

PUBLIC VERSION

**State Of Delaware
The Public Service Commission
Dover, Delaware 19904**

In The Matter of the Investigation on the)
Motion of the Commission into the)
Adequacy of Basic Telecommunications) PSC Docket No. 08-194
Services Provided by Verizon Delaware)
LLC (Opened August 19, 2008))

**VERIZON DELAWARE'S COMMENTS ON
REPORT OF CONSULTANTS TO THE DELAWARE
PUBLIC SERVICE COMMISSION STAFF
ON THE ADEQUACY OF VERIZON'S SERVICE, DATED NOVEMBER 3, 2009**

November 6, 2009

DE Final Consultants Report

PUBLIC VERSION

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A. INTRODUCTION

Verizon Delaware (“Verizon DE”) is providing efficient, sufficient and adequate service to its customers in Delaware, and nothing in the Report of the Consultants to the Delaware Public Service Commission Staff on the Adequacy of Verizon’s Service (the “Report”) indicates otherwise. Overall, Verizon DE routinely satisfies 14 of the 16 of the Docket 20 Service Quality Index metrics that it reports to the Commission each month.

Most importantly, no evidence exists that Verizon DE is ignoring its copper network.¹ Indeed, the Report indicates that Verizon DE’s performance on the Network Trouble Report Rate (“NTRR”) metric has improved year-over-year. Of all the metrics included in the Commission’s rules, this metric is the best indicator of the health of Verizon’s network since it is an indicator of the quality of the design, construction and maintenance of Verizon DE’s outside plant and switching facilities. If Verizon DE’s network were failing, Verizon DE would not have been able to routinely satisfy the Commission’s standard for this metric. Over the last three years, as Verizon DE has spent millions on the deployment of its advanced Fiber to the Premise (“FTTP”) network, its performance on this metric has steadily improved. In other words, customers have benefited not only from a *decreased* trouble rate measured in the traditional sense, but more importantly, *more than half of the households in Delaware* now have access to the most technologically advanced data and voice services available in the nation provided over fiber that runs all the way to the home. This achievement is bringing great benefits to Verizon and Delaware.

¹ The Commission opened this proceeding primarily to address two issues: (1) whether Verizon DE is providing efficient, sufficient, and adequate basic services over its copper facilities and (2) the extent to which Verizon Delaware LLC has met, and will in the future comply with, the objectives and reporting requirements set forth in the Commission’s Service Quality Rules. *See* PSC Docket No. 08-194, *In the Matter of the Investigation on the Motion of the Commission into the Adequacy of Basic Telecommunications Services Provided by Verizon Delaware LLC* (Opened August 19, 2008), at 3 (the “Instituting Order”).

This transition, however, has also highlighted the fact that today's telecommunications market does not square with the detailed Docket 20 rules adopted almost 20 years ago when there was a single monopoly carrier operating under rate-of-return and providing traditional copper-based services. These Rules -- adopted in 1991 -- no longer reflect the needs of the market place and can actually be counterproductive to achieving customer satisfaction. Indeed, the telecommunications landscape from 20 years ago bears little resemblance to today's marketplace. For example:

- Developments in technology, federal and state legislation, and decisions by both federal and state regulators to adopt pro-competitive policies have radically changed the telecommunications services market in Delaware and around the country.
- The market for retail telecommunications services in Delaware is robustly competitive, with numerous intermodal competitors, including wireless carriers, cable telephony companies, and Voice over Internet Protocol ("VoIP") suppliers all providing stand-alone and bundled service offerings to virtually every Delawarean.
- Services provided over intermodal technologies exert intense and increasingly competitive pressure on Verizon DE and the CLECs operating in the First State.

As a result of this competition, Verizon DE has lost a substantial number of its lines.

Verizon DE had 348,000 access lines in Delaware in September 2009, down from 478,000 access lines in January 2006, a reduction of over 27% in three and three-quarter years.

As of June 30, 2008, there were 61 percent more wireless lines in Delaware than wirelines (Verizon DE and CLECs). Over two years, from June 2006 to June 2008, the number of wirelines in Delaware decreased by more than 15 percent, while the number of wireless lines increased by almost 19 percent.²

Numerous technological changes have had a profound effect on customer needs and service quality expectations. Among other things, the wireline telephone is no longer the

² FCC, "Local Telephone Competition: Status as of June 30, 2008," rel. July 2009.

exclusive lifeline for most households. For example, in 2000, few households relied exclusively on their wireless phones. Today, more than a fifth (20.2% as of December 2008) of the households in the country have “cut the cord” and rely exclusively on wireless service for their household needs.

More importantly, most wireline customers have access to one or more wireless phones in their households, which means that these customers would not be cut off from essential services, such as E-911, if they were to experience an outage. The widespread use of wireless phones has dramatically changed the nature of a customer’s out of service (“OOS”) experience. While an OOS condition is undoubtedly an inconvenience, it no longer poses a potential for harm for the great majority of customers.

Finally, technology is making the types of services once monitored by regulators in the past under a service quality plan obsolete and irrelevant. Today, automated reporting systems and Internet-based interfaces permit instant interaction between the customer and carriers. Customers can use automated systems to place trouble reports or can go on-line to enter a repair ticket directly into carriers’ systems. Such technological capabilities make regulatory retail service measurements—such as the speed-of-answer or percentage of calls answered within a set time frame—obsolete measures of service quality. In short, the marketplace has made the role regulators should play relative to historical service quality measurements different and this role will continue to change in the future

While Verizon DE disagrees with many of the findings of the Report - - in particular the validity and accuracy of the Disaggregation Study - - it has mutually agreed with the Staff and the Department of the Public Advocate to a settlement that will address several concerns raised

in the Report. Nevertheless, Verizon views this settlement as only an interim step towards the need for the Commission to re-evaluate and revise the Docket 20 rules.

