COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND CABLE

In re Verizon Service Quality in Western Massachusetts	)	D.T.C. 09-1

PRE-FILED TESTIMONY OF SUSAN M. BALDWIN ON BEHALF OF THE OFFICE OF THE ATTORNEY GENERAL

Filed: November 9, 2009

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I. INTRODUCTION

Qualifications

Q: Please state your name, position, and business address.

A: My name is Susan M. Baldwin. I am a consultant, and my business address is 17 Arlington Street, Newburyport, Massachusetts, 01950.

Q: Please summarize your educational background and professional experience.

A: I have been specializing in telecommunications economics, regulation, and public policy, for 25 years. I have prepared a Statement of Qualifications, which is included as Attachment A.

Q: Ms. Baldwin, have you previously testified before the Massachusetts Department of Telecommunications and Cable ("Department")?

A: Yes. In 1998, I testified on behalf of AT&T Communications of New England, Inc. and MCI Telecommunications Corporation (regarding Consolidated Petitions for Arbitration of Interconnection Agreements, D.P.U. 96-73/74. 96-75, 96-80/81, 96-83, and 96-84).

Q: Have you previously worked with the Department?

A: Yes. I served as the Director of Telecommunications for the Massachusetts Department of Public Utilities ("DPU") between 1988 and 1992, and, in that capacity, served in a direct advisory capacity to the then three-member commission on all matters relating to the regulation of the telecommunications industry in Massachusetts.

Q: In your capacity as an independent consultant, have you consulted to the Department?

A: Yes. Between August 2001 and July 2003, I assisted the Telecommunications Division

and the commissioners of the Department of Telecommunications and Energy ("DTE") in their comprehensive investigation of the recurring and nonrecurring costs of Verizon's unbundled network elements.[1] This assignment entailed various aspects of the proceeding such as assisting with the preparation of discovery, cost study analysis, cross-examination, assisting with the preparation of Department orders, and the review of compliance filings.

Q: Have you testified before other State Commissions?

A: Yes. As Attachment A to my testimony shows, I have testified before nineteen state commissions on diverse telecommunications issues encompassing such matters as alternative regulation, revenue requirement, service quality, local competition, mergers, infrastructure deployment, universal service, cost studies, rate design, telephone numbering, and unbundled network elements.

Q: Have you analyzed service quality in other regulatory proceedings?

A: Yes. I have examined service quality data and the regulation of service quality in numerous proceedings. While I served as the Director of the Telecommunications Division, the DPU conducted a comprehensive analysis of voluminous service quality data submitted by New England Telephone and Telegraph Company ("NET") (now Verizon). [2]

[1] / D.T.E. 01-20.

[2] / State regulators directed NET (now Verizon) to accelerate its replacement of outdated electromechanical central office switches in rural Massachusetts so that some communities would not be left behind, lacking access to touch tone, while NET advertised then-new features, such as call waiting, in urban and suburban communities. State regulators also directed NET to improve service quality in specific regions of the state. Massachusetts D.P.U. 89-300, *New England Telephone Company*, June 29, 1990.

Later, on behalf of the Massachusetts Attorney General, I analyzed service quality indices and productivity offsets as part of my analysis of the proposed price cap plan submitted by NYNEX – Massachusetts.[3] I have addressed the service quality elements of various alternative regulation plans in numerous other states; analyzed service quality in the context of a general rate case in Arkansas;[4] and prepared a detailed report on service quality and price cap plans on behalf of the Utah Division of Public Utilities.[5]

More recently, on behalf of the Communications Workers of America ("CWA"), I testified in proceedings in Connecticut and Maryland regarding service quality. Also, on behalf of the CWA and the International Brotherhood of Electrical Workers ("IBEW"), as part of my analysis of Verizon's proposed sale of its operations in 14 states to Frontier, I have and am addressing, among other things, service quality in regulatory proceedings in Illinois, Ohio, and West Virginia.

Assignment

Q: On whose behalf is this testimony being submitted?

A: This testimony is being submitted on behalf of the Office of the Attorney General ("Attorney

[3]/ D.P.U. 94-50.

[4]/ Arkansas Public Service Commission Docket No. 03-041-U.

[5] / "Price Cap Plan for USWC: Establishing Appropriate Price and Service Quality Incentives for Utah" (Patricia D. Kravtin, Scott C. Lundquist, and Susan M. Baldwin). Prepared for the Utah Division of Public Utilities, March 22, 2000.

General").

Q: What is the purpose of your testimony at this time?

A: The Attorney General's Office of Ratepayer Advocacy, asked me to prepare testimony analyzing service quality in Western Massachusetts, defined by the Department as Franklin, Hampshire, Hampden and Berkshire Counties, and, as appropriate, to recommend remedies to ensure that households and businesses in the "413" area code region of the Commonwealth receive adequate basic local telecommunications service.

Q: How is your testimony organized?

A: This section introduces my testimony. Section II provides procedural and regulatory context for my testimony. Section III analyzes data and information regarding Verizon's service quality in Western Massachusetts. In Section IV, I summarize my recommended remedies. Section V concludes my testimony.

Summary of Testimony

Q: Please summarize your testimony.

A: Among my analyses and recommendations are the following:

- Evidence produced in this case has raised service quality concerns in Western Massachusetts that need to be addressed, such as:
  - Numerous consumer and municipal complaints regarding service quality.
  - Verizon does not meet the standard or target levels that the Department has established for clearing residential troubles within 24 hours.
  - Verizon does not meet the target level that the Department has established

for clearing business troubles within 24 hours.

- The trouble report rate in Western Massachusetts exceeds the statewide trouble report rate.
- Cable in Western Massachusetts is old, dating back to the 1960s in many instances. Although old cable does not necessarily need to be replaced, absent other information, all else being equal, older plant may be more likely to need replacement than more recently installed outside plant.
- Verizon must show that it allocates sufficient investment and staffing to repair lines in a timely manner and maintain the telecommunications infrastructure in Western Massachusetts.

- Verizon's complaint-driven resolution of service quality problems is worse for consumers than would be pro-active prevention of service quality problems and consistent compliance with the Department's repair standards.
- The operations of an incumbent local exchange carrier ("ILEC") with an obligation to serve in a rural area like Western Massachusetts require regulatory oversight and intervention so that consumers of basic local service are not harmed by poor service quality and because the loss of access to the public switched telephone network in rural areas with spotty cellular phone coverage raises public safety concerns.
- The Department should require a comprehensive audit of the network infrastructure in Western Massachusetts, and require Verizon to follow through on the audit's recommendations with a comprehensive plan filed with the Department.

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- The Department should consider establishing a pilot program in Western Massachusetts by which Verizon must continue to seek to meet the Department-established residential metrics of 60% (the existing standard) and 70% (the existing target) of service-affecting and out-of-service troubles within 24 hours, but would provide a customer credit to any residential customer that waits more than 36 hours for repair. At the end of 12 months, Verizon should make a filing with the Department describing the results of the pilot program.
- The Department should post Verizon's monthly service quality report on the Department's web site.
- If Verizon discontinues its ARMIS reporting to the FCC in the future, the Department should require Verizon to provide the information previously provided in those ARMIS reports to the Department.

II. PROCEDURAL AND REGULATORY BACKGROUND

Regulatory and statutory context for proceeding.

Q: Please describe your understanding of this proceeding.

A: The Department issued an Order to Open Investigation in D.T.C. 09-1 on June 1, 2009.[6] In so doing, the Department consolidated two ongoing service quality investigations for the Towns of Hancock[7] and Rowe[8] and a petition for an investigation by the Town of Shutesbury into a regional service quality investigation covering the counties of Berkshire, Franklin, Hampden, and Hampshire ("Western Massachusetts").[9]

Q: Was this proceeding initiated pursuant to Verizon Massachusetts' alternative regulation plan or service quality plan contained therein?

A: No. That is not my understanding. The Department of Telecommunications and Cable issued an Order on June 1, 2009 opening a regional investigation into the quality of service in Western Massachusetts.[10] The Department also ordered dockets D.T.C. 07-2, Town of Hancock, and D.T.C. 07-5, Town of Rowe as well as formal quality of service complaints filed with the Department by Shutesbury and Egremont be consolidated in

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[6] / Investigation by the Department of Telecommunications and Cable on its own motion, pursuant to General Law Chapter 159, Section 16, of the telephone service quality of Verizon New England Inc., d/b/a Verizon Massachusetts, in Berkshire, Hampden, Hampshire, and Franklin Counties, Commonwealth of Massachusetts, Department of Telecommunications and Cable, D.T.C. 09-1, *Order to Open Investigation*, June 1, 2009 ("Order to Open Investigation").

[7] / Petition of the Board of Selectman of the Town of Rowe, MA pursuant to G.L. c. 159, §24, regarding the quality of telephone service provided by Verizon New England Inc., d/b/a Verizon Massachusetts, D.T.C. 07-5.

[8] / Petition of the Board of Selectman of the Town of Hancock Relative to the Quality of Telephone Service Provided by Verizon Massachusetts, D.T.C. 07-2.

[9] / Order to Open Investigation, at 1.

[10] / D.T.C. 09-1, p.1 (June 1, 2009).

this proceeding.[11] Dockets D.T.C. 07-2 and D.T.C. 07-5 were initiated pursuant to Massachusetts law, specifically G.L. c. 159 §24, which reads:

> Upon written complaint, relative to the service or charges for service in, to or from any city or town as rendered or made by any company engaged therein in the transmission of intelligence by electricity, by the mayor or selectmen, or by twenty customers of the company, the department shall grant a public hearing, first giving to the complainants and the company reasonable written notice of the time and place thereof. Upon written complaint of the mayor, selectmen or twenty legal voters of a city or town within which any railroad, railway or other carrier of passengers under the jurisdiction of the department is located or renders service, alleging grounds of complaint, the department shall examine the condition and operation of such carrier, first giving to the complainants and such carrier reasonable written notice of the time and place thereof.[12]

Q: Is there any other language from the General Laws of Massachusetts that might be relevant to this proceeding?

