Invoice Accuracy
- Mean Time to Deliver Invoices

In addition, there is one measurement that uses retail results 'plus' (2 seconds for OSS Response Time); resulting in a benchmark standard. This measurement is OSS Response Interval (Pre-Ordering/Ordering/Maintenance & Repair.

As an example of one approach taken for a parity measure that does not use the truncated Z methodology, consider the measure Billing Invoice Accuracy. In Kentucky, AT&T calculates results for this measure by subtracting the Absolute Value of Total Adjustments during the current month from the Absolute Value of Total Billed Revenues during the current month then dividing these results by the Absolute Value of Total Billed Revenues during the current month and multiplying these results by 100. The formula is as follows:

*Invoice Accuracy = [(**a – b**)/**a**] x 100*

a = *Absolute Value of Total Billed Revenues during current month*

b = *Absolute Value of Total Billing Related Adjustments during current month*

A numerical example of the remedy calculation is given below:

Example:

CLEC DATA

Bill Adjustments	$14,660.00
Total Billed Revenue	$336,529.00

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

AT&T DATA
Bill Adjustments $6,018,969,26
Total Billed Revenue $484,691,922.40

CLEC Invoice Accuracy Ratio = [(336,529.00-14,660.00)/ 336,529.00] x 100 = 95.64

AT&T Invoice Accuracy Ratio =
[(484,691,922.40-6,018,969.26)/ 484,691,922.40] x 100 = 98.75

Thus, the calculated values are:

CLEC Result = 96%

AT&T Result = 98.75%

In Kentucky once it is determined that the AT&T percent is higher, AT&T pays the CLEC according to the Kentucky Fee Schedule.

The calculation would be the difference in the CLEC Invoice Accuracy Ratio and the AT&T Invoice Accuracy Ratio multiplied by the total CLEC Bill Adjustments. Then multiply the result by 2% (Appendix A: Fee Schedule)

- 98.75%-95.64%=3.11%
- 3.11% x $14,660= $455.92
- $455.92 x 2%= $9.12

C.2.1 Mean Measures

For mean measures, an adjusted, modified t statistic is calculated for each like-to-like cell that has at least seven AT&T and seven CLEC transactions. A permutation test is used when one or both of the AT&T and CLEC sample sizes is less than seven. The adjusted, modified t statistic and the permutation calculation are described in Appendix D, Statistical Formulas and Technical Description.

C.2.2 Proportion Measures

For performance measures that are calculated as a proportion, in each adjustment cell, the cell Z and the moments for the truncated cell Z can be calculated in a direct manner. In adjustment cells where proportions are not equal to zero or one, and where the sample sizes are reasonably large ($n_{ij}p_{ij}(1-p_{ij}) > 9$), 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 p

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

C.2.3 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 the rate measure Customer Trouble Report Rate there is a fixed number of access lines in service for the CLEC, b_{2j}, and a fixed number for AT&T, b_{1j}. The modeling assumption is that the occurrence of a trouble is independent between access lines, and the number of troubles in b access lines follows a Poisson distribution with mean $\lambda \cdot b$ where λ is the probability of a trouble per 1 access line and b (= $b_{1j} + b_{2j}$) is the total number of access lines in service. The exact permutation distribution for this situation is approximated by the binomial distribution (the limit for the hypergeometric distribution) that is based on the total number of AT&T and CLEC troubles, n, and the proportion of AT&T access lines in service, $q_j = b_{1j}/b$.

In an adjustment cell, if the number of CLEC troubles is greater than 15 and the number of AT&T troubles is greater than 15, and $n_j q_j(1-q_j) > 9$, then a normal approximation can be used. 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 AT&T troubles). In this case, the moments for the truncated Z are calculated explicitly using the binomial distribution.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Appendix D: Statistical Formulas and Technical Descriptions

We start by assuming that the data are disaggregated so that comparisons of CLEC's performance to AT&T's retail analog 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 at least one ILEC observation and at least one CLEC observation.