B. VERIZON'S COMMENTS

1. KEY FINDINGS --Verizon's Comments

The Key Findings ignore a number of the key aspects of this proceeding. In addition, a number of the Key Findings are either erroneous or not supported by the record.

The Report fails to acknowledge that customer complaints to the PSC concerning Verizon have dropped significantly since 2007. In fact, when only complaints about Verizon service are considered, *i.e.*, installation and repair, PSC complaints are trending down.

The Report fails to acknowledge that Public Comments Sessions were held in March 2009 and that only five customers appeared at these sessions. In addition, it fails to indicate that Verizon DE has addressed or is in the process of addressing each of the issues raised by individuals who appeared at the three sessions, as well as the issues that were raised by customers who submitted written comments to the Commission.

The Report fails to acknowledge that the best measure of the health of Verizon DE's network is the Network Trouble Report Rate ("NTRR") metric. Of all the metrics included in the Commission's rules, this metric is the best indicator of the health of Verizon's network since it is an indicator of the quality of the design, construction and maintenance of Verizon DE's outside plant and switching facilities. Verizon DE has routinely satisfied the Commission's standard for this metric.

While the Report acknowledges that Verizon DE has dramatically improved its performance on the Out-of-Service ("OOS") cleared in 24 Hours metric over the last 18 months,

it notes that Verizon DE has failed to meet the state-wide average 7 of the past 12 months. The salient point, however, is that Verizon DE has significantly improved its performance on this metric. Indeed, comparing Verizon DE's average monthly restoral rate for the first seven months of 2006 with the first seven months of 2009 demonstrates that Verizon DE has dramatically improved its OOS performance moving from an average of **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** per month to **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** per month. Indeed, Verizon DE's most recent OOS performance patterns resemble the level of service that Verizon DE provided in the earlier part of this decade. The fact that Verizon has missed the metric sporadically is not indicative of a failure to provide reasonably adequate service. To the contrary, Verizon-DE's service in Delaware is excellent.

In addition, the Report should note the correlation between Verizon DE's OOS performance and the service related complaints that are submitted to the Commission. When Verizon DE's performance on the OOS metric exceeds 75%, service related complaints to the Commission drop significantly. Additionally, the complaints remain relatively flat after that point, validating that a 90% objective is unnecessarily stringent.

Finally, the Report states that even when the Company may be meeting statewide objectives, examination of individual exchange data shows that there are exchanges and portions of exchanges that are "receiving a reduced grade of service quality." By definition, an average is made up of some numbers greater than the average, and some below the average. It is illogical to expect the numbers in all areas to be above average. In addition, wire center data is subject to small sample size issues and no showing has been made that the data is statistically valid.

The Report should indicate that Verizon DE's metric reporting and operational systems were not designed to provide the type of data the consultants sought to conduct their

Disaggregation Study. The two Verizon systems referenced in the Report-- NORM and vRepair³ -- contain adequate data and functionalities to perform the numerous tasks assigned to them. The consultants' real issue with the data from these systems has nothing to do with the efficiencies or adequacies of the systems or the ability of the systems to provide service functionality to customers. Rather, the consultants' were unable to conduct the analysis that they had originally contemplated because the systems do not contain the type of address information, formatted into specific data fields, which the consultants desired for their new, and untested, service quality disaggregation model.

The consultants' Disaggregation Study, which attempts to analyze Verizon DE's service quality performance on the NTRR and Repeat Report Rate metrics on a census block group ("CBG") level, is flawed. For example, it has not accurately mapped trouble tickets and repeat trouble tickets to specific CBGs.

Even if the Disaggregation Study flaws could be corrected – and they can not – such a study would not provide useful information. Verizon DE does not and will not manage its business or network operations on a CBG level. Nor does Verizon DE know of any other communications company that manages its maintenance and repair operations on a CBG basis. It is impractical in the telecommunications industry to manage on that basis. Likewise, the Company does not manage maintenance and repair operations at the carrier serving area ("CSA") level.⁴

³ NORM stands for "Network Operations Results Mart." NORM is the database where Verizon collects data used to calculate, among other things, its retail metric results for the various Verizon states with metric reporting obligations. vRepair is a new service assurance maintenance platform that began in approximately 2004 when Verizon began to phase out LMOS, the prior legacy trouble management system, which was a manufacturer-discontinued Lucent Technologies product.

⁴ The Report erroneously refers to a CSA as a "customer service area".

With regard to expenditures, the Report incorrectly finds that Verizon DE has not been able to improve performance despite increasing construction expenditures in 2005 and 2006. As discussed previously, since the beginning of this process, complaints are down, OOS levels have dramatically improved, primary service order installation standards are consistently met and the health of the network remains strong.

The Report did discuss three areas where Verizon DE is working to make improvements:

1. While Verizon DE has routinely satisfied the Repeat Report Rate metric over the past few years, it has missed the metric on four occasions since January 2008 and Verizon DE acknowledges that these metric scores are trending in the wrong direction. This issue will be addressed in the Performance Improvement Plan referenced in the Settlement Agreement.
2. Verizon DE acknowledges that it should take steps to address the tracking of “Bypass” installations. This issue is addressed in the Settlement Agreement.
3. Verizon DE agrees that it has frequently missed the current standard for the Business Office Answer Time metric. This issue will be addressed in the Performance Improvement Plan referenced in the Settlement Agreement. However, this metric no longer reflects current customer expectations and the needs of the market place. Verizon DE believes that this metric and, indeed, all of the service quality metrics need to be examined in light of the substantial market changes that have occurred since 1991 when Docket 20 was adopted.

