LCI International
Worldwide Telecommunications

DOCKET FILE COPY ORIGINAL

EX PARTE OR LATE FILED

October 22, 1997

RECEIVED

OCT 22 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

By Hand Delivery

Mr. William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, NW, Suite 222
Washington, DC 20554

Re: Notice of *Ex Parte* Communication in Local Competition Provisions
In the Telecommunications Act of 1996 CC Docket 96-98 and RM 9101

Dear Mr. Caton:

On Tuesday, October 21, 1997, member company representatives from the Local Competition Users Group ("LCUG"), Douglas W. Kinkoph and Jane Kunka, LCI International Telecom Corp.; Richard Fruchterman, WorldCom; Bob Welborn and Richard Juhnke, Sprint; Al Lewis and Michael Pfau, AT&T; and John Ruja, Tom O'Donoghue and Amy Zirkle, MCI met at the Competitive Telecommunications Association with staff members of the Federal Communications Commission's Common Carrier Bureau. The FCC's Common Carrier Bureau staff members in attendance at this meeting were Jake Jennings, Wendy Lader, Rhadika Karmarkar, David Kirschner, Michael Kende, Florence Setzer and Brent Olson.

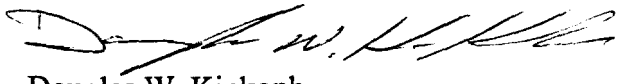
In our discussions, LCUG's representatives discussed the LCI/CompTel Joint Petition for Expedited Rulemaking and LCUG's Service Quality Measurements ("SQM") and Performance Standards recommendations (Version 6.1 of the document is attached).

As a follow-up from the August 29, 1997 meeting with the FCC, the LCUG group reviewed each SQM measurement goal and criteria with regard to ensuring adequate access by competitive local exchange carriers ("CLEC") to incumbent local exchange carriers ("ILEC") OSS functionalities. LCUG focused on business and consumer-related topics and the difficulties that CLECs have encountered with OSS access unreasonable and discriminatory situations, and the ILECs failure to comply with the FCCs First Report and Order for establishing performance standards.

The LCUG group also responded to questions from the FCC staff with regard to parity, auditing, jurisdictional issues and state versus federal topics with relation to performance standards.

Please place a copy of this letter in the public record of the above-referenced docket. Thank you for your assistance.

Sincerely,



Douglas W. Kinkoph
Director, Regulatory/Legislative Affairs

CC Jake Jennings

Rhadika Karmarkar

Michael Kende

David Kirschner

Wendy Lader

Brent Olsen

Florence Setzer

RECEIVED

OCT 2 2 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

LOCAL COMPETITION USERS GROUP (LCUG)

SERVICE QUALITY MEASUREMENTS (SQM)

September 26th, 1997
Membership: AT&T, Sprint, MCI, LCI, WorldCom

Version 6.1

Service Quality Measurements
Table Of Contents

Introduction	*Page 3*
Business Rules	*Page 5*
Executive Overview:	Page 7
Pre-Ordering (PO)	Page 8
Ordering and Provisioning (OP)	Page 8
Maintenance and Repair (MR)	Page 10
General (GE)	Page 12
Billing (BI)	Page 13
Operator Services and Directory Assistance (OS, DA)	Page 14
Network Performance (NP)	Page 15
Interconnect / Unbundled Elements and Combos (IUE)	Page 16
Formula Quick Reference Guide	Page 17
Measurement Detail:	Page 20
Pre-Ordering (PO)	Page 21
Ordering and Provisioning (OP)	Page 23
Maintenance and Repair (MR)	Page 33
General (GE)	Page 41
Billing (BI)	Page 45
Operator Services and Directory Assistance (OS, DA)	Page 49
Network Performance (NP)	Page 51
Interconnect / Unbundled Elements and Combos (IUE)	Page 52
Appendix A: Reporting Dimensions	*Page 56*
Appendix B: Glossary	*Page 58*

Service Quality Measurements
Introduction

Background:

On August 8, 1996, the Federal Communications Commission released its First Report and Order (the Order) in CC Docket No. 96-98 (Implementation of the Local Competition Provisions of the Telecommunications Act of 1996). The Order establishes regulations to implement the requirements of the Telecommunications Act of 1996. Those regulations are intended to enable potential competitive local exchange carriers (CLECs) to enter and compete in the local telecommunications markets. One requirement found to be "absolutely necessary" and "essential" to successful entry is that the incumbent local exchange carriers (ILECs) provide nondiscriminatory access to their operations support systems (OSSs). Many variations of interim OSS GUIs (graphic user interfaces), and electronic gateways have been or are being offered by the ILECs. These interim systems have not provided the capability for the CLECs to provide the same customer experience for their customer as compared to what the ILECs do for theirs. The timeliness and accuracy of information processed by the ILEC for pre-ordering, ordering and provisioning, maintenance and repair, unbundled elements, and billing have not, to date, been satisfactory. The service delivery problems exist regardless whether total service resale or unbundled elements are utilized. Final solutions for application-to-application real time system interfaces are evasive because of the complexity, the diversity of committed implementation schedules and lack or inconsistent use of industry guidelines.

On February 12, 1997 the Local Competition Users Group (LCUG) issued their "Foundation For Local Competition: Operations Support Systems Requirements For Network Platform and Total Services Resale. The core principles contained in the document are: Service Parity, Performance Measurement, Electronic Interfaces, Systems Integrity Notification of Change, and Standards Adherence. Each of these are significant to ensure CLEC customers can receive at least equal levels of service to those the ILEC provides to its own customers. The LCUG group indicated that is was essential that a plan be developed to measure the ILECs performances for all the essential OSS categories (e.g. pre-ordering, ordering and provisioning, maintenance and repair, network performance, unbundled elements, operator services and directory assistance, system performance, service center availability and billing). To that end, an LCUG sub-committee was formed with a charter to address measurements and metrics. The subcommittee jointly developed a comprehensive list of potential measurements which was developed and shared among the team members for review. Each committee member researched an assigned measurement group for the purpose of proposing consolidation and other modifications. The subcommittee discussed each measurement and considered existing regulatory requirements (minimum service standards) as well as good business practices in arriving at the recommended measurement and extent of detail to be reported. The service quality measurement (SQM) goals, or benchmark levels of performance, were established to provide a nondiscrimination standard in the absence of directly comparative ILEC results. Establishing precise benchmark level was difficult because the ILECs have been reluctant to share actual results. The goals, therefore, were based upon best of class and/an assessment of the necessary performance to support a meaningful opportunity for CLECs to compete. The SQM goals may change if the ILECs share historical and/or self report current results.

Measurement Plans:

A measurement plan, capable of monitoring for discriminatory behavior, must incorporate at least the following characteristics; 1) it permits direct comparisons of the CLEC and CLEC industry experience to that of the ILEC though recognized statistical procedures, 2) it accounts for potential performance variations due to differences in service and activity mix, 3) it measures not only retail services but experiences with UNEs and OSS interfaces, and 4) it produces results which demonstrate the nondiscriminatory access to OSS functionality is being delivered across all interfaces and a broad range of resold services and unbundled elements. The measures employed must address availability, timeliness of execution, and accuracy of execution.

Service Quality Measurements

Introduction

It is essential that the CLECs be able to determine that they are receiving at least equal treatment to that ILECs provide to their own retail operations or their local service affiliates. Benchmarks and performance standards that are voluntarily adopted by the CLECs and ILECs, or ordered by commissions, need to clearly demonstrate that new service providers are receiving nondiscriminatory treatment.

This document discusses measurements at both a summary level (Executive Overview) and at a level suitable for starting the implementation process (Measurement Detail)

Service Quality Measurements
Business Rules

Test for Parity:

ILEC Reports Results For Own Local Operations:
Both the average (mean) result and the variance of the measurement result for the ILEC and the CLEC should be compared to establish that the CLEC result is no worse than the ILEC's result.

ILEC Results Are Not Reported Or Results Are Incomplete:
The mean result for CLEC must be compared and a determination made that the CLEC result is no worse than the benchmark performance level. The benchmark performance to be employed in the comparison is the result produced via special study by an ILEC (as described below) or, in the absence of such a study result, the LCUG default performance benchmarks.