A: Yes. G.L. c. 159 §16 reads:

> If the department is of opinion, after a hearing had upon its own motion or upon complaint, that the regulations, practices, equipment, appliances or service of any common carrier are unjust, unreasonable, unsafe, improper or inadequate, the department shall determine the just, reasonable, safe, adequate and proper regulations and practices thereafter to be in force and to be observed, and the equipment, appliances and service thereafter to be used, and shall fix and prescribe the same by order to be served upon every common carrier to be bound thereby . . . Before making such order, the department shall consider the relative importance and necessity of the changes in any specific regulations, practices, equipment and appliances proposed to be included therein and of other changes which may be brought to its attention in the course of the hearing, the financial ability of the carrier to comply with the requirements of the order, and the effect of the carrier's compliance therewith, upon its financial ability to make such other changes, if any, as may be deemed by the department of equal or greater importance and necessity in the performance of the service which the carrier has

[11] / *Id.*, p. 19.

[12] / Source: http://www.mass.gov/legis/laws/mgl/159-24.htm.

> professed to render to the public. Every such common carrier shall obey every requirement of every such order so served upon it, and do everything necessary or proper in order to secure absolute compliance with every such order by all its officers, agents and employees . . . [13]

Q: Are the Hancock, Rowe, and Shutesbury complaints the only petitions that the Department has addressed recently?

A: No. The Department issued a final Order on April 30, 2008 in D.T.C. 06-6 ("Middlefield Order"), in which, based on a petition filed in January of 2006, the Department investigated the quality of service provided by Verizon Massachusetts in Middlefield.[14] In the Middlefield Order, the Department found that the service quality provided by Verizon MA was "unjust, unreasonable, and inadequate . . . and that Verizon's practices and equipment [were] unsafe, improper, and inadequate[.]"[15] The Department directed Verizon MA to "undertake a comprehensive analysis of service quality and infrastructure issues in Middlefield in order to determine whether Verizon's policies, practices, and procedures for inspecting its infrastructure and equipment would require modification."[16] Verizon MA and Middlefield entered into a settlement agreement which the Department

[13] / Source: http://www.mass.gov/legis/laws/mgl/159-16.htm.

[14] / In re the Board of Selectmen of the Town of Middlefield, Massachusetts, pursuant to G.L. c. 159, §24, regarding the quality of Verizon Massachusetts' telephone service, D.T.E./D.T.C. 06-6, *Order*, April 30, 2008.

[15] / Order Opening Investigation, at 3, citing Middlefield Order, at 1.

[16] / In re the Board of Selectmen of the Town of Middlefield, Massachusetts, pursuant to G.L. c. 159, §24, regarding the quality of Verizon Massachusetts' telephone service, D.T.E./D.T.C. 06-6, *Order on Motion for Reconsideration, Motion to Reopen the Record, and Motion for Stay Filed by Verizon Massachusetts*, September 18, 2008, at 1. Verizon MA submitted a Quality of Service Report and Infrastructure Analysis on June 30, 2008. In its comments submitted to the Department re the proposed service quality investigation, Verizon stated: "Verizon MA's comprehensive analysis of the service quality and status of infrastructure in Middlefield, performed at the direction of the Department, showed no significant infrastructure deficiencies in the Town and identified only minor physical disrepair conditions, which Verizon MA promptly fixed." Comments of Verizon New England Inc re Proposed Regional Service Quality Investigation, February 23, 2009, at 3.

approved on December 16, 2008.[17]

Q: On what basis did the Department open the instant proceeding?

A: The Department sought comment on opening the regional service quality investigation "in light of the formal complaints from Middlefield, Hancock, Rowe, and Shutesbury, and an analysis of Verizon monthly service quality index reports appearing to indicate higher levels of trouble reports in Western Massachusetts than in other region of the Commonwealth."[18] In response to the request for comment, the Department received numerous comments from towns in Western Massachusetts, as well as from the Attorney General.[19] The Department, citing G.L. c. 159 § 16 (quoted above), determined that "the plain language of the statute grants the Department broad authority to open an investigation solely upon its own initiative."[20]

Q: Did the Department make any other relevant determinations?

A: Yes. The Department concluded that opening a regional service quality investigation was more efficient than investigating individual complaints from towns separately[21] and

[17] / Order Opening Investigation, at 2. Verizon MA resolved some issues regarding service quality in Middlefield on an informal basis and the settlement agreement included a commitment by Verizon MA to meet with the Board of Selectmen or town officials each quarter to discuss service quality issues and provide a person to serve as a point of contact for service quality issues within Middlefield for times other than the quarterly meetings. In re the Board of Selectmen of the Town of Middlefield, Massachusetts, pursuant to G.L. c. 159, §24, regarding the quality of Verizon Massachusetts' telephone service, D.T.E./D.T.C. 06-6, *Settlement Agreement*, November 14, 2008.

[18] / Order Opening Investigation, at 4.

[19] / *Id.*, at 4.

[20] / *Id.*, at 11. See, also, *id.*, at 18.

[21] / *Id.*, at 16.

would make the best use of limited resources.[22] One problem identified in individual town investigations is that RHPL (trouble reports per hundred lines) data is available on a central office basis, not on a town basis.[23] A regional investigation overcomes this problem. The Department stated, not for the first time, that: " . . . aggregated data may provide an inaccurate assessment of the quality of service affecting an individual town."[24]

Q: What do you mean when you say "not for the first time"?

A: In the Middlefield Order, the Department also addressed this issue and Verizon MA's arguments that individual wire center RHPL was irrelevant, stating:

> Verizon, however, argued that the Department's statewide service quality standards do not require that a particular municipality's trouble reports not exceed the 4.0 RPHL threshold in any month, and that reporting on less than a wire center basis is not required nor appropriate (see Exh. DTE-VZ 5-1). The Department finds it is appropriate to apply the 4.0 RPHL threshold on a more granular town basis for two reasons.
>
> First, aggregated RPHL data (e.g., Becket RPHL rates) provide an inaccurate assessment of the quality of service in the Town of Middlefield . . .
>
> Second, the statewide SQI is not capable of addressing service quality issues on a granular, town level. The trouble reporting mechanism based upon the RPHL, on the other hand, is designed specifically to identify and correct service quality problems at a granular level.[25]

Q: Have you reviewed the procedural history relevant to service quality in Massachusetts?

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[22] / *Id.*, at 18.

[23] / *Id.*, at 17.

[24] / *Id.*, at 16.

[25] / In re the Board of Selectmen of the Town of Middlefield, Massachusetts, pursuant to G.L. c. 159, §24, regarding the quality of Verizon Massachusetts' telephone service, D.T.E./D.T.C. 06-6, *Order on Motion for Reconsideration, Motion to Reopen the Record, and Motion for Stay Filed by Verizon Massachusetts*, September 18, 2008, at 25, quoting Middlefield Order, at 11-12.

A: Generally, yes. The Attorney General's Office was an active participant in D.P.U. 89-300, and raised concerns about service quality in Roxbury, and, as described by the Department, the "Attorney General further argues that resources have been 'diverted from the dilapidated to fund the modern' and that service in Roxbury is poor because NET [New England Telephone and Telegraph Company, now Verizon] is concentrating its resources to install fiber optic cable."[26] Almost twenty years later, the same concern persists – namely, that Verizon MA may not be maintening and replacing outside plant that provides basic local telephone service in some communities while it pursues new lines of business elsewhere.

In D.P.U. 89-300, the Department also stated that: "As measured by many indicators of service quality, the western region, which consists of the Springfield and Worcester districts, is receiving lower quality service than the rest of the state"[27] and also concluded that "[b]ased on the evidence, the Department finds that the quality of service in the Springfield and Worcester districts, which together comprise the western region, is inadequate."[28] The Department directed NET to "immediately take steps to improve the quality of service in the western region."[29] The Department also concurred with the Attorney General that "the quality of service in the Dorchester district, as measured by

[26] / D.P.U. 89-300, NET, June 29, 1990, at 322, citing and quoting Attorney General Brief, at 7.

[27] / D.P.U. 89-300, at 343.

[28] / *Id.*, at 346.

[29] / *Id.*

various indicators in this record, is inadequate"[30] and determined that service quality in the Merrimack Valley and Brockton districts was inadequate.[31]

In D.P.U. 89-300, the Department also investigated concerns about network modernization that parallel those of today, with the major difference being that the Federal Communications Commission ("FCC") has thwarted the Department's oversight over Verizon's broadband deployment.[32] In its order issued in D.P.U. 89-300, the Department quoted a consumer stating: "Before we get this high-tech move, Becket, for one, would just like to move out of the Stone Age. We don't have touch-tone dialing."[33] I understand that some of the complaints that have been filed in this proceeding concern consumers' interest in having access to digital subscriber line ("DSL") service, which is not under investigation in this proceeding.[34]

Verizon Massachusetts' current Service Quality Plan.

Q: Please describe your understanding of the manner in which Verizon MA's service quality is regulated in Massachusetts.

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[30] / *Id.*

[31] / *Id.*, at 352-353.

[32] / *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings*, CC Docket Nos. 02-33, 01-337, 95-20, 98-10, Report and Order, 20 FCC Rcd 14853 (2005) (classifying wireline broadband Internet access service as an information service).

[33] / D.P.U. 89-300, at 376, citing Tr. Lee Public Hearing, p. 102.

[34] / Verizon indicates that some projects that it undertook that were intended to improve voice service "may affect [DSL] or make it possible in that area." Verizon response to IBEW-VZ 7-1.