2. BACKGROUND – Verizon’s Comments

The Report references the purpose behind the initiation of this service quality investigation in its background section. Verizon DE thinks it is important to acknowledge that the Commission is not receiving the same high level of complaints that contributed to the initiation of this proceeding. Customer complaints to the PSC regarding operational issues, such as repair commitments and need for multiple repair visits, have fallen substantially since the initiation of this proceeding and thus it would be accurate and appropriate to acknowledge this positive trend in the background section.

Thus, the Final Report should state that:

After spiking in 2007, complaints to the PSC concerning Verizon DE have dropped significantly. Indeed, when only the complaints concerning the actual delivery of service to customers, *i.e.*, installation and repair, are considered, complaints to the PSC are trending down. This is demonstrated on the chart below.

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In fact, as is demonstrated in the following chart, for several of the important repair categories of complaints, such as Missed Commitments, there has been a dramatic decrease in the number of complaints for the first six months of 2009. Also, complaints regarding a customer's ability to reach a company representative remain low.

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In addition, it would be appropriate to include a reference to the Public Comment Sessions in this section and that, as discussed above, Verizon DE has addressed the issues raised by individuals who either attended these sessions or submitted written comments in response to the Hearing Examiner's Notice of the Commencement of this proceeding. The Final Report should specifically note that:

Pursuant to a Public Notice, Public comments sessions were held in each county of the state in March 2009 at which time members of the public were given the opportunity to provide any comments on Verizon DE's service quality. During these sessions, only five customers described service problems they had or were experiencing with Verizon DE. In addition, the Commission received a few written comments from Verizon DE customers

regarding service conditions that they did not find satisfactory. In response to these communications, Verizon DE has informed the Commission and Staff that it investigated each of the described conditions and developed plans that have been implemented or will be implemented in the near future for those jobs that require more extensive work.

Furthermore, at the Sussex County session, the CWA Local President submitted pictures of Verizon's telephone plant that he claimed showed deficient facilities. Although the Hearing Examiner ruled that such photos would not be considered evidence in this proceeding until they were properly introduced and authenticated, Verizon DE, nonetheless, investigated each of the locations in the pictures and has taken or is taking steps to correct these conditions, where warranted.

3. THE COMMISSION'S RULES -- Verizon's Comments

Since the Report comments on service quality rules in other states, it would be helpful for the Commission to get the full picture of how other states and commissions are addressing the antiquated service quality regulations that were adopted long ago in the monopoly era. That is, the Report should note that a number of states have repealed their retail service quality rules or substantially modified them to reflect the current level of competition in the market place from unregulated cable television providers, wireless companies, Voice over the Internet Protocol (VoIP) providers and Competitive Local Exchange Carriers ("CLECs") in the market place. This is generally referred to as intermodal competition. In addition, it would be appropriate to note that the Commission's current service quality rules are some of the most stringent in the country.

4. SCOPE OF THE ANALYSIS -- Verizon's Comments

Verizon DE has only one specific comment regarding the scope of analysis. A detailed examination or analysis of service quality and complaints over the last 10 years is much too long a time period. With changes in technology and the marketplace, a review of the past 3 years is a more appropriate and relevant period to determine whether Verizon DE is providing adequate service.

5. PERFORMANCE MEASURES

5.1 Primary Service Order Installations (5.6.1)⁵ -- Verizon's Comments

The Report states that Verizon has been “very inconsistent in its attempts to meet this performance metric on a statewide composite basis prior to 2008.” The Report should emphasize, however, that with the exception of one month when Verizon reported a **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** rate, Verizon has made this metric every month since May 2007 – over 27 months.

With regard to Figure 1, Verizon notes that the scale of the x axis is every 5 months, which is not frequent enough to portray the intervening months.

The bottom line is that Verizon DE is performing quite well on this metric and has been in compliance with this metric every month (save one miss by less than 0.1 percentage point) for over 2 years.

5.2 Non-Primary Service Order Installations (5.6.2) -- Verizon's Comments

Verizon has no comments on this section.

⁵ The numbers in the parenthetical refer to the relevant section of the Commission's service quality rules. For example, the requirements for Primary Service Order Installations are included in section 5.6.1.

5.3.1 Installation Commitments Met (5.6.6 & 5.6.7) -- Verizon's Comments

While some states do require morning and afternoon commitments, many state legislatures have done away with service quality standards altogether, and a number of states including Virginia and West Virginia have significantly reduced retail metric obligations. Otherwise, Verizon agrees with and has no comment on the finding related to Installation Commitments Met.

5.3.2 Repair Commitments – (5.10.2) -- Verizon's Comments

Verizon has no specific comments on this section, but refers the Commission to its comments on Section 6 of the Report.

5.4 Held Orders (4.4.1, 4.4.2, 4.4.3 & 5.6.9) --Verizon's Comments

Verizon agrees that it has had no held regrade orders since Jan 2000. A chart showing 100% compliance during this time period similar to the one below would be appropriate.

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5.5 Toll and Assistance Operator, Directory Assistance Answer Time (5.7.1, 5.7.1.1, & 5.7.13) – Verizon’s Comments

Verizon agrees that it has not missed the Toll and Operator Assistance Answer Time metric since January 2000 and has not missed the DA answer time metric since December 2003.

5.6.1 Repair Answer Time (5.7.12) - - Verizon’s Comments

With the exception of September 2000, when Verizon missed this metric due to a work stoppage, Verizon agrees that it has routinely satisfied the Repair Access Answer Time metric.