$L =$ 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; $k = 1, \ldots, n_{1j}$

$X_{2jk} =$ Individual CLEC transactions in cell j; $k = 1, \ldots, n_{2j}$

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

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

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

For Mean Performance Measures the following additional notation is needed.

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

$\bar{X}_{2j}$	=	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, one can avoid permutation calculations since this statistic will be normal (or Student's t) to a good approximation. For small samples, where one cannot avoid permutation calculations, it has been determined that the difference between "modified Z" and the textbook "pooled Z" is negligible. Therefore the permutation test based on pooled Z for small samples will be used. 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 for cell j

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EFFECTIVE
3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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

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

For Rate Performance 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; $b_{1j} + b_{2j}$

r_{1j} = the ILEC sample rate of cell j; n_{1j} / b_{1j}

r_{2j} = the ILEC 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:

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

and the cumulative binomial distribution is

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

D.2 Calculating the Truncated Z

The general methodology for calculating an overall 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 formula will depend on the type of measure.

Mean 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 Measures

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

D.2.2 Calculate a Z-Score (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

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

where α is determined by the following algorithm.

If the two means are equal and the two variances are zero, set the cell Z-Score to zero.

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 Student's t random variable with n_{1j} - 1 degrees of freedom, is less than

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

where

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

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

and g is the median value of all values of

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

over all cells within the submeasure being tested such that all three conditions stated below are true.

$\gamma_{1j} > 0$

$n_{1j} > 6$

$n_{1j} \ge n_{3q}$ for all values of j, where n_{3q} is the 3rd quartile of all values of n_{1j} in cells where the first two conditions are true.

If no submeasure cells exist that satisfy these conditions, then

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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

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

- $M_j \le 1{,}000$ (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 to 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

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

Rate Measure

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

D.2.3 Obtain a Truncated Z-Score 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 equivalents are set to 0, and negative values are left alone. Mathematically, this is written as

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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

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, $E(Z_j^*|H_0)$ and $Var(Z_j^*|H_0)$. To compensate for the truncation in step 3, an overall, weighted sum of the Z^*_j will need to be centered and scaled properly so that the final overall statistic follows a standard normal distribution.

- If $W_j = 0$, then no evidence of favoritism is contained in the cell. The formulas for calculating $E(Z_j^* | H_0)$ and $Var(Z_j^* | H_0)$ cannot be used. Set both equal to 0.

- If $\min(n_{1j}, n_{2j}) > 6$ for a mean measure, or $\min\left\{a_{1j}\left(1-\frac{a_{1j}}{n_{1j}}\right), a_{2j}\left(1-\frac{a_{2j}}{n_{2j}}\right)\right\} > 9$ for a proportion measure, or $\min(n_{1j}, n_{2j}) > 15$ and $n_j q_j(1-q_j) > 9$ for a rate measure, then

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

and

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

- 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.

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

and

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

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Mean Measure

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

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

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

Proportion Measure

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

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

Rate Measure

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

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

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

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

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*

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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 errors possible when using such a decision rule:

- **Type I Error**: (α)Deciding favoritism exists when there is, in fact, no favoritism.
- **Type II Error**: (β)Deciding parity exists when there is, in fact, favoritism.

The probabilities of each type of error 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.

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

where

$$M(\mu, \sigma) = \mu \Phi(\tfrac{-\mu}{\sigma}) - \sigma \phi(\tfrac{-\mu}{\sigma})$$

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

$\Phi(\cdot)$ is the cumulative standard normal distribution function, $\phi(\cdot)$ is the standard normal density function, and μ and σ are the formal arguments of functions $M(\cdot,\cdot)$ and $V(\cdot,\cdot)$.

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.

[1] This decision rule assumes that a negative test statistic indicates poor service for [illegible]f the opposite is true, then reverse the decision rule.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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: $\mu_{2j} = \mu_{1j} + \delta_j\, \sigma_{1j}$, $\sigma_{2j}^2 = \lambda_j\, \sigma_{1j}^{2.}$

Where $\delta_j > 0$, $\lambda_j \geq 1$, $j = 1,\ldots L$, and parameters δ_j and λ_j correspond to the Delta and Lambda values defined in section 4.1.6 of the Administrative Plan)

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 transactions 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 $j = 1,\ldots,L$.