A: In its order issued in D.P.U. 94-50 in 1995,[35] the Department approved a price cap plan for Verizon MA (then NYNEX). The price cap plan included a Service Quality Index ("SQI") provision with the twelve service metrics that exist in Verizon MA's current plan.[36] The plan included Verizon MA's proposed twelve metrics, but the Department adopted the Attorney General's proposed Q-factor,[37] stating:

> As a penalty for not achieving the threshold level of performance in the SQI, the Company proposed a delay of one month in the allowed price increases for each month in which the SQI is below the threshold. The Attorney General, however, has recommended an increase in the productivity offset by one-twelfth of one percent for each month the overall SQI falls below the standard measure (see Exh. AG-795, at 99). The Department finds that the Attorney General's penalty provision is more appropriate because the Company may not be allowed, or may not plan, any price increases in a particular year, thus making its proposed penalty potentially inoperable. Failure to meet the 33-point threshold for overall performance in any given month thus will result in an increase in the productivity offset by one-twelfth of one percent for purposes of the subsequent annual filing.[38]

The Department also modified Verizon MA's proposed plan to include the current "standard miss" component at that time.[39]

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[35] / Petition of New England Telephone and Telegraph Company d/b/a NYNEX for an Alternative Regulatory Plan for the Company's Massachusetts intrastate telecommunications services, D.P.U. 94-50, *Order*, May 12, 1995.

[36] / *Id.*, at 81.

[37] / A "Q-factor" in a price cap plan is a component of the price cap index that seeks to ensure service quality remains adequate under the price cap plan by linking price increases to the achievement of service quality targets. See, e.g., *Id.*, at 89 and 245. See, also, *id.*, at 245 stating: "Because price cap regulation introduces a financial incentive for the regulated firm to reduce costs, a well-designed price cap plan must include some form of protection against a reduction in service quality for monopoly customers. Otherwise, NYNEX could increase profits by reducing service quality for captive customers. This reduction in service quality would be tantamount to a price increase."

[38] / *Id.*, at 251 (notes omitted).

[39] / *Id.*, at 252.

In 2003, in D.T.E. 01-31- Phase II, the Department approved an alternative regulation plan for Verizon Massachusetts that included a Service Quality Plan[40] that had been modified to reflect the fact that Verizon was no longer operating under an indexed price cap formula. As noted above, under the old price cap plan, if Verizon Massachusetts failed to meet a threshold number of SQI performance points, the productivity offset was increased by one-twelfth of one percent for each month that the SQI was not met. So, in a given year, the productivity offset could be increased by 1%, thus reducing by 1% the total percent by which Verizon Massachusetts could raise prices (or even requiring a *rate reduction).*[41]

The 2003 Service Quality Plan replaced the Q factor with a service quality rebate, or credit. The plan includes a financial penalty that is paid as a one-time credit to *all* residence and business lines on an annual basis.[42] In adopting the plan, the Department stated:

> As an initial matter, we disagree with Verizon's position that continuation of the Department's monitoring of Verizon's retail service quality is unnecessary and discriminatory. In the Price Cap Order, the Department

[40] / The Verizon Massachusetts Retail Service Quality Plan ("Service Quality Plan" or "Plan") was filed by Verizon Massachusetts as Attachment C to the Verizon Massachusetts Alternative Regulation Plan ("Alternative Regulation Plan") on June 2, 2003. The Department stamp-approved the Alternative Regulation Plan as filed by Verizon Massachusetts on June 6, 2003. See e-mail from Paula Foley, Hearing Officer, to service list on June 10, 2003.

[41] / *Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Regulatory Plan to succeed Price Cap Regulation for Verizon New England, Inc. d/b/a Verizon Massachusetts' intrastate retail telecommunications services in the Commonwealth of Massachusetts*, Massachusetts Department of Telecommunications and Energy Docket No. DTE 01-31-Phase II, *Order*, April 11, 2003 ("DTE 01-31-Phase II Order"), at 95.

[42] / *Id.*, at 96, 100-101.

> concluded that because price cap regulation introduces a financial incentive for the regulated firm to reduce costs, a well-designed price cap plan must also include some form of protection against reduction in service quality . . . The Department's adoption of a price cap form of regulation for Verizon therefore included a service quality plan designed to evaluate the overall level of service provided by Verizon to its retail customers.
>
> Although Verizon is no longer subject to price cap regulation, competition for some customers may introduce a financial incentive for the regulated entity to reduce costs by reducing service quality to other customers, so we conclude that there should continue to be some form of protection against a reduction in service quality. Therefore, given that Verizon's residential retail services will be regulated under the alternative form of regulation we have established in this proceeding, the Department finds it reasonable and appropriate to continue a retail service quality plan and penalty mechanism for these services. While the decisions of other state utility commissions are not determinative, our approach is consistent with the actions of the California, Connecticut, Maine, New York, and Pennsylvania utility regulatory commissions, which have continued to require service quality plans for Verizon under alternative regulatory regimes (see Exh. DTE-VZ 1-8).[43]

The Department also ruled that monitoring Verizon MA's service quality without monitoring other carriers' service quality was not discriminatory because "Verizon continues to be classified as a dominant provider of telecommunications services in Massachusetts for both business and residential services."[44]

Q: Were the specific metrics originally contained in the SQI changed in D.T.E. 01-31-Phase II?

A: No. My understanding is that the metrics are the same as they were established in 1995.[45]

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[43] / *Id.*, at 98-99.

[44] / *Id.*, at 99-100.

[45] / See, e.g., DTE 01-31-Phase II Order, at 97. See, also, Petition of New England Telephone and Telegraph

Q: Did any party argue that the metrics that make up Verizon MA's Service Quality Plan may be outdated?

A: Yes. The Attorney General suggested that the standards may be outdated because most of the metrics were based on 1992-1993 performance data.[46] In its DTE 01-31-Phase II Order in April 2003, the Department indicated that it would consider whether it should conduct a "comprehensive review of Verizon's retail service quality and service delivery throughout the state."[47] In the interim, the Department stated, it would continue Verizon MA's then current Service Quality Plan to "ensure that retail customers continue to receive customary levels of service quality while the Department conducts its review."[48]

Q: What was the result of that review?

A: I have not found any subsequent Orders by the Department that indicate that such a review was completed.

Q: What are the specific metrics that make up the SQI?

A: The metrics, or measures, generally fall into three categories: maintenance service, installation service, and service response. The plan includes a "standard" level and "target" level of performance for each metric. Verizon Massachusetts earns one point for

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Company d/b/a NYNEX for an Alternative Regulatory Plan for the Company's Massachusetts intrastate telecommunications services, D.P.U. 94-50, *Order*, May 12, 1995.

[46] / DTE 01-31-Phase II Order, at 100. See, also, Petition of New England Telephone and Telegraph Company d/b/a NYNEX for an Alternative Regulatory Plan for the Company's Massachusetts intrastate telecommunications services, D.P.U. 94-50, *Order*, May 12, 1995, at 250 (stating that Verizon MA maintained an SQI between 33 and 37 on monthly rolling average basis between April 1993 and April 1994 and concluded that a 33 point threshold was appropriate).

[47] / DTE 01-31-Phase II Order, at 100.

[48] / *Id.*, at 101.

each metric for which it provides service at or above the standard level, but still below the target level. Verizon Massachusetts earns two points if it provides service at or above the target level. The specific metrics and the associated standard performance levels and target performance levels are shown in Table 1 below.

Table 1

Verizon Massachusetts Service Quality Plan Measures[49]

Measure	Standard	Target
Maintenance Service Items		
Network Trouble Report Rate (per hundred lines)	2.25	1.90
Percent of Troubles Cleared within 24 Hours – Residence	60%	70%
Percent of Troubles Cleared within 24 Hours – Business	75%	85%
Installation Service Items		
Percent of Appts Missed for Company Reasons – Total	2.5%	1.5%
Percent of Appts Missed for Company Reasons – Residence	2.5%	1.5%
Percent of Appts Missed for Company Reasons – Company Facilities	1.25%	1.15%
Percent of Installation Trouble Reports	6.0%	5.5%
Service Response Items		
Directory Assistance Average Speed of Answer (seconds)	4.0	3.6
Toll & Assist Average Speed of Answer (seconds)	4.0	3.6
Repair Resolution Center (Repair Service) Average Speed of Answer (seconds)	20	15
Residence Service Level (answer w/in 20 seconds)	60%	75%
Business Service Level (answer w/in 20 seconds)	60%	75%

Q: How is the SQI calculated?

[49] / Service Quality Plan, Section 2.

A: The SQI is a level of performance based on Verizon Massachusetts' achievement of the measures above. Verizon Massachusetts must score a total of 33 points in order to avoid the financial penalty (the payment of credits to customers). The five service response items in the above table are reported on a statewide level and represent a possible 10 points. The seven measures in the installation and maintenance categories in the above table are reported separately for each of the three "operations geographies"[50] and represent a total of 42 points. The overall SQI score could theoretically total 52 points if Verizon Massachusetts provided service at or above the Target level for all measures.[51]

Q: Is the SQI the only criteria within the Service Quality Plan?

A: No. The plan also includes a "Standard Miss Criteria." In order to avoid the penalty, Verizon Massachusetts must score 33 points on the SQI and must not perform below the "Standard" level (i.e. score zero points) for more than two measures on a statewide basis in a given month.[52]

Q: When is a penalty assessed?

A: According to the Service Quality Plan, the penalty its assessed at the end of a calendar year and is calculated as one-twelfth of one percent of total annual retail revenue for each month that Verizon Massachusetts failed to either obtain 33 SQI points or meet the

[50] / The geographic regions are MassBay SBU, North/Northeast SBU, and BayPath SBU. A list of wire centers contained in each region is attached as Exhibit SMB-1 (Verizon's response to AG-VZ 1-8). Verizon indicates that the three districts are used solely for reporting the Monthly Service Quality Reports and that Verizon does not use the districts "for purposes of performing any functions, assigning resources or making decisions. The BayPath SBU includes not only Western Massachusetts, but also many communities in Eastern Massachusetts. Verizon response to AG-VZ 1-8.

[51] / Service Quality Plan, at 3-4.

[52] / *Id.*, at 4.

"Standard Miss" threshold.

Q: Are there exemptions and waivers allowed under the plan?