5.6.2 Business Office Answer Time (5.7.12) -- Verizon’s Comments

Like the other SQI metrics, the standard for this metric was established in Docket 20 in 1991. Much has changed since then, and Verizon DE believes that this metric no longer reflects reasonable customer expectations and thus should be revisited.

Indeed, this metric was adopted over 18 years ago at a time when Verizon DE primarily only sold simple voice services and competition did not exist as it does now. Today Verizon DE offers an array of services, including high-speed Internet and video services (not regulated by the Commission), that were not available in 1991 when the Commission adopted this metric – all through the same sales channel as its voice services. Not only do these new services increase the volume of calls received by the business offices, but they also increase the level of complexity of the calls, which, in turn, increases the amount of time that Verizon DE’s representatives must spend with each customer. In addition, in a highly competitive market such as the market for telecommunications, customers call into the business office far more frequently to price shop and compare or to disconnect in favor of competitors – indeed, when Comcast advertises a promotion, *Verizon’s* volumes increase. Also, evidence suggests that customers do not expect their calls to be answered in 20 seconds. Rather, customers want their issues resolved the first time, in a single call.

Moreover, technology itself is making this metric increasingly irrelevant. Today, automated reporting systems and Internet-based interfaces permit instant interaction between the customer and carriers. Customers increasingly use automated systems (both Internet and phone-based) to pay their Verizon bills and check account balances, place trouble reports, order new services and satisfy a whole host of other issues without ever speaking to a Verizon customer representative. Such technological capabilities make regulatory retail service measurements — such as the speed-of-answer or percentage of calls answered within a set time frame — obsolete measures of service quality.

That is not to say that Verizon DE does not care about its response time to customers. Indeed, Verizon is constantly seeking to satisfy customer needs in this area. Recently, in order to improve customer satisfaction, Verizon rolled out a new nationwide 1-800-VERIZON number for all calls to customer centers. In addition, there have been numerous changes in the technology Verizon uses to interact with our customers. Many of our customers now interact with Verizon using our Verizon.com website.

In short, Verizon DE agrees that this metric should be examined. However, that examination should take place in the context of a larger review of all the requirements contained in Docket 20 to determine whether they meet the needs of the current market place.

5.7 Customer Trouble Reports (5.10 & 5.10.1) -- Verizon's Comments

Verizon DE has provided outstanding performance as measured by the Customer Trouble Reports metric.⁶ Of all the metrics included in the Commission's rules, this metric is the best indicator of the health of Verizon's network since it is an indicator of the quality of the design, construction and maintenance of Verizon DE's outside plant and switching facilities. The

⁶ This metric is also referred to as the Network Trouble Report Rate (NTRR) metric.

standard for this metric is no more than 5 troubles per 100 access lines, and, since January 2005, Verizon DE has often achieved scores in the range of 3 or less troubles per 100 access lines.

This performance is demonstrated on the chart below.

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The above chart not only demonstrates that Verizon DE routinely scores below the metric standard, but that its performance on this metric has improved year-over-year. This is a strong indicator that Verizon DE's investment in its network -- fiber *and copper* -- is more than sufficient. The overall network remains healthy, and no evidence exists that Verizon's investment in its fiber deployment is having a negative affect on the copper.

5.8 Out-of-Service Trouble Clearing Time (5.10.3) --Verizon's Comments

While the Report acknowledges that Verizon has shown significant improvement on the OOS metric over the last 18 months, it fails to emphasize that Verizon DE has met this objective 5 of the 8 months in 2009. Thus, it would be prudent to examine more recent data, which shows steady improvement, and candle this performance trend against the trends from earlier this decade.

The chart below demonstrates Verizon DE's performance since January 2005 and clearly shows that performance has steadily and significantly improved since early 2007.

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The chart also shows the seasonal nature of this issue, with the summer months presenting the biggest challenge for Verizon DE. This is consistent with the seasonal challenges faced by the industry as a whole. Overall this chart demonstrates that Verizon DE is providing a

very high level of service to its customers, especially considering the fact, unlike most other states, the Commission's OOS metric includes no exclusions for weekends or holidays.

Furthermore, there is a clear correlation between Verizon DE's OOS performance and the service related complaints that are submitted to the Commission. As can be seen on the chart below, when Verizon DE's performance on the OOS metric exceeds 75%, service related complaints to the Commission drop significantly. Additionally, the complaints remain relatively flat after that point.

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In addition, Verizon DE's most recent OOS performance patterns resemble the level of service that Verizon DE provided in the earlier part of this decade, as shown in the chart below.

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The Report should acknowledge all of the above trends in Verizon DE's performance and the effect Verizon DE's performance has had on reducing complaints to the Commission. Furthermore, the disaggregated wire center OOS data reveals very little that would assist Verizon DE in improving its overall service quality performance. For example, the **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** wire center only achieved the 90% statewide objective for this metric on a monthly basis three times in 2008. But that "fact" does not reveal a systematic failure in service quality in that location – the result is largely due to the small number of OOS reports in that area in any given month. Indeed, the small number of OOS reports means that not restoring service to a *single* customer within 24 hours can knock that wire center below the statewide objective. The use of statewide-standards has always accommodated for variations in data among exchanges and is the appropriate basis on which the Commission's current rules assess service quality.

Finally, numerous technological changes have had a profound effect on customer needs and service quality expectations. Among other things, the wireline telephone is no longer the exclusive lifeline for most households. For example, in 2000, few households relied exclusively on their wireless phones. Today, however, more than a fifth (20.2% as of December 2008) of the households in the country have “cut the cord” and rely exclusively on wireless service for their household telecommunications needs.