Where parameters ψ_j corresponds to the Psi values defined in section 4.1.6 of the Administrative Plan.

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.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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

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

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

where

$$\pi_j^{(1)} = f_j^{(1)}\left(n_j^2 + f_j^{(2)} + f_j^{(3)} - f_j^{(4)}\right)$$

$$\pi_j^{(2)} = f_j^{(1)}\left(-n_j^2 - f_j^{(2)} + f_j^{(3)} + f_j^{(4)}\right)$$

$$\pi_j^{(3)} = f_j^{(1)}\left(-n_j^2 + f_j^{(2)} - f_j^{(3)} + f_j^{(4)}\right)$$

$$\pi_j^{(4)} = f_j^{(1)}\left(n_j^2\left(\tfrac{2}{\psi_j} - 1\right) - f_j^{(2)} - f_j^{(3)} - f_j^{(4)}\right)$$

$$f_j^{(1)} = \frac{1}{2n_j^2\left(\frac{1}{\psi_j} - 1\right)}$$

$$f_j^{(2)} = n_j n_{1j}\left(\tfrac{1}{\psi_j} - 1\right)$$

$$f_j^{(3)} = n_j a_j\left(\tfrac{1}{\psi_j} - 1\right)$$

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

Recall that the cell test statistic is given by

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

Using the equations above, it can be shown that Z_j has mean and standard error given by

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

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (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 transactions are identically distributed within cells is:

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

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

Where parameters ε_j corresponds to the Epsilon values defined in section 4.1.6 of the Administrative Plan.

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

$$E(n_{1j}) = n_j q_j^*$$

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

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

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

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

Using the relationships above, it can be shown 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

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

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 (where λ_j and δ_j correspond to the Lambda and Delta values defined in section 4.1.6 of the Administrative Plan section). Proportion measures are indexed by parameter ψ_j and rate measures by ε_j (these parameters correspond to the Psi and Epsilon of section 4.1.6). 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 larg[e] λ_j. Put

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

another way, reasonable differences in the values chosen here could make very little difference in the balancing points chosen. Therefore, λ_j parameters have been set to 1.

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 – $\delta_j = \delta$ might be fine for tests across individual CLECs where 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 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 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.

D.2.7 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.

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Appendix E: AT&T SEEM Remedy Calculation Procedures

E.1 AT&T SEEM Remedy Procedure

E.1.1 Tier-1 Calculation For Retail Analogs

DETERMINE IF AN INDIVIDUAL CLEC FAILS A TIER-1 SUBMETRIC

1. Tier-1 is triggered by a monthly failure of any Tier-1 Remedy Plan submetric.
2. Calculate the overall test statistic for a CLEC (CLEC1); Example, z^T_{CLEC1} (per Statistical Methodology).
3. Calculate the balancing critical value (Example, ${}^cB_{CLEC1}$) that is associated with the alternative hypothesis (for fixed parameters λ,δ, ψ, or ε) for that CLEC.
4. If the overall test statistic is equal to or above the balancing critical value, stop here. That is, if ${}^cB_{CLEC1} \leq z^T_{CLEC1,}$ stop here. Otherwise, go to step 5.