Benchmarking Study Requirements:

A special study may be optionally utilized by the ILEC to establish the benchmark performance level whenever a reasonable ILEC retail analog does not exist. When the ILEC performs a benchmarking study, it must be based upon equivalent experiences of that ILEC and conform to the following minimum requirements: (1) a benchmark result is provided for each reporting dimension described for the measurement; (2) the mean, standard error, and number of sample points are disclosed for each benchmark result; (3) the study process and benchmark results may be subjected to independent audit; (4) update to the benchmark result will be submitted whenever changes may reasonably be expected to impact the study results or six months has elapsed since the conduct of the prior study, whichever occurs earlier. Unless directly ordered by the appropriate regulatory commission, no ILEC benchmark will be utilized in lieu of an LCUG benchmark without mutual agreement of the CLECs impacted by use of the benchmark

Reporting Expectations and Report Format:

CLEC results for the report month are to be shown in comparison to the ILEC result for the same period with an indication, for each measurement result, where the CLEC result is lesser in quality compared to the ILEC (based upon the test for parity described in the preceding). Such detailed results will be reported only to the CLEC unless written permission is provided to do otherwise. Furthermore, reporting to the individual CLECs should include, for each measure, a representation of the dispersion around the average (mean) of the measured results for the reporting period (e.g. percent of 1-4 lines installed in the 1st day, 2nd day, 3rd day, and > 10 days, etc.) In addition to providing the preceding detailed results, the ILEC must also supply, to each interested CLEC, a report showing the ILEC performance for each measure in comparison to both CLEC industry in aggregate and the performance delivered to any affiliate(s) of the ILEC.

Delivery of Reports and Data:

Reports are to be made available to CLEC by the 5th scheduled business day following the close of the calendar report month. If requested by the CLEC, data files of raw data are to be transmitted by the ILEC to the CLEC on the 5th scheduled business day pursuant to mutually acceptable format, protocol and transmission media.

Geographic Reporting:

Measurement data should be reported on a natural geographic area that allows prudent operational management decisions to be made and does not obscure actual performance levels. Presently ILECs report at levels as discrete as indiviual exchanges (Central Office) to as aggregated as the Region level. The recommended default level of reporting is the MSA although further detail should be required where it improves the ability to make meaningful comparisons..

Service Quality Measurements
Business Rules

Verification and Auditing:

By joint request of more than one CLEC, an audit of the data collecting, computing and reporting processes must be permitted by the ILEC. The ILEC must also permit an individual CLEC to audit or examine its own results pursuant to terms no more restrictive than those established between the CLEC and the ILEC in the interconnection agreement for the operating area underlying the reported results.

During implementation of the measurement reporting, validation of results of data collection, measurement result computation and report production will be necessary. The ILEC must permit such validation activities and not subsequently contend that an individual CLEC has undertaken an audit either under the terms of the measurement plan or pursuant to the terms of the CLEC's interconnection agreement.

Adaptation:

Technology, market conditions and industry guidelines/standard continue to evolve. LCUG reserves the right to modify the content of this document, adding, deleting or making modification, as necessary to reflect such changes.

Service Quality Measurements
Executive Overview

This Executive Overview section:

- Provides a summary of the detailed requirements
- Enables a quick overview and understanding of the proposed LCUG measurements
- Summarizes the Business Implications associated with each measurement
- Accommodates a target audiences who have a need to know about the measurements but not the specific details

Executive Overview:	Page 7
Pre-Ordering (PO)	Page 8
Ordering and Provisioning (OP)	Page 8
Maintenance and Repair (MR)	Page 10
General (GE)	Page 12
Billing (BI)	Page 13
Operator Services and Directory Assistance (OS, DA)	Page 14
Network Performance (NP)	Page 15
Interconnect / Unbundled Elements and Combos (IUE)	Page 16
Formula Quick Reference Guide	Page 17

Service Quality Measurements
Executive Overview

Pre-Ordering (PO)

Function:	
Average Response Interval for Pre-Ordering Information	
Business Implications:	
• The CLEC customer service agent must establish such basic facts as availability of desired features, likely service delivery intervals, the telephone number to be assigned and the validity of the street address while the customer (or potential customer) is on the phone • It is critical that the CLEC be perceived as equally competent, knowledgeable and fast as an ILEC customer service agent • This measure is designed to monitor the time required for CLECs to obtain the pre-ordering information necessary to establish and modify service • Comparison to the ILEC results allow conclusions whether an equal opportunity exists for the CLEC to deliver a comparable customer experience (compared to the ILEC) when a retail customer calls the CLEC with a service inquiry	
Measurements:	**Results Detail:**
• Average Response Interval for Pre-Ordering Information	• Major Pre-ordering Query Type

Ordering and Provisioning (OP)