More importantly, most wireline customers have access to one or more wireless phones in their households, which means that these customers would not be cut off from essential services, such as E-911, if they were to experience an outage on their landline phone. In fact, the widespread use of wireless phones has dramatically changed the nature of a customer’s out-of-service experience. While an OOS condition is undoubtedly an inconvenience, it no longer creates the need for near-immediate restoration for the great majority of customers. The Report should acknowledge these significant market and technological changes, which are driving the need to re-evaluate the service quality metrics.

5.9 Repeated Trouble Reports (5.10.4) – Verizon’s Comments

Verizon has made this metric every year since 2000 on an annual basis, most recently in **(BEGIN PROPRIETARY)** **(END PROPRIETARY)**. While Verizon has missed the objective for this metric only four times since January 2008, performance under this metric since 2005 has shown a negative trend. This is represented on the chart below.

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Verizon DE recognizes this performance trend and this issue will be addressed in the Performance Improvement Plan in the Proposed Settlement.

5.10 Disaggregation Study (Overview) -- Verizon's Comments

Verizon DE has a number of concerns with Staff's Disaggregation Study. First, the Disaggregation Study is beyond the scope of this proceeding since the Commission did not request a neighborhood by neighborhood analysis of Verizon DE's service quality. More important, the Disaggregation Study has provided no useful information regarding the quality of service that Verizon DE provides over its copper network in Delaware. The disaggregation study attempted to analyze Verizon's service quality at the census block group ("CBG") level by disaggregating performance on trouble tickets and repeat trouble tickets into small geographic

areas. The study made no attempt to eliminate fiber lines despite the fact the Commission sought an evaluation of the “efficiency, sufficiency, and adequacy of basic services provided by Verizon Delaware LLC over its copper facilities” (Instituting Order at 3.)

But even if a successful disaggregation study could be conducted, which did not occur in this case, it would not be useful to Verizon DE or the Commission since Verizon does not manage its maintenance and repair operations at the CBG level, and the Commission does not measure Verizon’s performance at this tiny geographic level. Indeed, measurement of Verizon DE’s performance at this level would make little sense. For example, Verizon DE has 33 wire centers, while there are over 500 CBGs in the State. The CBGs have no relationship to Verizon DE’s wire centers. Some rural wire centers have only a few CBGs, while some urban wire centers include dozens of CBGs. Moreover, many CBGs cross one or more wire center boundaries. Additionally, data at such a small level would be subject to significant statistical inaccuracies.

5.10.1 The Unit of Analysis

Telecommunications networks are not planned, built or maintained on a CBG basis. While CBGs may be a useful analytical tool for social scientists, urban planners and other government entities, they have no value in the maintenance of a telecommunications network. Verizon knows of no commission or telecommunications company that uses data disaggregated to the CBG level for the purpose of evaluating or managing its maintenance and repair operations. Indeed, during the oral argument on Staff’s Motion to Compel, Dr. Loube admitted that no one else had tried to undertake the type of analysis that he was attempting to conduct. Furthermore, the Report makes no attempt to explain how telecommunications engineers could

use CBG trouble and report data from over 500 CBGs in Delaware to maintain Verizon DE's network.

5.10.2 Method of Analysis – Verizon's Comments

The Consultants attempted to geo-code the street addresses that Verizon DE provided pursuant to Data Request (DR) 2-2. Mechanized geo-coding remains a process with problematic accuracy, especially in outer suburban and rural areas. Issues arise from incomplete data. Commercial digitized maps may not identify every alternate road name or may not have complete address range data for a particular road segment. Areas served by rural delivery boxes will not have address ranges at all.

Verizon's address data in its systems, which are used for engineering, installation and repair, are readily interpreted by employees, sometimes with supplemental data such as paper maps that identify cable routes with sequentially numbered terminals ("leads"). However, the data do not conform to the rigid specifications needed for computerized matching. For example, the data may not include ZIP codes. As a result, there may be false positive matches when a wire center contains the same address in more than one ZIP code. Another coding problem may also be as simple as a clerk entering "Route 202" or "Rte 202" for a street name, when the computer table needs to see "US Highway 202".

While the Staff's consultants rejected Verizon's geo-coding efforts, their analysis does not necessarily improve on the accuracy of the geo-coded data. This can be seen especially with the use of "Street" level accuracy method. This method allows for customer locations to be misidentified by substantial distances when roads cross CBG boundaries and wire center boundaries.

For example, Verizon supplemented the locations in Verizon's file "Proprietary_Lead_TermMatch" in the Delmar wire center by extensive manual geo-coding based on inspection of paper engineering records. When assigned to CBGs, the quantities are shown in the Verizon Match column below. The consultants' results are listed in the Staff column.

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This is an extreme example, but is illustrative of the problems with the consultants' geo-coding. The large differences between the Verizon and consultant results can be attributed to a number of things. The results may be affected by the consultants' rejection of lines they consider "interstate", as Delmar borders Maryland to the west and south, and roads, including State Highway 54, run along the boundary in places. The values also include only Delmar customers in the CBGs, excluding customers from adjacent wire centers such as Laurel. When those customers are included, the situation is similar. (Note that the Verizon data may be slightly low because it does not include data from the NoMatch table.)

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Nonetheless, approximately 85% of customer points fall into the same CBG using Verizon's geo-coding or consultants' geo-coding. The inability to locate the remaining 15% of the customer points indicates that CBG-level analysis is not yet feasible.