A: Yes. Verizon MA must petition the Department to have the monthly service results modified for such exemptions as natural disasters or emergency situations that are beyond the Company's control. The plan states: "Any petition pursuant to this provision must demonstrate clearly and convincingly the extraordinary nature of the circumstances involved, the impact that the circumstances had on Verizon MA's service quality, why Verizon MA's normal, reasonable preparations for difficult situations proved inadequate, and the specific days affected by the event. The petition must be filed within 45 days from the end of month in which the event occurred."[53]

Q: Verizon MA suggested in comments that the regional service quality investigation is unjustified. How do you respond?

A: Verizon stated in its comments:

> Performance that exceeds the target level established by the Department cannot be interpreted as being "unreasonable" or warrant a regional investigation. That the RPHL rate may differ from one portion of the state to another is neither surprising nor a cause for concern or an investigation. There will be differences between rural and urban areas, between densely populated and sparsely populated regions and between areas served by different types of outside plant, and these differences may have nothing to do with the level of service quality provided by Verizon MA. There will also be deviations from month to month and when service is affected by particularly severe weather. This is especially so in a region like western Massachusetts, which is subject to more harmful storms than the eastern portion of the state. But where the service-quality data show that Verizon MA's performance has met and exceeded the targeted performance level across the region over a significant period of time, there is no "regional problem" that bears

[53] / *Id.*, at 6.

investigation.[54]

However, although I am not an attorney, the statute is clear that the Department has broad authority to examine Verizon Massachusetts' service quality. If communities in Massachusetts state that they continue to experience poor service quality and the Department concludes that there is evidence that Verizon MA is providing poor service to a few, some, or many customers, those findings may suggest that the Service Quality Plan as it is currently constructed is a poor indicator of actual performance and fails to provide the proper incentives for Verizon Massachusetts to provide adequate service quality in Western Massachusetts and/or throughout Massachusetts. I discuss the failure and weaknesses of the Service Quality Plan in more detail in Section IV below.

[54] / Comments of Verizon New England, Inc. re Proposed Regional Service Quality Investigation, February 23, 2009, at 8.

III. SERVICE QUALITY ANALYSIS

Western Massachusetts corresponds with the "413" area code.

Q: Please describe the geographic region that Western Massachusetts encompasses.

A: Western Massachusetts corresponds with the "413" area code, which in turn corresponds with the "Western LATA, LATA number - 126."[55] Western Massachusetts includes 101 municipalities[56] served by 63 wire centers in the Berkshire, Franklin, Hampden, and Hampshire counties. Exhibit SMB-2, which reproduces Verizon's response to AG-VZ 2-4, shows the municipalities that each Western Massachusetts wire center serves. Exhibit SMB-3 provides a map of the Western Massachusetts region of the Commonwealth.[57]

Q: How does Western Massachusetts relate to the three SBUs that Verizon uses for reporting service quality information to the Department?

A: Verizon reports data in its monthly service quality reports for three districts: "North/Northeast" (which, in turn, includes "Metro North" and "Northeast"); "MassBay" (which, in turn, includes "Boston" and "Southeast"); and "BayPath" (which, in turn includes "Springfield" and "Marlboro"). As Exhibit SMB-1 shows, the Western Massachusetts wire centers are included in the Springfield portion of the BayPath SBU, and the majority of the BayPath lines likely correspond with Eastern Massachusetts

[55] / At the time of the 1984 divestiture of Bell operating companies' local operations from their long-distance operations, the Modified Final Judgment created Local Access and Transport Areas ("LATA") to distinguish between areas within which Bell operating companies could offer service and between which they were prohibited from so doing. Massachusetts has two LATAs, which now, as result of the FCC's approval of Verizon's "Section 271" long-distance (interLATA) authority no longer are germane to Verizon's ability to provide service.

[56] / http://www.sec.state.ma.us/ele/elecct/cctidx.htm

consumers.[58]

Q: How many lines are served by each of the wire centers in Western Massachusetts?

A: Confidential Exhibit SMB-C-4, which reproduces Proprietary Attachment AG-VZ 3-8, provides access line data by wire center, and shows that, in total, Verizon serves **[CONFIDENTIAL]** in Western Massachusetts.

Q: Is there data regarding the size of Western Massachusetts businesses that rely on Verizon's public switched telephone network?

A: Such information is forthcoming. In response to AG-VZ 7-6 (regarding the study referenced in response to AG-VZ 3-81), Verizon indicates that it will provide the requested data by the end of December 2009. The original request by the Attorney General sought quantities of business lines separately for customers that subscribe to (1) one line; (2) two to four lines; (3) five to fifteen lines; and (4) more than 15 lines.

Q: Have you analyzed revenue and expenditure data separately for Western Massachusetts?

A: No because these data were not available. Verizon maintains consolidated financial statements for Massachusetts.[59] Verizon's statewide intrastate regulated revenues in

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[57] / Verizon response to AG-VZ 3-47.

[58] / As Exhibit SMB-1 shows, the Marlboro district within the BayPath SBU encompasses approximately 14 more wire centers than does the Springfield district within the BayPath SBU; also the Marlboro district may include more densely populated areas than does the Springfield district.

[59] / Verizon response to AG-VZ 3-84.

2008 wer approximately $1.163 billion.[60]

Analysis of Verizon's ARMIS service quality data and data provided in discovery responses indicates increasing installation intervals.

Q: Did you examine service quality data available from the FCC?

A: Yes. Large telecommunications companies such as Verizon are required to report various financial, operational, and service quality data to the FCC through the Automated Reporting Management Information System, or ARMIS.[61] Based on my review of the ARMIS Report 43-05, I analyzed average installation intervals, initial and repeat trouble reports per 100 lines, and out of service intervals.

Q: The ARMIS data you examined are aggregated at the state-level. Why is that dataset relevant to a proceeding concerned only with Western Massachusetts?

A: These data are important because they provide a relatively long time series of data that show broad trends in service quality. Even though these data are not specific to Western Massachusetts, they help put Western Massachusetts-specific data in context. I also note that these ARMIS data are reported on an annual basis.

Q: What did your analysis of the average installation intervals show?

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[60] / Verizon response to AG-VZ 3-6.

[61] / As a result of orders issued by the FCC in several "forbearance" proceedings, beginning in September 2010, Verizon may discontinue reporting ARMIS data. "Commission actions taken in the AT&T Cost Assignment Forbearance Order, the ARMIS Forbearance Order, and the ARMIS Financial Reporting Forbearance Order, result in major revisions to ARMIS data filed for reporting year 2008. Following is a chronological listing of these revisions. . . Also, in the ARMIS Forbearance Order, the Commission decided to forbear from the rules requiring that carriers file ARMIS Reports 43-05 and 43-06 provided that the carriers committed to file the data voluntarily for 24 months after September 6, 2008." http://www.fcc.gov/wcb/eafs/help/system_changes.html.

A: The average installation interval measures the length of time between a customer ordering local exchange service and when installation is complete. Installation intervals are significantly elevated from just a few years ago. Average installation intervals for all residential customers rose from 0.8 days in 2005 to 2.4 in 2008.[62] Installation intervals for all business customers rose from 1.5 days in 2005 to 2 in 2008.[63] However, non-MSA[64] residential customers experienced the longest delays for service installation in 2008: 5.9 days.[65] Figure 1 below shows that the average installation interval for non-MSA residential customers has lengthened each year since 2005, a troubling trend.

[62] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 134.

[63] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 134.

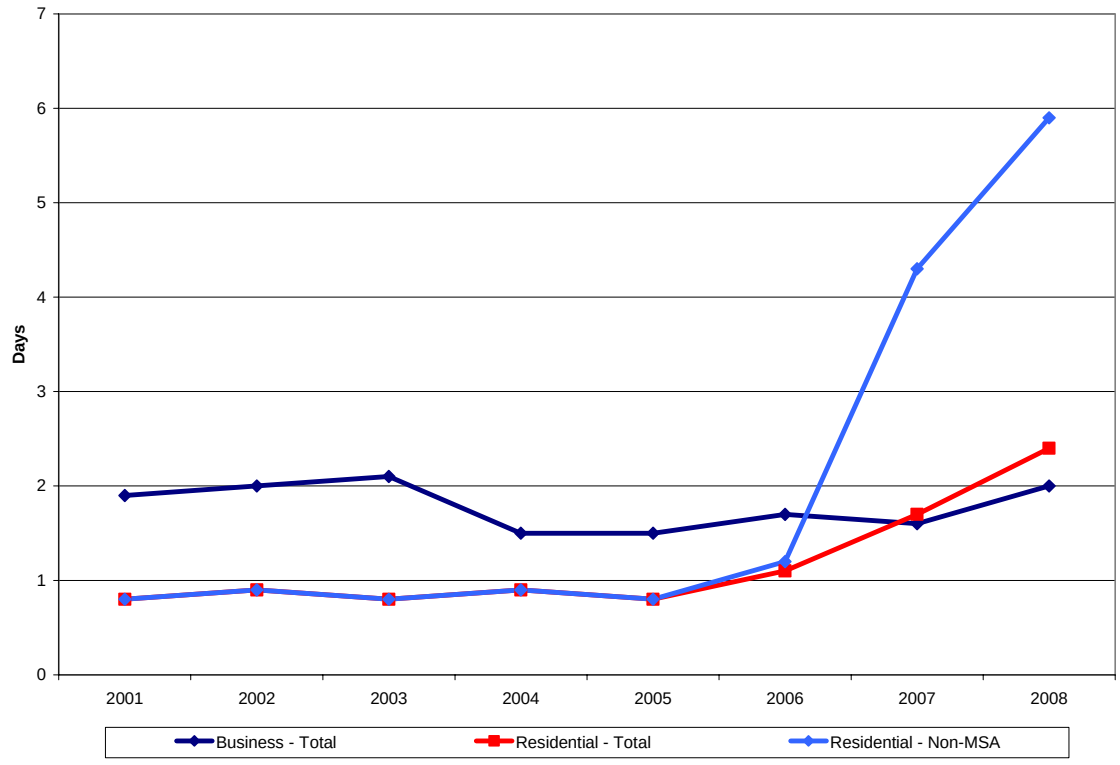
[64] / According to ARMIS instructions, "MSAs, or Metropolitan Statistical Areas, are designated by the Office of Management and Budget in a list following each decennial census. An MSA is a Core - Based Statistical Area associated with at least one urbanized area that has a population of at least 50,000. The Metropolitan Statistical Area comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting." http://www.fcc.gov/wcb/armis/instructions/#4305.