Function:	
Order Completion Intervals	
Business Implications:	
• When the CLEC commits to a due date for service delivery, the customer plans for service availability at that point and will be dissatisfied if the requested service or feature is not delivered when promised • The "average completion interval" measure monitors the time required by the ILEC to deliver integrated and operable service components requested by a CLEC, regardless of whether services resale or unbundled network elements are employed • When the service delivery interval of the ILEC is measured for comparable services, then conclusion can be drawn regarding whether or not CLECs have a reasonable opportunity to compete for customers • The "average completion interval" and "percent completed on time" may prove useful in detecting developing capacity issues	
Measurements:	**Results Detail:**
• Mean Completion Interval • Percent Orders Completed on Time	• By Major Service Family and Order Type

Service Quality Measurements
Executive Overview

Function:	
Order Accuracy	
Business Implications:	
• Customers expect that their service provider will deliver precisely the service ordered and all the features specified • This measurement monitors the accuracy of the provisioning work performed by the ILEC in response to CLEC orders	
Measurements:	**Results Detail:**
• Percent Order Accuracy	• By Major Service Family

Function:	
Order Status	
Business Implications:	
• When a customers calls their service providers, they expect to be able to promptly get the information regarding the progress on their order(s) • When changes must be made, such as to the expected delivery date, customers expect that they will be immediately notified so that they may modify their own plans • The order status measurements monitor, when compared to the ILEC result, that the CLEC has timely access to order progress information so that the customer may be updated or notified, early on, when changes and rescheduling are necessary	
Measurements:	**Results Detail:**
• Mean Reject Interval • Mean FOC Interval • Mean Jeopardy Interval • Mean Completion Interval • Percent Jeopardies Returned	• By Status Type and Order Type

Function:	
Held Orders	
Business Implications:	
• Customers expect that work will be completed when promised • There must be assurances that the average period that CLEC orders are held, due to a delayed completion, is no worse for the CLEC when compared to ILEC orders	
Measurements:	**Results Detail:**
• Mean Held Order Interval • Percent Orders Held ≥ 90 Days • Percent Orders Held ≥ 15 Days	• By Major Service Family and Reason for Hold

Service Quality Measurements
Executive Overview

Maintenance and Repair (MR)

Function:	
Time To Restore	
Business Implications:	
• Customers expect prompt restoral of service to the normal operating parameters whenever troubles are detected • The longer the time required to correct a service problem, the greater the customer dissatisfaction	
Measurements:	**Results Detail:**
• Mean Time to Restore	• By Major Service Family and Trouble Type

Function:	
Frequency of Repeat Troubles	
Business Implications:	
• This measurement, when gathered for both the ILEC and CLEC can establish whether or not CLECs are competitively disadvantaged (vis-à-vis the ILEC) as a result of experiencing more frequent occurrence of customer troubles not being resolved in the first attempt to repair the trouble • Differences in this measure may indicate that the CLEC is receiving inferior maintenance support in the initial resolution of troubles or, in the alternative, it may indicate that the network components supplied are of inferior quality	
Measurements:	**Results Detail:**
• Repeat Trouble Rate	• By Major Service Family and Trouble Type

Function:	
Frequency of Troubles (Troubles per 100 Lines)	
Business Implications:	
• Customers demand high quality service performance from their supplier and differentials in performance are quickly recognized throughout the market place • When measured for both the ILEC and CLEC and compared, this measure can be used to establish that CLECs are not competitively disadvantaged, compared to ILEC, as a result of experiencing more frequent incidents of trouble reports • Disparity in this measure may indicate differences in the underlying quality of the network components supplied	
Measurements:	**Results Detail:**
• Trouble Rate	• By Major Service Family and Trouble Type

Service Quality Measurements
Executive Overview

Function:	
Estimated Time To Restore Met	
Business Implications:	
• When customers experience trouble on working services, they naturally expect the services to be restored within the time frame promised • When this measure is collected for the ILEC and CLEC and then compared, it can be used to establish that CLECs are receiving equally reliable (as compared to the ILEC operations) estimates of the time required to complete service repairs	
Measurements:	**Results Detail:**
• Percentage of Customer Troubles Resolved Within Estimate	• By Major Service Family and Trouble Type

Service Quality Measurements
Executive Overview

General (GE)