5.10.3 Data Analysis - - Customer Location Data Base – Verizon's Comments

The description of the data analysis highlights a number of flaws in the consultants' Disaggregation Study. First, it is clear that the consultants were attempting to develop a new analytical tool. As a result, they ran into a number of problems that they did not anticipate and that are not fully explained in the text. For example, the consultants did not request the circuit id information associated with each of the lines in the customer location data base and, thus, they had no way to correctly match trouble tickets with the appropriate access lines.

Second, as noted above, the consultants included fiber lines in their analysis despite the fact that the Commission asked for an evaluation of Verizon's copper network.

Third, the denominator is based on access line information taken from a snapshot of the network in March 2009, while the numerator is based on trouble report records over the course of 2008. This is a significant mismatch of data given the level of churn in Verizon wireline network.

Fourth, and most important, Staff's geo-mapping process eliminated approximately 20% of the **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** customer locations that Verizon provided to them. The **(BEGIN PROPRIETARY)** **(END PROPRIETARY)**

customer records had a total of **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** lines associated with them. The Report fails to indicate how many lines were associated with the **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** records that remained in the study group after the original number of **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** records were reduced by use of the Delorme geo-coding software.

This is critical since the trouble report rate for each CBG is calculated on the basis of 100 access lines. The state-wide standard is 5 troubles per 100 access lines. Thus, if the number of access lines is not properly determined, there will be more troubles per 100 access lines than actually exist in the network. This becomes particularly relevant when attempting to assess Verizon DE's service quality at the significantly more granular CBG level.

Finally, the claim that the missing data would have no impact on the results of the Disaggregation Study is off the mark. Missing data is always a serious problem. It is a very serious problem when approximately 20% of the data are missing and when it is unclear that the geo-coding is correct for all the included data. The Disaggregation Study contains no empirical or theoretical support for the claim that the study's results would be no different if the missing data were included. It is not the case, as the Disaggregation Study claims, that the excluded data are excluded at random. A process that successfully geo-codes some records but not others is not the same as a random sample. Whether or not a record is included in the study likely depends on both the rules for geo-coding and the characteristics of the records. If these characteristics are correlated with trouble report rates and/or CBGs, the results are systematically biased. Yet the Disaggregation Study performs no analysis showing that excluding a record from the study does not depend on known characteristics of the record, such as zip code.

5.10.4 Trouble Report Data Base -- Verizon's Comments

The discussion related to the production of the trouble ticket address data should note Verizon DE was able to provide customer address information for more than 95% of the initial and repeat trouble tickets, and that pursuant to Staff's request, Verizon DE conducted another special study that provided a special indicator to show whether the troubles or repeat troubles were on lines served by fiber.

Staff's consultants were dissatisfied with the information, primarily because (1) some of the customer address information associated with the trouble and repeat troubles did not include all the address information that the consultants were seeking, *i.e.*, the addresses associated with the troubles and repeats sometimes only included references to streets addresses and neighborhoods with no town or zip code information, and (2) the customer address information was often provided in one data field, *i.e.*, the address information was not parsed into separate fields for street address, town and zip code. In addition, as Verizon DE had advised Staff, not all of the addresses had associated zip codes.

Consequently, Staff asked Verizon DE to engage in several new and costly special studies. First, Staff asked Verizon DE to provide the city or town associated with any address that did not include this information (DR 6-4), and, second, it requested that Verizon DE parse the address information associated with troubles and repeats into separate fields. (DR 6-5). Verizon investigated the practicality and costliness of each new proposed special study. Verizon DE found it simply did not have the address information in the specific form sought by the consultants in its databases. Verizon DE determined that the special studies would have required an extensive manual effort that, in the end, would not produce all the information that Staff was seeking. However, Verizon DE advised Staff that if the consultants thought the efforts would be

fruitful, nothing precluded them from proceeding to perform their own analyses to determine the city or town information or to parse the provided information into separate data fields.

Thus, the data provided to the consultants was the data available in Verizon's systems that was requested pursuant to the Compromise Agreement. While Verizon DE may not retain service data at the level of specificity and in the format that the consultants desired to conduct their analysis, it does retain the data in the manner required to operate its network in Delaware. Verizon's data is of the quality needed for the purpose it was designed to serve.

Due to the limitations in the address information provided to the consultants, they note that the partial address information was manually entered into Internet-based geo-coding services such as Google Earth. Nowhere does the Report explain how the partial addresses were used to obtain accurate street address for the associated trouble tickets or how many trouble tickets had partial addresses. The Report also does not indicate whether any quality controls were used to avoid human error during the manual entry process.

Finally, the Report indicates that approximately 5,000 of the almost **(BEGIN PROPRIETARY) (END PROPRIETARY)** trouble records were eliminated from the study group. Thus, the Disaggregation Study eliminated a significantly larger percentage of access lines than troubles, which produced an inflated trouble report rate for each CBG.

5.10.5 Repeated Trouble Data Base -- Verizon's Comments

Based on the limited description included in this section of the Report, it does not appear that the consultants could have accurately calculated a repeat report rate for each of the individual CBGs. Most importantly, since the addresses used for the repeat troubles were linked to the access lines used for the trouble ticket denominator, the repeat report rate CBG analysis suffers from the same types of flaws associated with the trouble report analysis. Finally, since

the repeats are reported more than thirty days after the initial trouble, the consultants could not have matched any of the circuit id and address information for the January 2008 repeats to prior trouble reports. The consultants had no data for December 2007.

5.10.6 Verizon's Comments on Staff's Findings in Disaggregation Section

The Report claims that a disaggregated analysis of Delaware statewide service quality metrics reveals systematic differences in service quality among exchanges and CBGs. The Report supports this claim by ranking exchanges and CBGs from lowest to highest according to the service quality metrics and then noting the differences between the best and worst exchanges and CBGs.