[65] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 134.

THIS DOCUMENT HAS BEEN REDACTED.

Figure 1[66]

Average Installation Interval, Verizon Massachusetts, 2001 – 2008



Q: Why is it important to look at non-MSA customers in particular?

A: Examining the service quality of non-MSA customers is important because these customers are geographically isolated, and may live in the areas in Western Massachusetts relevant to this investigation.[67]

[66] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 134.

[67] / ARMIS data show that of Verizon's 2.6 million Massachusetts access lines, about 31,000 are designated as non-MSA. FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 140.

Q: Did you examine Verizon's average installation interval for Western Massachusetts?

A: Yes. In response to AG-VZ 3-23, Verizon provided average installation times by wire center in Western Massachusetts. Data for January through August 2009 shows that installation is not particularly speedy in Western Massachusetts. For each wire center, I averaged the installation interval over the nine months and then examined the distribution of the results. My analysis shows that customers in **[CONFIDENTIAL]** of the wire centers waited an average of more than three days for basic local service to be installed. Table 2 below shows the full distribution of installation interval for this period.

Table 2

Distribution of Average Installation Intervals for Western Massachusetts, January – August 2009

[CONFIDENTIAL]

Q: What else do these data show?

A: Because these data are averaged for each wire center, they mask individual installations that involved extraordinarily long waits for particular residential and business customers. To put it another way, a wire center average of, for example, 6.5 days, necessarily masks the fact that some installations in that wire center took more time, and some less time.

Q: Did any particular wire centers stand out as experiencing particularly long installation intervals?

A: Yes. Over the nine months I examined, the following wire centers had three or more

months in which the average installation interval was greater than 6 days:

[CONFIDENTIAL]

Q: Between January and August 2009, what was the wire center with the longest average installation interval, and how long was it?

A: The data show an average installation interval of **[CONFIDENTIAL]** days for West Stockbridge in May 2009.

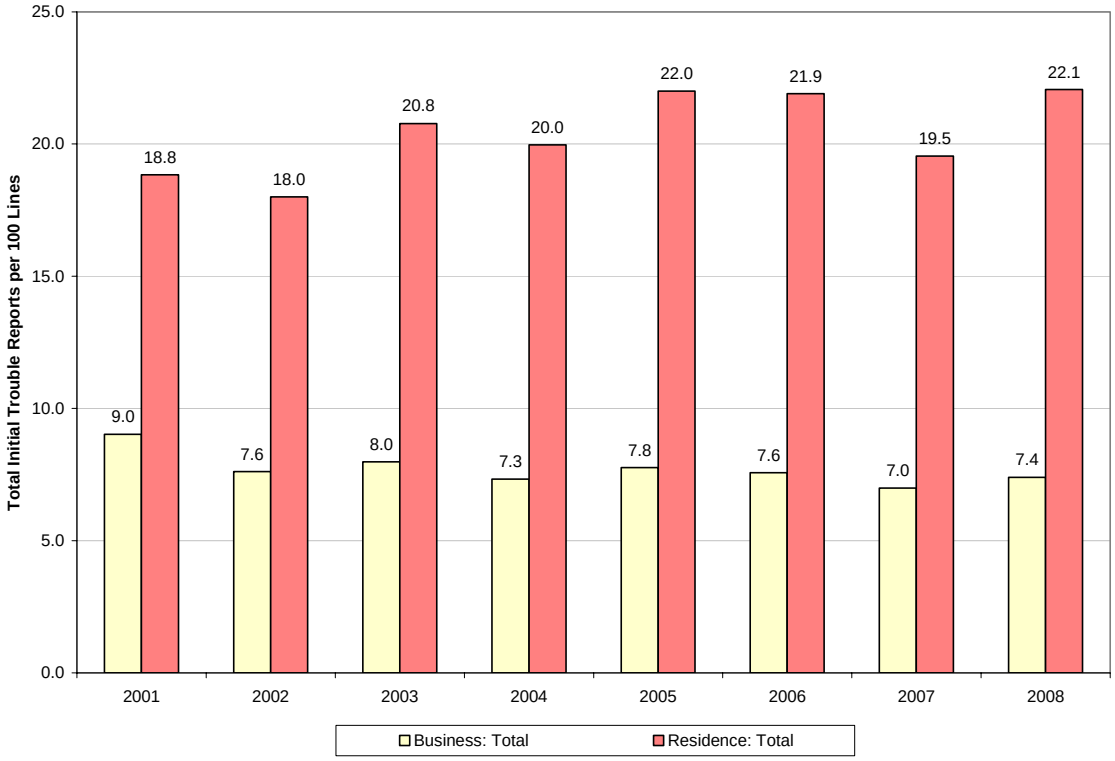
An analysis of trouble reports, speed of repair, and repeat troubles suggests that Verizon MA is not meeting its service quality obligations to provide adequate service quality to residential consumers.

Q: What did your analysis of the FCC's ARMIS data reveal about the frequency of trouble reports?

A: Trouble reports are complaints by customers that telephone service quality is poor. In some cases, the problem may be noise on the line, or some other "service affecting" problem. In other cases, the problem may be a complete lack of dial tone. For every year from 2001 through 2008, residential customers reported far more problems than business customers. Furthermore, the trend for residential customers is not improving. Figure 2 below shows the record for total initial trouble reports per 100 lines separately for business and residential customers.

Figure 2[68]

Total Initial Trouble Reports per 100 Lines, Verizon Massachusetts, 2001 – 2008



Q: What do the ARMIS data show about Verizon's responsiveness to requests for repairs?

A: Speed of repair is measured in ARMIS by the metric "out of service interval." This refers to the length of time between the report of a service outage, and restoration of service. Figure 3 shows that, in 2008, residential customers waited an average of 34.1 hours for service to be restored after an initial out of service problem, nearly twice as

[68] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Rows 140, 144, and 146.

long as business customers, who waited an average of 17.8 hours for repairs.[69]

Q: How does Verizon's 2008 record for repair times for residential customers compare with previous years?

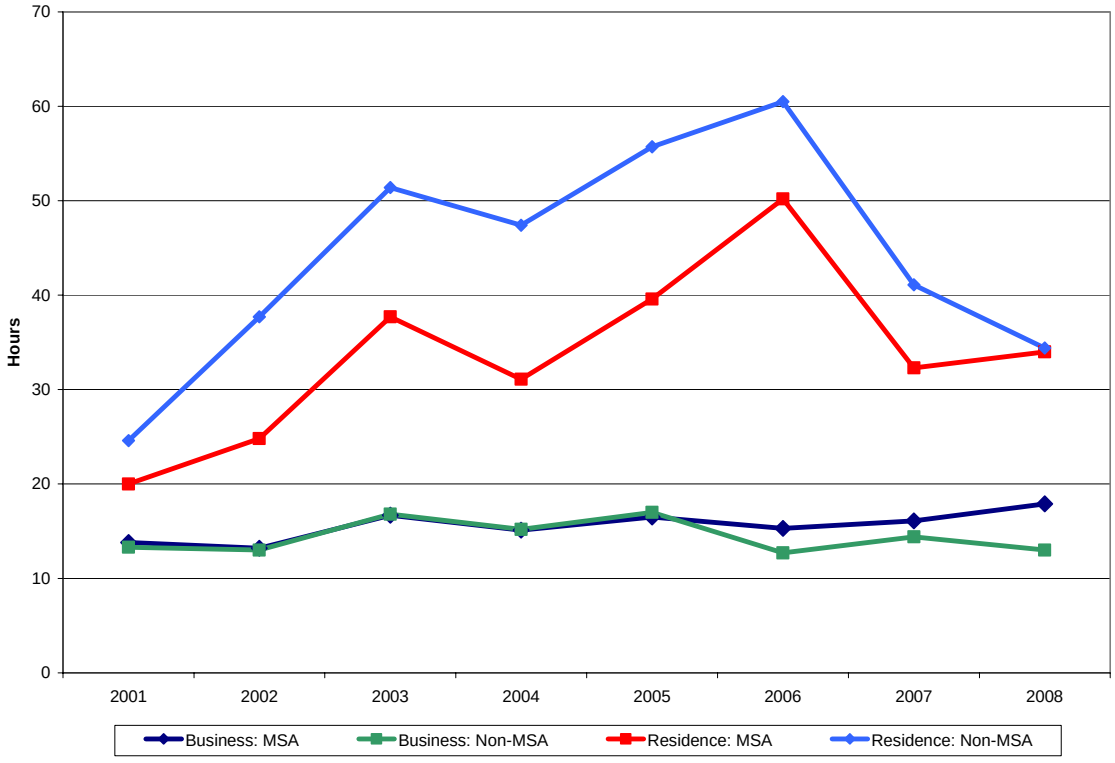
A: While an improvement from the years 2003 to 2006, the 2008 record for residential customers still falls short of the performance of 2001, when residential customers as a whole had repairs completed in an average of 20.5 hours.[70] In 2008, households waited, on average, approximately 66% longer to have basic local service installed than they did in 2001. Figure 3 below shows initial out of service repair intervals separately for residence MSA, residence non-MSA, business MSA, and business non-MSA customers.

[69] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Rows 145.