Function:	
Systems Availability	
Business Implications:	
• Access to essential business functionality, supported by OSS of the ILEC, is absolutely essential to CLEC operations • This measure monitors that such OSS functionality is at least as accessible to the CLEC as to the ILEC	
Measurements:	**Results Detail:**
• Percent System Availability	• By Function Interface

Function:	
Center Responsiveness	
Business Implications:	
• When CLECs experience operational problems dealing with ILEC processes or interfaces, prompt support by the ILEC is required in order to assure that the CLEC customers are not adversely impacted • Any delay in responding to CLEC center requests for support (e.g., request for a vanity telephone number) will, in turn, adversely impact the CLEC retail customer who may be holding on-line with the CLEC customer service agent • This measure, when gathered for both the CLEC and ILEC, supports monitoring that ILEC handling of support calls from CLECs is at least as responsive as for calls by ILEC retail customers seeking assistance (e.g., calling the business office of the ILEC or call the ILEC to report service repair issues)	
Measurements:	**Results Detail:**
• Mean Time to Answer Calls • Call Abandonment Rate	• By Support Center Provided

Service Quality Measurements
Executive Overview

Billing (BI)

Function:	
Timeliness Of Billing Record Delivery	
Business Implications:	
• Regardless whether the billing is for retail customer or exchange access service, the timing of ILEC delivery of billing records must provide CLECs with the opportunity to deliver timely bills in as timely a manner as the ILEC; otherwise artificial competitive advantage would be realized by the ILEC	
Measurements:	**Results Detail:**
• Mean Time to Provide Recorded Usage Records • Mean Time to Deliver Invoices	• By Type of Usage (End User Direct Bill, End User Alternately Billed, or Access) or By Type of Invoice (TSR or UNE)

Function:	
Accuracy of Billing Records	
Business Implications:	
• The accuracy of billing records affects the accuracy of the billing ultimately delivered to local service customers, whether retail service or exchange access service customers • Billing for the elements from which CLEC services are constructed must be validated to assure that only correct charges are paid	
Measurements:	**Results Detail:**
• Percent Invoice Accuracy • Percent Usage Accuracy	• By Type of Usage (End User Direct Bill, End User Alternately Billed, or Access) or By Type of Invoice (TSR or UNE)

Service Quality Measurements

Executive Overview

Operator Services and Directory Assistance (OS, DA)

Function:	
Speed To Answer	
Business Implications:	
• In order to assure that an unjustified competitive advantage is not created for the ILEC, the speed of answer delivered to CLEC retail customers, when the ILEC provides Operator Services or Directory Services on behalf of the CLEC, must be no slower than the speed of answer that the ILEC delivers to its own retail customers of equivalent local services	
Measurements:	**Results Detail:**
• Mean Time to Answer	• Operator Services and Directory Service Separately Reported Detailed, for eeach Service by Machine and Human Answer Time

Service Quality Measurements

Executive Overview

Network Performance (NP)

Function:	
Network Performance Parity	
Business Implications:	
• The perceived quality of CLEC retail services, particularly when either ILEC services are resold or UNE combinations are employed, will be heavily influenced by the underlying quality of the ILEC network performance • Customers experience the quality of the service provider each time services are used	
Measurements:	**Results Detail:**
• Network Performance Parity	• Transmission Quality • Speed Of Connection • Reliability

Service Quality Measurements

Executive Overview

Interconnect / Unbundled Elements and Combos (IUE)

Function:	
Availability of Network Elements	
Business Implications:	
• Because CLECs use individual elements as well as element combinations to deliver unique services, it is essential that the UNE functionality operate properly due to the crucial role played by such elements in providing quality retail services • This measure monitors individual network element or element combinations, that do not have an apparent retail analog, to assure that CLECs have a meaningful opportunity to compete through access to and use of element (or combination) functionality	
Measurements:	**Results Detail:**
• Availability of Network Elements	• By Unique UNE or UNE Combination employed (e.g., A-Link, D-Link, SCPs/Databases, SCPs/Databases Correctly Updated, Loop Combo Availability)

Function:	
Performance of Network Elements	
Business Implications:	
• As CLECs use individual elements (as well as element combinations) to deliver unique services, it is essential that the UNE functionality operates in a timely manner because of the crucial role played by such elements in providing quality retail services	
Measurements:	**Results Detail:**
• Timeliness of Element Performance	• By Unique UNE or UNE Combination employed (e.g.,LIDB Query time out)