By definition, Exchange and CBG level service quality metrics will vary around the statewide average. Some exchanges and CBGs must be above the statewide average and some must be below. That is just simple arithmetic. Exchanges and CBGs can always be ranked from worst to best. Demonstrating that the worst is worse than the best does not imply that there are systematic differences in service quality among the exchanges. Within exchanges, service quality performance varies over time. Differences among exchanges during a specific time period could be due to statistical variation. It is incorrect to attribute this statistical "noise" to real differences in service quality among exchanges. Examination of a different time period, past or future, will generate different results. Any claim of systematic differences in service quality among exchanges/CBGs must be supported by statistical tests showing that the variation in average service quality among exchanges is large relative to the variation from month-to-month within the exchanges. The Report contains no such tests or analyses. As a result, the data and tables in the report do not provide a reliable analysis of the trouble report rates and repeat trouble report rates for the CBGs.

For example, Figures 14 and 15 show the differences in service quality metrics among subsets of the CBGs. But the subsets are defined in terms of the service quality metric itself. The lowest 40 CBGs on the metric are in Group 1, the next 40 are in Group 2, and so on up to the highest 40 CBGs. No conclusions can be drawn from these figures. The lowest 40 CBGs on any service quality metric will always be noticeably lower than the highest 40 CBGs. The second 40 lowest CBGs will always be lower than the third 40 lowest CBGs, and so on. These figures are just tautologies. Essentially, the Report clusters CBGs according to the service quality metric and then uses these clusters to highlight differences among CBGs on the same service quality metric. This is just stacking the deck in favor of finding differences in service quality among CBGs.

The correct issue to address is whether the differences in average performance among CBGs are large enough relative to the differences from month-to-month within CBGs. This issue can be addressed via the type of test described above. The Report performs no such tests. As a result, the analyses in the Report do not support any claim of real differences in service quality among exchanges or CBGs.

5.10.7 Application of the Disaggregation Study Analysis to Verizon's Service Quality Performance --Verizon's Comments

This section of the Report claims that the Disaggregation Study "clearly" demonstrates differences in trouble report rates and repeat troubles among CBGs and that some CBGs experience unacceptable service quality levels. The section also acknowledges that the format of the data in Verizon's systems would make "it difficult to proceed with an ongoing CBG analysis." (Report at 43.) Nonetheless, the Report recommends that VZ-DE systematically evaluate service quality on a disaggregated basis in order to identify those areas in need of

improvement. The Report claims that “the usefulness of the disaggregation of service is undeniable.” (*Id.*)

This recommendation is inherently flawed and should not be adopted. Any sub-units of data, be it CBGs, wire centers or carrier serving areas, will have smaller numbers of troubles than the troubles included in the current state-wide aggregate data that is measured under the Commission’s current rules. As a result, sub-units are much more likely to miss the statewide objective than the state itself. For example, even if Verizon-DE meets the statewide objective of 20% for repeat troubles, the probability that a randomly selected sub-unit consisting of 5 troubles misses the objective is 26%. A randomly selected sub-unit consisting of 10 troubles has a 32% chance of missing the objective and a sub-unit with 25 troubles misses the objective 38% of the time. Clearly, sub-unit service quality is inherently more variable than statewide service quality. This variability increases as the size of the sub-units becomes smaller. Two randomly selected sub-units consisting of 5 troubles each are more likely to manifest a difference of a specified size in their repeat trouble rates than are two randomly selected sub-units consisting of 10 troubles each.

The flaw in applying statewide service quality standards to sub-units is that the sub-units contain smaller samples of troubles. Smaller samples have inherently more variability. More variability means greater likelihood of missing the statewide objective as well as more frequent and larger differences among the sub-units. This phenomenon has nothing to do with real differences in service quality among the sub-units, nor with some sub-units systematically receiving below statewide average service quality. This phenomenon is caused solely by the smaller numbers of troubles in the sub-units.

Disaggregation makes it more likely that random differences in service quality are mistaken for genuine differences. In this situation, statistical tests play an important role. Statistical tests ask the question: Are the observed differences too large to be attributable to random variability? If, and only if, the answer is yes, do we reject the claim that sub-units are treated symmetrically.

It is important to perform these statistical tests even though the geo-coding problems, the large amounts of missing data, and the mismatch between troubles and access lines make it difficult for the tests to distinguish between systematic differences among CBGs and measurement error. The variation in measured service quality among CBGs might not be statistically large enough to support a claim of systematic differences even with the increased dispersion caused by measurement error. It is important to rule out this possibility.

Recognizing the flaws with the CBG analysis, the Report suggests that an analysis of service quality below the wire center level could be conducted using Carrier Serving Areas (“CSAs”). This suggestion should be rejected. Verizon DE copper network was designed using the CSA concept. While the CSA is a more appropriate methodology over Census Block Group in the disaggregation of troubles below the wire center level, it still represents too broad an area when examining the cause of multiple troubles. A CSA contains many different cables (both feeder and distribution), cross-connect facilities, terminals and other equipment. A defective section of cable, a bad cross connect box or even a single defective terminal could be the cause of multiple trouble reports and cause an otherwise trouble-free CSA to appear to be an area with “substandard service,” when in fact 99% of the customers in that CSA are receiving excellent service.

Verizon's current method of trouble analysis identifies service issues down to the cable section, cross connect box or terminal to facilitate repair of the part of the network causing service problems. Accordingly, an evaluation of troubles and repeats based on CSAs would not provide any useful information to either the Commission or Verizon DE.