[70] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Rows 145

Figure 3[71]

Initial Out of Service Interval, Verizon Massachusetts, 2001 - 2008



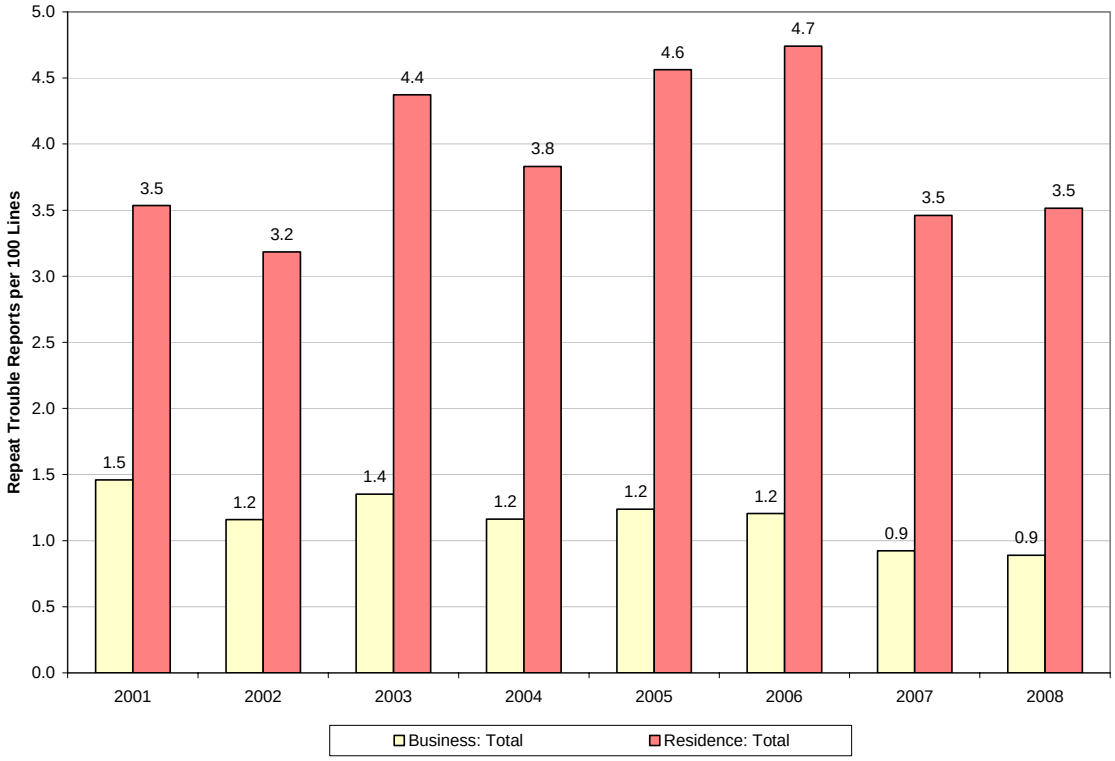
Q: What do ARMIS data show about repeat trouble reports?

A: Repeat trouble reports are problems that are reported within 30 days of an initial trouble report on the same line. Figure 4 below shows that residential customers report more than three-times as many repeat troubles as business customers.

[71] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Rows 145

Figure 4[72]

Repeat Trouble Reports, Verizon Massachusetts, 2001 - 2008



Q: How quickly does Verizon respond to repeat out of service troubles?

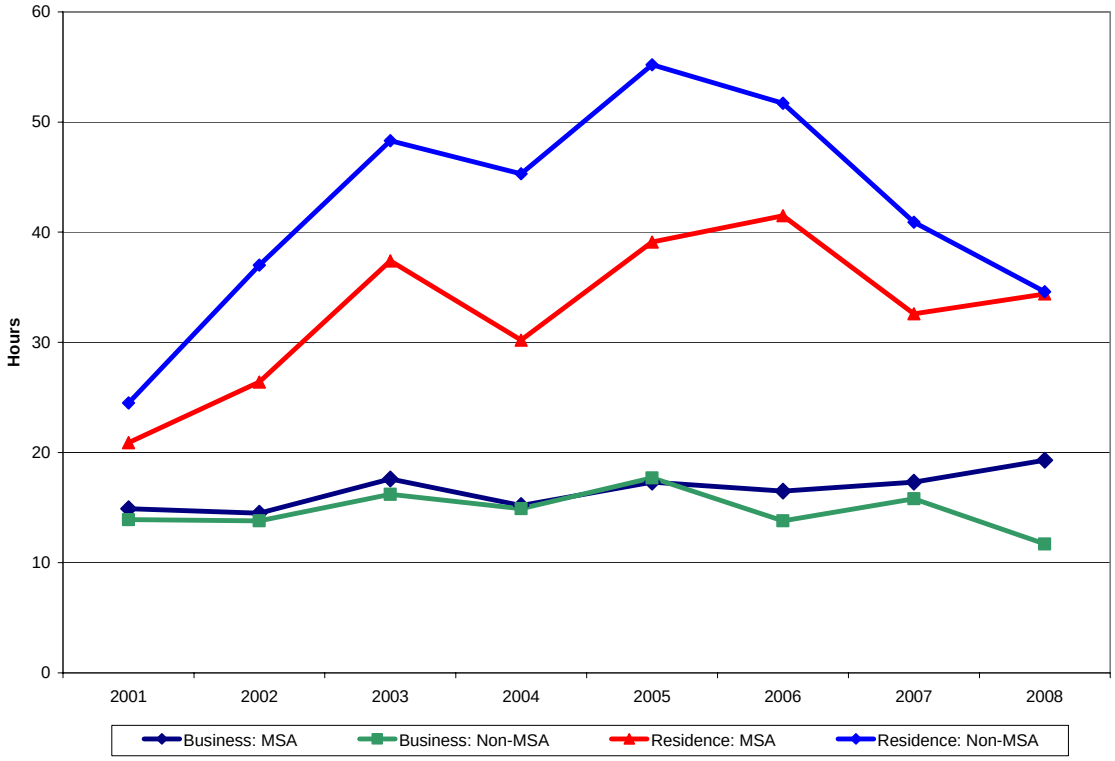
A: As in the case for initial out of service repairs, the time required for repeat out of service repairs improved in 2008 for non-MSA customers, but deteriorated for MSA customers. Considering all customers together, Figure 5 shows that repair times in 2008 averaged 31.8 hours, which is about 52% longer than the average interval in 2001: 20.9 hours.[73]

[72] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Rows 140, 148, and 150.

[73] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local

Figure 5[74]

Repeat Out of Service Repair Interval, Verizon Massachusetts, 2001 – 2008



Q: Please explain again the relevance of your analysis of ARMIS data to this proceeding.

A: The ARMIS data, which the FCC collects from incumbent local exchange carriers and reports on its web site, allow one to examine, among other things, historic trends, and, in some instances, metrics that are not reported to state regulators. Although the ARMIS

Service), Row 149.

[74] / FCC Report 43-05, the ARMIS Service Quality Report, Table II. Installation and Repair Intervals (Local Service), Row 149.

data that I analyzed correspond with Verizon's operations throughout Massachusetts, I am unaware of any information to suggest that, based on ARMIS data, Verizon's service quality in Western Massachusetts between 2001 and 2008 was better than it was in Eastern Massachusetts, and, indeed, my analysis of data submitted in this proceeding as well as my comparison of MSA and non-MSA data suggest that such a situation was unlikely.

Consumers wait long times for out-of-service ("OOS") troubles to be repaired, yet the Department does not now monitor the clearance of OOS troubles and Verizon is not specifically accountable for the timeliness of its repair of OOS.

Q: Did you analyze the timeliness of Verizon's repair of out-of-service troubles?

A: Yes.

Q: Verizon's monthly quality of service reports, which correspond with the SQI metrics, do not track OOS information separately.[75] Why then did you analyze OOS data?

A: The OOS is an important component of trouble reports. With service affecting ("SA") troubles, such as static on the line, consumers can continue to use their telephone to communicate. In sharp contrast, an out-of-service line is unusable,[76] and, for this reason, the trouble is significant and therefore merits particular analysis by the Department.

[75] / Verizon indicates that of the states where Verizon operates as incumbent local exchange carrier, Massachusetts is the only state that has regulatory metric for percentage of troubles cleared within 24 hours, that is, where Verizon has a metric for all repairs, not just OOS. Verizon response to AG-VZ 1-11.

[76] / Verizon considers troubles to be OOS when a line has no dial tone, cannot call out, cannot be called, or the customer states that the line is unusable. When a customer designates the trouble as anything else, it is recorded by the Verizon Repair Resolution Center as a service affecting trouble. Verizon response to AG-VZ 6-15.

Q: Please explain this metric in more detail.

A: The total quantity of troubles that customers report to Verizon (whether OOS or SA) is reflected in the trouble report rate (i.e., the number of troubles that are reported per one hundred lines), which Verizon reports to the Department. The trouble report rate ("TRPHL") is a barometer of the infrastructure – if a network is in relatively good condition, customers will report relatively fewer troubles. The timeliness of repair is a separate barometer of service quality and encompasses Verizon's timeliness of repairing out-of-service and service-affecting troubles.

Q: Did Verizon provide an overview of disposition codes and the process of assigning disposition codes to trouble reports?

A: Yes. Verizon MA's response to IBEW-VZ 1-1 explains the flow process for repairs. When a customer makes a complaint about service, the Repair Agent interviews the customer and enters the report into the "VRepair" system. VRepair performs tests to determine which repair group is responsible for the repair. A trouble identified as a Central Office problem is routed to a Central Office Technician ("COT") for resolution. After resolving the problem the COT closes the trouble ticket with the appropriate disposition code. A trouble identified as a field issue is routed by VRepair to Work Force Administration – Dispatch Out ("WFA-DO"), which dispatches a Splice Service Technician ("SST") to the location of the problem. After repairing the problem, the SST closes the trouble report with the appropriate disposition code.[77] Verizon states that

[77] / Verizon response to IBEW-VZ 1-1.

trouble tickets cannot be closed without a trouble resolution,[78] and that disposition codes cannot be changed after the trouble ticket is closed.[79]

Q: Did Verizon provide a list of disposition codes used to describe service troubles?