Service Quality Measurements
Formula Quick Reference

	Measurement Description By Business Process:	Measurement Formula:
	Pre-Ordering (PO)	
PO-1	Average Response Interval for Pre-Ordering Information	**Average Response Interval = Σ[(Query Response Date & Time) - (Query Submission Date & Time)]/(Number of Queries Submitted in Reporting Period**
	Ordering and Provisioning (OP)	
OP-1	Average Completion Interval	**Average Completion Interval = Σ[(Completion Date & Time) - (Order Submission Date & Time)]/(Count of Orders Completed in Reporting Period)**
OP-2	Percent Orders Completed on Time	**Percent Orders Completed on Time = (Count of Orders Completed within ILEC Committed Due Date) / (Count of Orders Completed in Reporting Period) x 100**
OP-3	Percent Order Accuracy	**Percent Order Accuracy = (Σ Orders Completed w/o Error) / (ΣOrders Completed) x 100**
OP-4	Mean Reject Interval	**Mean Reject Interval = Σ[(Date and Time of Order Rejection) - (Date and Time of Order Acknowledgment)]/(Number of Orders Rejected in Reporting Period)**
OP-5	Mean FOC Interval	**Mean FOC Interval = Σ[(Date and Time of Firm Order Confirmation) - (Date and Time of Order Acknowledgment)]/(Number of Orders Confirmed in Reporting Period)**
OP-6	Mean Jeopardy Interval	**Mean Jeopardy Interval = Σ[(Date and Time of Committed Due Date for the Order) - (Date and Time of Jeopardy Notice)]/(Number of Orders Jeopardized in Reporting Period)**
OP-7	Mean Completion Interval	**Completion Interval = Σ[(Date and Time of Notice of Completion Issued to the CLEC) - (Date and Time of Work Completion by ILEC)]/(Number of Orders Completed in Reporting Period)**
OP-8	Percent Jeopardies Returned	**Percent Jeopardies Returned = (Number of Orders Jeopardized in Reporting Period)/(Number of Orders Confirmed in Reporting Period)**
OP-9	Mean Held Order Interval	**Mean Held Order Interval = Σ(Reporting Period Close Date - Committed Order Due Date) / (Number of Orders Pending and Past The Committed Due Date) for all orders pending and past the committed due date**
OP-10	Percent Orders Held ≥ 90 Days	**(# of Orders Held for ≥ 90 days) / (Total # of Orders Pending But Not Completed) x 100**
OP-11	Percent Orders Held ≥ 15 Days	**(# of Orders Held for ≥ 15 days) / (Total # of Orders Pending But Not Completed) x 100**

Service Quality Measurements
Formula Quick Reference

	Maintenance and Repair (MR)	
MR-1	Mean Time to Restore	**Mean Time To Restore = Σ[(Date and Time of Ticket Closure)-(Date and Time of Ticket Creation)] / (Count of Trouble Tickets Closed in Reporting Period)**
MR-2	Repeat Trouble Rate	**Repeat Trouble Rate = (Count of Service Access Line Generating More Than One Trouble Within a Continuous 30 Day Period) / (Number of Reports in the Report Period) x 100**
MR-3	Trouble Rate	**Trouble Rate = (Count of Initial & Repeated Trouble Reports in the Current Period) / (Number of Service Access Line in Service at End of the Report Period) x 100**
MR-4	Percentage of Customer Troubles Resolved Within Estimate	**Percentage of Customer Troubles Resolved Within Estimate = (Count of Customer Troubles Resolved By The Quoted Resolution Time and Date) / (Count of Customer Troubles Tickets Closed) x 100**
	General (GE)	
GE-1	Percent System Availability	**% System Availability = [(Hours Functionality is Available to CLECs During Report Period) / (Number of Hours Functionality was Scheduled to be Available During the Period)] x 100**
GE-2	Mean Time to Answer Calls	**Mean Time to Answer Calls = Σ [(Date and Time of Call Answer) - (Date and Time of Call Receipt)]/(Total Calls Answered by Center)**
GE-3	Call Abandonment Rate	**Call Abandonment Rate = (Count of Calls Terminated Before Answer During the Reporting Period)/(Count of All Calls Placed in Queue During the Reporting Period)**
	Billing (BI)	
BI-1	Mean Time to Provide Recorded Usage Records	**Mean Time to Provide Recorded Usage Records ={ Σ[(Data Set Transmission Date)-(Date of Message Recording)]}/(Count of All Messages Transmitted in Reporting Period)**
BI-2	Mean Time to Deliver Invoices	**Mean Time to Deliver Invoices = Σ[(Invoice Transmission Date)-(Date of Scheduled Bill Cycle Close)]/(Count of Invoices Transmitted in Reporting Period)**
BI-3	Percent Invoice Accuracy	**Percent Invoice Accuracy = [(Number of Invoices Delivered in the Reporting Period that Have Complete Information, Reflect Accurate Calculations and are Properly Formatted) / Total Number of Invoices Issued in the Reporting Period)] x 100**
BI-4	Percent Usage Accuracy	**Percent Usage Accuracy = [(Number of Usage Records Delivered in the Reporting Period That Reflected Complete Information Content and Proper Formatting) / (Total Number of Usage Records Transmitted)] x 100**