In short, the Disaggregation Study does not report the results of a single statistical test to support the claim that there are systematic differences in service quality among sub-units. Nevertheless, the report recommends that VZ-DE incur significant expenditures to develop a system that tracks service quality at the sub-unit level. The recommendation should be rejected.

6. Customer Commitment and Scheduling Process

6.1 Prompting the Customer to Agree to a Change in the Commitment Time -- Verizon's Comments

Substantively, we think this section could be misunderstood because it implies that there is something inappropriate about calling customers when or if Verizon is going to miss a scheduled appointment. This is incorrect. Although Verizon strives to make all of its scheduled appointments, clearly it is good customer service and common courtesy to alert our customers if a technician is going to miss a scheduled appointment, has missed a scheduled appointment or might miss a scheduled appointment.

The salient point for purpose of monitoring Verizon's service quality, however, is that Verizon's performance is measured against its ability to make the *originally scheduled commitment*. Thus, Verizon's practice of proactive customer contact and rescheduling appointments has no affect on its performance results reported to the Commission regarding commitments.

6.2 Prompting the Repair Technician to Change the Restoral Time --

Verizon's Comments

The Report states that the vMobile prompt related to restoral time is a concern for the consultants. As Verizon has explained on a number of occasions, it is not uncommon for a repair technician to restore service to a customer and then engage in other activities prior to having an opportunity to close the ticket out in vMobile. For example, the technician may spend time explaining the repairs to the customer, cleaning up the site following the repairs or traveling to another location (i.e., central office or cross connect box) to obtain dial tone to close out that job and pick up their next job. The purpose of the prompt is to permit Verizon to receive credit for restoring service within its commitment time when there is a delay between the restoral of service and the closing of the trouble ticket. Verizon does not suggest, imply, or train its technicians to enter anything other than the correct restoral time.

6.3 The Scrubber/vScrub Process -- Verizon's Comments

Verizon DE believes its Scrubber process is proper and necessary to prevent unwarranted repair dispatches, which result in wasted resources that could be and should be utilized for necessary repair dispatches. However, pursuant to the Proposed Settlement agreement, Verizon DE will provide Staff with a report that, among other things, evaluates the vScrub process and the effectiveness of its automated line testing system. Verizon DE will also address any additional questions that Staff may have about this process.

6.4 Approach to Handling Out-of-Service Trouble Reports -- Verizon's Comments

Verizon has no comments on this section of the Report.

7. Facility Construction (4.3 & 4.3.1) -- Verizon's Comments

Verizon has no comments on this section of the Report.

7.1 Construction Expenditures (7.1) -- Verizon Comments

Comparing TPIS per billable access line is not an appropriate comparison because there are numerous factors impacting TPIS per access line, including the age of the plant, population density, geographic and topographic features, variations in access line loss, state regulations and many other factors. In addition to being an inappropriate comparison, the Report does not demonstrate any relationship between TPIS per access line and service quality. There is no evidence that states with higher TPIS per access line have better service quality performance than Verizon DE. Absent this empirical link, TPIS per access line says very little about Verizon's service quality in Delaware.

Figure 19 is consistent with the data provided by Verizon. However, it is important to keep in mind that OSP expenditures for "Service Improvement" are capital investments that yield benefits over the life of the investment. Thus, OSP expenditures for service improvements made in 2003-2004 continue to yield benefits to this day. In addition, while expenditures for service improvements have decreased since 2003, expenditures for asset restoration have increased substantially – more than doubling since 2004.

Moreover, Verizon's investment in a state-of-the-art fiber plant will positively affect Verizon's network performance and accordingly its service quality and thus will produce benefits for Delaware consumers for many years to come.

7.2 By-Passes -- Verizon Comments

Since Verizon DE originally provided information on its "bypasses" in June 2009, Verizon DE has already implemented permanent fixes to a number of the bypasses and has approved work orders to fix several more. This has been reflected in Figure 20 of the Report.

In addition, Verizon has implemented procedures to track the date bypasses are placed. This issue is also addressed in the Settlement Agreement.

7.3 Subscriber Transmission Loss & Noise (5.3, 5.3.1, 5.3.2, 5.11 & 5.11.2) -- Verizon's Comments

While the last sentence of the Discussion section is technically correct,⁷ it suggests that if there is more than 8 dB of transmission loss, parties would not be able to hear each other satisfactorily, which is not necessarily true. Verizon has no other comments to this section.

8. EMPLOYEES IN DELAWARE -- VERIZON'S COMMENTS

While the absolute number of employees in Delaware has varied throughout the years (e.g., decreasing from 2002-2004 and increasing in 2004-2006), overall any reduction in force has been consistent with the decline in Verizon's access lines so that Verizon's force levels have actually remained stable or improved. This is reflected in Figure 21 on page 62 of the Report. Indeed, the number of Verizon's OSP employees per 10,000 access lines has increased from **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** OSP employees per 10,000 access lines as of September 30, 2008. Although there has been a slight decrease in Central Office employees per 10,000 access lines during that same period (from **(BEGIN PROPRIETARY)** **(END PROPRIETARY)** respectively),⁸ overall Verizon increased its number of employees per access lines since 2001, when the absolute number of employees was at its highest. The ratio of employees per access line is a significantly

⁷ The sentence states: "If there is no more than eight dB of transmission loss in a subscriber line, the parties should be able to hear each other satisfactorily, based on objective customer testing."

⁸ The decrease in the number of central office employees is also indicative of technological advancements in switching and other newly automated central office functions.

more important indicator of Verizon's commitment to service quality than the absolute number of employees, which reveals very little by itself.