CALCULATE REMEDY PAYMENT FOR CORRECTION OF TEST STATISTIC TO THE BALANCING CRITICAL VALUE

5. Select the cell with the most negative Z-Score (let i=1,…,I with i=1 having the most negative Z-Score , i=2 having next most negative Z-Score , etc. and with i=I when the criterion in step 7 is fulfilled.) and set its Z-Score to zero ($z_{CLEC1,i} = 0$).
6. Recalculate the overall test statistic for that CLEC with the adjusted data; Example, $z^T_{CLEC1}{}^*$ (per Statistical Methodology).
7. If the new overall test statistic is equal to or above the balancing critical value, that is, if ${}^cB_{CLEC1} <= z^T_{CLEC1}{}^*$, go to step 8. Otherwise, repeat steps 5 – 6 letting i = i + 1.
8. Calculate the Total Affected Volume (TAV) by summing the Total Impacted Volumes (TIV) of each cell whose Z-Score was reset to zero except the last cell changed. The impacted volume for the last cell changed should be interpolated by $TIV_{CLEC1,I,INT} = ({}^cB_{CLEC1} - z^T_{CLEC1,I-1}{}^*) / (z^T_{CLEC1,I}{}^* - z^T_{CLEC1,I-1}{}^*) \times TIV_{CLEC1,I}$. The result should be rounded up to the next positive integer and added to $TAV_{CLEC1.}$ That is, $TAV_{CLEC1} = TIV_{CLEC1,1} + TIV_{CLEC1,2} + \ldots + TIV_{CLEC1,I-1} + TIV_{CLEC1,I,INT}$. Note that if $TIV_{CLEC1,I} = 1$ then $TIV_{CLEC1,I,INT} = 1$ and the interpolation step can be omitted. Any transactions that cause the overall test statistic to be between the BCV and zero will be included in the TIV for transactions between the BCV and zero.
9. Calculate the below BCV portion of the payment to CLEC1 by multiplying the result of step 8 (TAV_{CLEC1}) by the appropriate dollar amount from the fee schedule. Thus, $CLEC1_{BCV}$ payment = $TAV_{CLEC1} \times$ \$\$from Fee Schedule. Here the fee should be derived from Table 1: Fee Schedule for Tier-1 Per Transaction Fee Dete[illegible]dix A)

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

multiplied by the appropriate factor from section 4.3.1.4. This factor is 3/2 if the CLEC aggregate performance passes and 3 if the CLEC aggregate performance fails.

CALCULATE REMEDY PAYMENT FOR CORRECTION OF TEST STATISTIC TO ZERO

10. If the current overall adjusted test statistic (calculated in step 6) is equal to or above zero, that is, if $0 <= z^T{}_{CLEC1}{}^*$ for i = I, then go to step 14. Otherwise, go to step 11.
11. Select the cell with the most negative remaining z-value (let i=I+1,…, J with i=1+1 having the most negative z-value, i=I+2 having next most negative z-value, etc. and with i=J when the criterion in step 13 is fulfilled.) and set its z-value to zero ($z_{CLEC1,i} = 0$).
12. Recalculate the overall test statistic for that CLEC with the adjusted data; Example, $z^T{}_{CLEC1}{}^*$ (Per Statistical Methodology).
13. If the new overall test statistic is equal to or above zero, that is, if ${}^cB_{CLEC1} <= z^T{}_{CLEC1}{}^*$, go to step 14. Otherwise, repeat steps 11 – 12 letting i= i+1.
14. Calculate the Total Affected Volume (TAV0) by summing the Total Impacted Volumes (TIV0) of each cell whose z-value was reset to zero except the last cell changed. The affected volume for the last cell changed should be interpolated by $TIV0_{CLEC1,J,INT} = (0 – z^T{}_{CLEC1,J-1}{}^*) / (z^T{}_{CLEC1,J}{}^* – z^T{}_{CLEC1,J-1}{}^*) * TIV0_{CLEC1,J} – TIV_{CLEC1,I,INT}$. The result should be rounded up to the next positive integer and added to $TAV0_{CLEC1}$. That is, $TAV0_{CLEC1}= (TIV_{CLEC1,I} – TIV_{CLEC1,I,INT}) + TIV0_{CLEC1,I+1} + TIV0_{CLEC1,I+2} + … + TIV0_{CLEC1,J-1} + TIV0_{CLEC1,J,INT})$. Note that if $TIV0_{CLEC1,J} = 1$ then $TIV_{CLEC1,J,INT} = 1$ and the interpolation step can be omitted. Also, $TIV_{CLEC1,I} – TIV_{CLEC1,I,INT}$ is the remaining transactions from $TIV_{CLEC1,I}$ that were not used in step 8 and if $TIV_{CLEC1,I} = TIV_{CLEC1,I,INT}$ then $TAV0_{CLEC1} = 0$.
15. Calculate the 0 to BCV portion of the payment to CLEC1 by multiplying the result of step 14 ($TAV0_{CLEC1}$) by the appropriate dollar amount from the fee schedule. Thus, $CLEC1_0$ payment = $TAV0_{CLEC1}$ * $$from Fee Schedule. Here the fee should be derived from Table 1: Fee Schedule for Tier-1 Per Transaction Fee Determination (Appendix A) multiplied by the appropriate factor from section 4.3.1.4. This factor is 1/3 if the CLEC aggregate performance passes and 2/3 if the CLEC aggregate performance fails.