Service Quality Measurements
Formula Quick Reference

	Operator Services and Directory Assistance (OS, DA)	
OS/DA-1	Mean Time To Answer	**Mean Time To Answer =[Σ(Date and Time of Call Answer) - (Date and Time of Call Receipt)]/(Total Calls Answered on Behalf of CLECs in Reporting Period)**
	Network Performance (NP)	
NP-1	Network Performance Parity	**Network Performance Parity = Σ(Network Performance Parameter Result)/(Number of Tests Conducted)**
	Interconnect / Unbundled Elements and Combos (IUE)	
IUE-1	Function Availability	**Function Availability[1] = (Amount of Time[2] a Functionality is Useable[1] by a CLEC in a Specified Period)/(Total Time[2] Functionality Was Intended to Be Useable)** **Notes:** **1. These measure may also be expressed in the negative, that is, in term of unavailability.** **2. In some instances, rather than time, the availability will be express in terms of transactions executed successfully compared to transactions attempted.**
IUE-2	Timeliness of Element Performance	**Timeliness of Element Performance = (Number of Times Functionality Executes Successfully Within the Established Timeliness Standard)/(Number of Times Execution of Functionality was Attempted)**

Service Quality Measurements
Measurement Detail

The Measurement Detail section:

- Provides explicit detail information for each measurement
- Provides business reasons for the measurement, required data elements, analogs to the existing ILEC business function and comparative results suggestions
- Is targeted at those individuals who need to know and understand the detail categories and measurement methodologies

Measurement Detail:	Page 20
Pre-Ordering (PO)	Page 21
Ordering and Provisioning (OP)	Page 23
Maintenance and Repair (MR)	Page 33
General (GE)	Page 41
Billing (BI)	Page 45
Operator Services and Directory Assistance (OS, DA)	Page 49
Network Performance (NP)	Page 51
Interconnect / Unbundled Elements and Combos (IUE)	Page 52
Appendix A: Reporting Dimensions	*Page 56*
Appendix B: Glossary	*Page 58*

Service Quality Measurements
Measurement Detail

Pre-Ordering (PO)

Function:	**Average Response Interval for Pre-Ordering Information**
Business Implications:	As an initial step of establishing service, the customer service agent must establish such basic facts as availability of desired features, likely service delivery intervals, the telephone number to be assigned, the current products and features the customer has, and the validity of the street address. Typically, this type of information is gathered from supporting OSS while the customer (or potential customer) is on the telephone with the customer service agent. Because pre-ordering activities are the first tangible contact that a customer may have with a CLEC, it is critical that the CLEC be perceived as equally competent, knowledgeable and fast as and ILEC customer service agent. This measure is designed to monitor the time required for CLECs to obtain the pre-ordering information necessary to establish and modify service. Comparison to the ILEC results allow conclusions whether an equal opportunity exists for the CLEC to deliver a comparable customer experience (compared to the ILEC) when a retail customer calls the CLEC with a service inquiry.
Measurement Methodology:	**Average Response Interval = Σ[(Query Response Date & Time) - (Query Submission Date & Time)]/(Number of Queries Submitted in Reporting Period)** **For CLEC Results:** The response interval for each pre-ordering query is determined by computing the elapsed time from the ILEC receipt of a query from the CLEC, whether or not syntactically correct, to the time the ILEC returns the requested data to the CLEC. Elapsed time is accumulated for each major query type, consistent with the specified reporting dimension, and then divided by the associated total number of query received by the ILEC during the reporting period. **For ILEC Results:** The ILEC computation is identical to that for the CLEC with the clarifications noted below. **Other Clarifications and Qualification:** • The elapsed time for an ILEC query is measured from the point in time when the ILEC customer service agent submits the request for identical or similar information into the ILEC OSS until the time when the ILEC OSS returns the requested information to the ILEC customer service agent. • As additional pre-ordering functionality is established by industry, for example with respect to unbundled network elements, the reporting dimensions may be expanded. • Elapsed time is measured in seconds and tenths of seconds rounded to the nearest tenth of a second • Elapsed time is to be measured through automated rather than manual monitor and logging. • The ILEC service agent entry of a request for pre-ordering information (to the ILEC OSS) is considered to be the equivalent of the ILEC receipt of a query from the CLEC. • The ILEC OSS return of information, whether in hard copy or by display on the ILEC service agent's terminal is considered equivalent to the return of requested information to the CLEC.