A: Yes. Verizon provided the Disposition Codes as an attachment,[80] which I include as Exhibit SMB-5. This document states that "Disposition codes are used to reflect the type trouble found on the Network circuit."[81] In response to another discovery question, Verizon summarized the organization of the disposition codes:

> Codes beginning with a 3 represent troubles in wire or equipment between the pole and the Verizon/customer interface at the home. Codes beginning with a 4 represent troubles in the plant infrastructure, such as cable and terminal boxes, from the pole serving the customer back to but not including the central office. Codes in the 5 range are troubles in the central office. Codes that begin with a 7 are troubles closed by the Voice Response Resource Center ("VRRC") or Dispatch Resource Center ("DRC") without a dispatch. (For example: a customer calls back and says everything is ok now). Codes in the 9 range are used when the Verizon MA technician's tests in the field indicate that there is no trouble with the network to the network interface device. Additional codes such as those beginning with 6 (any customer action such as customer's refusal to give access or a customer's misuse of a calling feature and 12 (customer equipment and wire) are not part of the Network Trouble Report Rate ("NTRR") as per DTC guidelines.[82]

Q: Please elaborate on why you analyzed OOS data separately from service affecting troubles.

A: As I demonstrate in more detail below in this section of my testimony, the timeliness of

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[78] / Verizon response to DTC-VZ 2-4.

[79] / Verizon response to DTC-VZ 2-6.

[80] / Verizon response to IBEW-VZ 1-8 Attachment.

[81] / Verizon response to IBEW-VZ 1-8 Attachment, at 1.

[82] / Verizon response to DTC-VZ 2-1.

Verizon's repair of consumers' out-of-service status for their basic dial tone line has deteriorated sharply. The delay in repairing dial tone causes societal costs and jeopardizes safety. A non-functioning telephone denies consumers connection to social services, economic transactions, and every-day interactions. Elderly consumers, who live alone, and particularly those elderly who are less adept with (or may not even own) wireless telephones, should not lack reliable access to the public switched telephone network. Consumers who reside and work in areas with poor wireless coverage are particularly harmed by unreliable wireline service.

Delays in repairing out-of-service troubles harm most those who are isolated and those who must reach emergency personnel in a timely and reliable manner. The longer customers must wait for service to be restored, the greater the potential harm.

Q: Could you provide some examples of how wireline service affects the welfare of western Massachusetts' consumers?

A: Yes.

- Wireline service may be more important to a household in a remote area that undergoes frequent power outages or where the restoration of electricity service may be delayed than to a household in an urban area, where customers are more likely to have more rapid restoration of electricity and where customers live closer to emergency services. For example, in Massachusetts, some homes were without electricity for at least eleven straight days last year as the result of a major ice storm.[83] A wireline connection may be particularly valuable to these customers.

[83] / "Fitchburg councilor says Unitil couldn't explain why his neighborhood didn't have electricity yet," http://www.sentinelandenterprise.com/ci_11294615, site visited, December 23, 2008. *See also* D.P.U. 09-01-A (2009).

- Some elderly customers living alone (or living with others who leave the house for work and other reasons) may be less familiar with wireless service than the general population, may forget how to use wireless phones, and may forget to charge their wireless phones. A wireline connection may be particularly important to these households.

- Wireline service may be particularly important to households with young children because, for example, when parents leave their children in the charge of babysitters, it could be important to parents that babysitters have reliable and predictable access to wireline connections in the event of an emergency.

All consumers, regardless of their age and health, are harmed by prolonged disconnection from the public switched network.[84] Clearly, for some households, the burden, risk to safety, and harm is greater than for others.

Q: What percentage of total troubles reported are typically out-of-service troubles?

A: Three-fourths (that is, 85,187) of the 113,693 troubles reported between September 2007 and August 2009 in Western Massachusetts were out-of-service troubles and the remaining 28,506 troubles were service-affecting troubles.[85]

Q: What did you find with regard to the speed of restoration of service?

A: For the year of data reported by Verizon, from September 2008 through August 2009, Verizon succeeded in restoring service in under 24 hours to residential customers in Western Massachusetts only 50% of the time.[86] During three of these twelve months (September 2008, November 2008, and August 2009), fewer than 40% of service outages

[84] / Harm is also caused to consumers who continue to have service but who cannot reach or be reached by those consumers who lack dial tone.

[85] / Response to AG-VZ 6-26, attachment (reproduced as Exhibit SMB-6).

[86] / Response to AG-VZ 3-20. The chart provided in response to AG 3-20 is based on 35,031 reports. Verizon response to IBEW-VZ 7-7.

were remedied within 24 hours. Over the course of this year, Verizon managed to remedy Western Massachusetts residential out of service problems within 48 hours only 76% of the time.[87]

Q: Were you able to examine more detailed OOS data for Western Massachusetts?

A: Yes. Verizon provided data regarding the number of out of service troubles and the number of these troubles (for all customers) that were remedied within 24 hours for each wire center in Western Massachusetts. During 2009, **[CONFIDENTIAL]** of out of service troubles were fixed within 24 hours in Western Massachusetts.[88]

Q: Did some areas have a particularly bad record with regard to the speed of OOS remediation?

A: Yes. Table 3 shows the wire centers where fewer than 50% of the OOS troubles were cleared within 24 hours over this period.

Table 3[89]

Western Massachusetts Wire Centers with Longest Waits for Service Restoration

January through August 2009

[CONFIDENTIAL]

Q: What do you conclude based on your analysis?

[87] / Response to AG-VZ 3-20. See also Verizon's response to AG-VZ 1-5, which I have reproduced as Exhibit SMB-7, and which shows the percentage of OOS (residential and business) cleared within 24 hours by month, from September 2007 through August 2009.

[88] / Proprietary Response to AG-VZ 3-23 Attachment B4. These data cover the period from January 2009 through August 2009. I have included Verizon's complete response to AG-VZ 3-23, Attachment B (for the years 2006 through 2009) as Confidential Exhibit SMB-C-8.

[89] / Proprietary Response to AG-VZ 3-23 Attachment B4.

A: Customers are waiting too long to have their basic local dial tone repaired. With respect to this metric, Verizon MA's performance is inadequate.

Q: Does the repair metric exclude nights and/or weekends and holidays in its calculation of the 24 hour period?

A: That is not my understanding. There are no time exclusions in the metric definitions contained in the Service Quality Plan.

Verizon MA's position that consumer preference drives declining service quality is unconvincing.

Q: Did Verizon address consumers' preferences regarding the timeliness of repair in response to discovery requests?

A: Yes. Verizon states:

> Verizon MA believes that customers generally do want landline dial tone installed and repaired quickly, but the widespread use of cell phones and two-adult working families has rendered speedy repair and installation of landlines less important to many customers than it was the past. As a result, it is often more important to customers that service be installed or restored at their convenience, even if that means the work is not performed as soon as it otherwise could have been.[90]

Q: Has Verizon conducted any studies to compare customer expectations to the standards in the Department's Service Quality Plan?

A: No.[91]

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[90] / Verizon response to AG-VZ 5-3. See also Verizon's response to AG-VZ 5-1, in which Verizon asserts that in its "experience, it has become more common in recent years for customers to defer repair and installation appointments to a time more convenient to them, rather than take the first available time." Verizon states further in the same response: "Current reporting of performance on this metric for troubles cleared within 24 hours does not take account of this preference."

[91] / Verizon response to AG-VZ 5-1. Verizon also has not conducted, in the past five years, any studies, surveys, or analyses of the trade-off that basic local exchange customers would be willing to make between the

Q: Is Verizon's rationale for slow repair persuasive?

A: No. I am not persuaded by Verizon's response for several reasons, including, but not limited to the following:

- Verizon has not provided any empirical analyses, surveys, or studies to support its assertion that "it is often more important to customers that service be installed or restored at their convenience, even if that means the work is not performed as soon as it otherwise could have been."
- Elderly households are less likely to rely on cell phones than are other households, and also, of course, do not conform to the "two-adult working family" that Verizon describes.[92] (In the four Western Massachusetts counties, 14.4% of the population are 65 years of age or older, compared with 13.3% of the population in Eastern Massachusetts.[93])
- A parent at home caring for young children (or a family-based daycare giver who is responsible for multiple small children) may indeed seek speedy repair of basic local service because of a desire for access to emergency services.[94]

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prices they pay for basic local service and the quality of the service they receive. Verizon response to AG-VZ 5-2. Verizon also has not conducted any studies in the past five years of consumer preference regarding service quality levels for Western Massachusetts, Eastern Massachusetts, Massachusetts, or any other jurisdiction. Verizon response to AG-VZ 5-4.

[92] / Verizon response to AG-VZ 5-3.

[93] / U.S. Census Bureau, State and County Quickfacts, available at http://quickfacts.census.gov/qfd/states/25/25003.html.

[94] / AT&T and the National Emergency Number Association launched a campaign in July 2009 urging households to consider keeping a landline telephone for emergency purposes. See http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26916. See, also, Consumer Reports, "Using a cell phone as your home phone comes with a risk" May 11, 2009; FCC Fact Sheet on calling 911 from wireless phones: http://www.fcc.gov/cgb/consumerfacts/wireless911srvc.html.

- Verizon does not address households in which one or more members of the working adults telecommute.
- A small business may rely on its wireline telephone number to be reached by potential customers.

Q: Doesn't it make sense that it would be difficult for Verizon MA to meet metrics related to clearing OOS if two-worker families must take time from work to be home for the repair service?

A: That might be the case in a small, potentially insignificant number of instances. The Attorney General asked Verizon MA for the percentage of instances where it is necessary for customers to be home in order to repair an out-of-service dial tone and also asked Verizon MA to describe the circumstances that require customers to be in the home to enable Verizon to repair OOS.[95] Verizon MA responded that it does not keep records in a manner that would allow it to calculate the percentage of instances where it is necessary to access the inside of the home to repair OOS. Verizon MA suggested that it would need access to the home in instances where the Network Interface Device ("NID")[96] is in the home or where the problem is related to inside wire trouble. If the problem is at the

[95] / AG-VZ 1-4.