CALCULATE TOTAL REMEDY PAYMENT FOR CLEC1

16. The total remedy payment for CLEC1 is found by adding the results from step 9 to the results from step 15. That is $CLEC1_{TOTAL}$ payment = $CLEC1_{BCV}$ payment + $CLEC1_0$ payment.

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PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

E.1.2 Example: CLEC1 Percent Repeat Customer Troubles Within 30 Days (PRT) for Resale (DSGN).

Submeasure Category = Provisioning - Resale
Failure Month = Month 1
CLEC Aggregate Result = Failed

	n_I	n_C	I_c	z^T_{CLEC1}	$^C B_{CLEC1}$		Order Zeroed Out (I/J)	TAV (< BCV)	TAV0 (0 to BCV)
State	312	27	18	-4.10	-1.22				
Cell				$z_{CLEC1,i}$	RANK	$z^T_{CLEC1}{}^*$			
1		1	0	0.75					
2		4	2	-0.69	8				
3		3	3	-1.76	3	-0.65^{Δ}	3	2^{o}	1
4		1	0	0.67					
5		4	3	-1.45	5	$0.80^{\Delta\Delta}$	5		1^{oo}
6		3	3	-3.45	1	-2.46	1	3	
7		2	2	-1.81	2	-1.60	2	2	
8		3	2	-1.09	6				
9		1	1	-1.65	4	-0.13	4		1
10		2	1	-0.84	7				
11		1	0	0.62					
12		2	1	-0.40	9				
Total			**18**					**7**	**3**

$^{\Delta}$Note that after making $z_{CLEC1,I} = 0$, the overall $z^T_{CLEC1}{}^* = -0.65$ is greater than the balancing critical value **$^C B_{CLEC1}$ =** -1.22.

$^{\Delta\Delta}$Note that after making $z_{CLEC1,J} = 0$, the overall $z^T_{CLEC1}{}^* = 0.80$ is greater than zero.

^{o}For cell#3 the TAV would be calculated with ((-1.22) - (-1.60))/((-0.65) - (-1.60)) × 3 = 1.2 which is rounded up to 2 transactions.

^{oo}For cell#5 the TAV0 would be calculated with ((0) - (-0.13))/((0.80) - (-0.13)) × 4 = 0.56 which is rounded up to 1 transaction.

Remedy payment for $CLEC1_{BCV}$ payment is (7 units) * ($40/unit) * (3 factor) = **$840** when the CLEC aggregate performance fails. Remedy payment for $CLEC1_0$ payment is (3 units) * ($40/unit) * (2/3 factor) = **$80** whe[illegible]gregate

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

performance fails. The total remedy payment is $CLEC_{TOTAL}$ payment = $840 + $80 = **$920**.

E.2 Tier-1 Calculation For Benchmarks

1. For each CLEC with five or more observations, calculate monthly performance results for the State.
2. CLEC having observations (sample sizes) between 5 and the large sample threshold L will use benchmark adjustment calculations described below.
   The only exception will be for Collocation Percent Missed Due Dates.
   a. Large sample threshold is defined as $L = 5/(B\times(1-B))$, rounded to the closest larger integer, where B is the benchmark. Large sample thresholds for some values of benchmarks are shown in the table below.

Benchmark B	**Large Sample Threshold L**
90%	56
95%	106
96.5%	149

   b. The Equivalent Minimal Benchmark for sample size n=5, EB(5) is based on the smallest number of failures $k \leq n$, for which the cumulative binomial distribution CBN(k,n,B) exceeds 5%. The failure allowance is at least 1 for small samples.