Service Quality Measurements

Measurement Detail

Reporting Dimensions:	**Excluded Situations:**
• Pre-Ordering Query Types (See Appendix A) Geographic Scope	• None
Data Retained Relating To CLEC Experience:	**Data Retained Relating To ILEC Performance:**
• Report Month • Query Identifier (e.g., unique tracking number) • Query Receipt Date by ILEC • Query Receipt Time by ILEC • Query Type (per reporting dimension) • Data Response Date • Data Response Time • Geographic Scope	• Report Month • Query Type (per reporting dimension) • Mean response interval • Standard error of the mean response interval • Geographic Scope
Performance Standard in Absence of ILEC Results:	If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete: • Other than a query when 30 or more telephone numbers are requested, the response interval will be less than or equal 2 seconds for 98% of the CLEC's queries received by the ILEC during the reporting period and no query will take more than 5 seconds. • For queries requesting 30 or more telephone numbers, the response interval is never to exceed two hours.

Service Quality Measurements

Measurement Detail

Ordering and Provisioning (OP)

Function:	**Order Completion Intervals**
Business Implications:	In order to be successful in the marketplace, CLECs must be capable of delivering service in time frames equal or better than what the ILEC delivers for comparable service configurations. Likewise, when the CLEC commits to a due date for service delivery, the customer plans for service availability has been established and the customer will be dissatisfied if the requested service or feature is not delivered when promised. The "average completion interval" measure monitors the time required by the ILEC to deliver integrated and operable service components requested by the CLEC, regardless of whether services resale or unbundled network elements are employed. When the service delivery interval of the ILEC is measured for comparable services, then conclusion can be drawn regarding whether or not CLECs have a reasonable opportunity to compete for customers. The "orders completed on time" measure monitors the reliability of ILEC commitments with respect to committed due dates to assure that CLECs can reliably quote expected due dates to their retail customer. In addition, when monitored over time, the "average completion interval" and "percent completed on time" may prove useful in detecting developing capacity issues.
Measurement Methodology:	**Average Completion Interval = Σ [(Completion Date & Time) - (Order Submission Date & Time)]/(Count of Orders Completed in Reporting Period)** **Percent Orders Completed on Time = (Count of Orders Completed within ILEC Committed Due Date) / (Count of Orders Completed in Reporting Period) x 100** **For CLEC Results:** The actual completion interval is determined for each order processed during the reporting period. The completion interval is the elapsed time from the ILEC receipt of a syntactically correct order from the CLEC to the ILEC's return of a valid completion notification to the CLEC. Elapsed time for each order is accumulated for each reporting dimension (see below). The accumulated time for each reporting dimension is then divided by the associated total number of orders completed within the reporting period. The percentage of orders completed on time is determined by first counting, for each specified reporting dimension, both the total numbers of orders completed within the reporting interval and the number of orders completed by the committed due date (as specified on the initial FOC returned to the CLEC). For each reporting dimension, the resulting count of orders completed no later than the committed due date is divided by the total number of order completed with the resulting fraction expressed as a percentage. **For ILEC Results:** The ILEC computation is identical to that for the CLEC with the clarifications noted below. **Other Clarifications and Qualification:** • The elapsed time for an ILEC order is measured from the point in time when the ILEC customer service agent enters the order into the ILEC order processing system until the date and time reported by the ILEC installation personnel log actual completion of all work necessary to permit service initiation, whether or not the ILEC initiates customer billing at that point in