Nominal Benchmark	**Equivalent Minimal Benchmark: EB(5)**
90%	60%
95%	80%
96.5%	80%

   c. For any CLEC sample size n between 5 and L, the Equivalent Benchmark EB(n) is calculated so that the adjustment percent decreases linearly from EB(5) for n=5 to 0 for n=L, resulting in the following formula:

$$EB(n) = B - (B-EB(5))\times(L-n)/(L-5).$$

   d. Effective Benchmark is equal to the nominal Benchmark for large samples and to the Equivalent Benchmark for small samples.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

3. If the percentage (or equivalent percentage for small samples) meets the benchmark standard, no remedies are required. 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 CLEC's Total Affected Volume (TAV) by multiplying the Volume Proportion from step 4 by the Total Impacted CLEC Volume.
6. Calculate the payment to CLEC by multiplying the result of step 5 by the appropriate dollar amount from the fee schedule (Appendix A, Table 1) times the appropriate multiplier (section 4.3.1.5). That is,
   CLEC's payment = (CLEC's Total Affected Volume x $$ from Fee Schedule * multiplier). For the example that follows, fee amounts are based on an aggregate failure.

E.2.1 Example: CLEC Percent Missed Due Dates for Collocations

Submeasure Category = Collocation
Failure Month = Month 1
CLEC Aggregate Result = Failed

	n_C	Benchmark	$PMDD_C$	Volume Proportion	Affected Volume	Fee Schedule	Fee Multiplier	Payout
State	600	≥ 95% On Time	92%	.03	18			

Payout for CLEC is (18 units) * ($3165/unit) * (3 factor) = $170,910.

E.3 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. CLEC having observations (sample sizes) between 5 and large sample threshold L will use small sample adjustments as described 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, no remedies are required. Otherwise, go to step 5.
5. Determine the Volume Proportion by taking the difference between benchmark and the actual performance result.
6. Calculate the Total Affected Volume by multiplying the Volume Proportion from step 5 by the Total CLEC Volume.
7. Calculate the payment to CLEC by multiplying the result of step 6 by the appropriate dollar amount from the fee schedule. That is, CLEC's payment = CLEC's Total Affected Volume x $$ from Fee Schedule x multiplier. For the example that follows, assume CLEC aggregate failure.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

E.3.1 Example: CLEC Reject Interval – Fully Mechanized

Submeasure Category = Ordering
Failure Month = Month 1
CLEC Aggregate Result = Failed

	n_C	Benchmark	Reject Interval	Volume Proportion	Affected Volume	Fee Schedule	Fee Multiplier	Payout
State	600	97% <= 1 hour	95% <= 1 hour	.02	12			

Payout for CLEC is (12 units) * ($20/unit) * (2.5 factor) = $600

E.4 Regional Coefficients

This section describes the method of calculating regional coefficients.

E.4.1 [AKC]

- Acknowledgement Completeness (AKC_XML Gateway)
- Regional Coefficient Formula (Tier-1)
- Coefficient = (A+B) / (C+D) where:
- A = number of valid FOC transactions of the CLEC in the state (fully & partially mechanized)
- B = number of valid RI transactions of the CLEC in the state (fully & partially mechanized)
- C = total valid FOC transactions of the CLEC in the region (fully & partially mechanized)
- D = total valid RI transactions of the CLEC in the region (fully & partially mechanized)

E.4.2 [FT]

- Percent Flow Through CLEC Aggregate - Residence (PFT-RES)
- Percent Flow Through CLEC Aggregate - Business (PFT- BUS)
- Percent Flow Through CLEC Aggregate – UNE-L (includes UNE-L with LNP)
- Percent Flow Through CLEC Aggregate - LNP (PFT-LNP)
- Regional Coefficient Formula (Tier-1)
- Coefficient = A / B where:
- A = number of valid FOC transactions of the CLEC in the state (fully mechanized)
- B = total valid FOC transactions of the CLEC in the region (fully mechanized)

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

E.4.3 [SOA]

- Service Order Accuracy [SOA]
- Regional Coefficient Formula (Tier-1)
- Coefficient = A / B where:
- A = number of valid SOA orders of the CLEC in the state;
- B = total valid SOA orders of the CLEC in the region.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Appendix F: AT&T's Policy on Reposting of Performance Data and Recalculation of SEEM Payments

AT&T will be required to repost performance data as reflected in the Service Quality Measurement (SQM) reports and recalculate Self-Effectuating Enforcement Mechanism (SEEM) payments, to the extent technically feasible, under the following circumstances:

1. Those SQM measures included in a state's specific SQM plan with corresponding sub-metrics are subject to reposting. A notice will be placed on the AT&T performance measurement website advising CLECs when reposted data is available.
2. SQM Performance sub-metric calculations that result in a shift in the statewide aggregate performance from an "in parity" condition to an "out of parity" condition will be available for reposting.
3. SQM Performance sub-metric calculations with benchmarks where statewide aggregate performance is in an "out of parity" condition will be available for reposting whenever there is a >= 2% decline in AT&T's performance at the sub-metric level.
4. SQM Performance sub-metric calculations with retail analogues that are in an "out of parity" condition will be available for reposting whenever there is a degradation in performance as shown by an adverse change of >= .5 in the Z-Score at the sub-metric level.
5. Any data recalculations that reflect an improvement in AT&T's performance will be reposted at AT&T's discretion.
6. SQM Performance data will be reposted for a maximum of three months in arrears from implementation of the change of programming request requirement (RQ) which corrects a detected error. RQs shall not be unreasonably delayed after the date the error is detected. As an example, an error is discovered during the analysis of the May data month peformance that triggers a reposting, but the RQ correcting the error is implemented in the calendar month of July with the June data month performance reports, AT&T will correct the data beginning with the month of the RQ implementation (July), which would be for the June data month performance reports, and will repost the data month performance reports for the three months preceding data month performance reports – May, April, and March.
7. When updated SQM performance data has been reposted or when a payment error has been discovered, AT&T will recalculate applicable SEEM payments, where technically feasible, for a maximum of three months in arrears from date of detection. Recalculated SEEM payments due to reposted SQM data will be made for the same months that the applicable data was reposted. The three month period for recalculating SEEM payments due to an error will be determined in the same manner previously described for the SQM. For example, should an error be discovered for the data month of June, AT&T will correct data for the three preceding months – May, April, and March.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

8. Any adjustments for underpayment of Tier-1 calculated remedies resulting from the application of this policy will be made consistent with the terms of the state-specific SEEM plan, including the payment of interest. Any adjustments for overpayment of Tier-1 remedies will be made at AT&T's discretion.
9. Any adjustments for underpayments resulting from application of this policy will be made in the next month's payment cycle after the recalculation is made. The final current month 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.

When a CLEC believes that an error in its specific data requires reposting where the above statewide thresholds have not been met, the CLEC is responsible for identifying such issues and requesting AT&T to repost the data. Any failure to repost inaccurate data should be brought to the attention of the Commission for resolution if it is estimated that the thresholds described in items 3 or 4 have been met at the CLEC-specific level.

Determination of when Reposting Policy Applies

As part of the Change Notification Process, AT&T performs an analysis of impacts that are proposed to be made to performance measurement code. These impacts are used to identify changes to its reported SQM results.

To determine this impact, AT&T performs a query of the data warehouse to identify those records that would be impacted by the proposed change. Once the number of records is identified, the measurement is recalculated to determine the impact. This is the general framework for analysis - the specific steps used to evaluate the impact will vary with the issue being analyzed. However, the following example may assist in understanding:

Assume that service orders were erroneously being included in a particular product disaggregation for Percent Missed Installation Appointments. They should have been in another product disaggregation. Further, assume that the number of records erroneously included is 110 records out of a total of 86,000. In this example, the numerator and denominator would both be reduced by 110 records and the Z-Score would be recalculated. If the amount of the change was sufficient to meet criteria 2, 4, or 5 above, the Reposting policy will be invoked.

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3/1/2011
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)