[96] / A NID is the demarcation point between the "outside wire" for which Verizon has responsibility and the "inside wire" for which customers have responsibility. During the 1980s , the Federal Communications Commission deregulated inside wire, meaning that any work that Verizon does on the customers' side of the NID is considered an unregulated activity. Customers can choose to do their own inside wiring to their telephone sets, hire an electrician to do the wiring, or purchase Verizon's deregulated inside wiring maintenance and repair services. Troubles related to inside wiring, therefore, have no bearing on the Department's oversight of Verizon's service quality for its basic local exchange service. Federal Communications Commission (FCC) Order in FCC Docket 70-105 dated February 24, 1986. The FCC Order deregulated inside wiring and prohibited state regulation of inside wiring as of January 1, 1987.

central office, Verizon MA stated, no access to the home is required.[97] However, Verizon MA acknowledged that most NIDs are located on the outside of the home and that inside wire problems are not included in the trouble report rate.[98] In addition, Verizon MA stated that "[g]enerally a customer need not be home where Verizon can restore service without having access to the customer's premises, most often when the cause of the problem is with Verizon MA's outside plant."[99]

Q: What is the basis of your assertion that the elderly are less likely to use cell phones than are other households?

A: A report released by the Centers for Disease Control and Prevention ("CDC"), based on the National Health Interview Survey, states: "As age increased from 30 years, the percentage of adults living in households with only wireless telephone decreased: 21.6% for adults aged 30-44 years; 11.6% for adults aged 45-64 years; and 3.3% for adults aged 65 years and over."[100] Furthermore, in the case of a life-threatening medical situation, an elderly person should not need to look throughout her home to search out a cell phone in order to reach public safety. Instead, elderly consumers should be able to rely on the basic local connection to the public switched telephone network.[101]

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[97] / Verizon response to AG-VZ 1-4.

[98] / Verizon response to AG-VZ 6-16(a),(f).

[99] / Verizon response to AG-VZ 6-16(g).

[100] / Stephen J. Blumberg, Ph.D., and Julian V. Luke, Division of Health Interview Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention, *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2008*, released May 6, 2009, at 3 (available at: http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200905.pdf.),

[101] / Households that want to be sure they can always locate a telephone in the event of an emergency may have a corded wireline telephone, which is then always charged and available.

Q: Given that Verizon MA's explanation regarding OOS is not convincing and the current Service Quality Plan does not appear to address this service quality issue adequately, do you have a proposed solution?

A: Yes, I recommend that the Department consider the adoption of credits to consumers. I discuss the credit and its mechanics in Section IV below, which addresses overall remedies for Verizon MA's service quality.

Verizon's overall repair is slow, whether for out-of-service or for service-affecting troubles.

Q: Did you examine data regarding the mean time for Verizon to repair out-of-service troubles reported on all consumers' lines?

A: Yes. Verizon provided 44 months of data showing the mean time to repair out-of-service troubles, separately by wire center, for the **[CONFIDENTIAL]** wire centers.[102] Taking each month of data for each wire center as a separate data point, there are 2772 data points, or "wire center-months," to consider. The mean over all of the data points was **[CONFIDENTIAL]**. These initial summaries of the repair time show that customers must generally wait more than a full day for service to be remediated after a problem is reported. Furthermore, because this analysis averages performance over nearly four years and averages over all of the wire centers, it necessarily masks many fluctuations over time and throughout the region.

Q: What else do the out-of-service repair data show?

[102] / Proprietary Response to AG-VZ 3-23 (e). The 44 months are January 2006 through August 2009.

A: The data show that in **[CONFIDENTIAL]**, customers averaged more than a 48-hour wait for service to be restored.[103] Furthermore, because the data that I analyzed show average repair times by wire center averaged over 44 months, they do not show the range of wait times that individual customers within any particular wire center experience within any particular month. Also, even when viewed on an entire wire center basis, as my earlier discussion demonstrates, some customers must wait considerably longer than 48 hours to have their basic service restored. For example, customers served by the Housatonic wire center waited, on average, **[CONFIDENTIAL]** in November 2008 for their out-of-service lines to be repaired, with individual customers potentially waiting more than that amount.[104]

Q: Did you find any seasonal patterns in the mean time to repair out-of-service lines?

A: Yes. I found a clear pattern. Figure 6 below shows **[CONFIDENTIAL].** Because Figure 6 reflects averages, it does not convey the wide distribution of repair times that individual customers experience.

Figure 6
Seasonality in Mean Time to Repair

[CONFIDENTIAL]

Q: Did Verizon explain the reason for the seasonal variations in the time it takes to

[103] / Proprietary Response to AG-VZ 3-23 (e).

[104] / Verizon response to AG-VZ 3-23(e).

repair basic service?

A: Yes. Verizon explains that summer weather patterns (with increased storm activity, electrical storms and high winds) as well as the "influx of summer vacation activity," which requires seasonal service and maintenance activation affect the seasonal report rate in Western Massachusetts.[105] Verizon MA also indicated that "summer is the most popular vacation time for Verizon MA's own associates, further straining the company's ability to respond to trouble reports."[106] It may be appropriate for the Department to direct Verizon MA to take the steps necessary to ensure that it has adequate resources to meet seasonal peaks in demand, to protect consumers and communities from inadequate service quality.

Q: Why is it important for Verizon MA to meet seasonal demand?

A: Tourism is an important element of the economy in Western Massachusetts and therefore it is important that Verizon MA allocate resources to ensure adequate service quality during peak tourism months. Many outdoor, historic, and cultural destinations attract summer visitors throughout Western Massachusetts, providing stimulus to local economies. A robust, reliable telecommunications network is an important element of the local economy.

[105] / Verizon response to AG-VZ 6-14.

[106] / Verizon response to AG-VZ 6-14.

The monthly data that Verizon MA reports to the Department provides further evidence of Verizon MA's slow repair of troubles reported on consumers' lines.

Q: Did you review the data that Verizon MA submits to the Department in its monthly service quality reports?

A: Yes. The data indicate that Verizon MA never meets the standard, let alone the target for clearing residential troubles within 24 hours and that it usually meets the standard (at the statewide level) but never the target for clearing business troubles within 24 hours. I have included Verizon MA's most recent monthly service quality report (submitted October 22, 2009 for September 2009) as Exhibit SMB-9.

The use of a rolling average in the Service Quality Index masks poor performance in some months.

Q: What did you find when you examined Verizon MA's most recent Service Quality Report?

A: First, I examined the 12 month rolling average results, from which the SQI is derived. Statewide, the 12-month rolling average shows that Verizon missed not only the "target" threshold, but also the standard for every month (October 2008 through September 2009) for the metric "percent troubles cleared within 24 hours for residential customers." The standard threshold is 60 percent; the target threshold is 70 percent. Verizon's actual performance ranges from 48 to 51 percent (on a rolling average basis). These results support my recommendation for customer credits, which I discuss in more detail in Section IV below.

Business customers experienced slightly better service. The percent troubles cleared within 24 hours for business customers was a consistent 82 – 83 percent from October 2008 through September 2009. Although this meets the standard threshold for business customers (75%), it does not meet the target threshold (85%).

This pattern is repeated for two of the SBUs: Mass Bay SBU and North/Northeast SBU. The service quality report shows slightly more responsive time for business customers in the Bay Path SBU for five of the twelve months.

Q: Did you also examine the monthly actual results?

A: Yes. Comparing the monthly actual scores with the rolling averages, I found that the rolling averages mask especially poor performance in some months. For example, statewide, the *actual* percent troubles cleared within 24 hours for residential customers was only 43% in November 2008 and 44% in January 2009. In contrast, as I stated above, the range of *rolling averages* for this metric was 48% to 51%. For business customers, especially low *actual* scores occurred in November 2008 (78%) December 2008 (77%), and January 2009 (76%), well beneath the *rolling average* of 82%-83%. This holds true for the geographic regions as well. For example, for the Bay Path SBU, I found that the *actual* Network Trouble Report Rate was 3.57 in December 2008. The *rolling average* for Bay Path in December 2008, however, was only 1.66.

Q: What do you conclude from this analysis?

A: The use of the rolling average in scoring the SQI does not provide a complete picture of

service quality, and, therefore, harms customers. Customers experience extremes in the level of service quality received, as seen in the "monthly actual" component of the service quality report. Because this variation is averaged out over the course of a year, though, Verizon MA's performance appears to be more consistent than it really is. Furthermore, because the SQI uses rolling averages, Verizon MA avoids paying any penalty even though it misses standards in particular months. The use of rolling averages means that Verizon MA does not have to make the permanent commitment to provide high quality of service to customers. Instead, it can shift around resources so that it can strategically "patch" the rolling average, allowing it to "squeak past" the standards every month.

Q: Did Verizon provide other service quality data related to Western Massachusetts?

A: Yes. In response to AG-VZ 5-11, Verizon provided service quality data at the wire center level for all wire centers in Massachusetts, including the Eastern and Western parts of the state. I examined data for the most recent period provided, that is, for September 2009.[107]

Q: What does your analysis of these data for September 2009 show?

A: Aggregating all of the wire centers into two groups, Western and Eastern (where Western corresponds to the wire centers in Berkshire, Hampshire, Hampden, and Franklin Counties, and Eastern is the rest of the state), Western shows

[107] / Please refer to the entire Verizon response AG-VZ 5-11 which, because of its voluminous nature, I am incorporating into my testimony by reference.

[CONFIDENTIAL]. Table 4 below shows these results as a snapshot for September 2009.

Table 4[108]

Service Quality in Eastern and Western Massachusetts

[CONFIDENTIAL]

Q: But you have analyzed only a single month of data. How do you know that September 2009 is indicative of general patterns in Massachusetts?

A: I am not asserting that September 2009 is necessarily representative of all months, but it is the most recent month for which Verizon MA provided data in response to AG-VZ 5-11. In any event, I would caution the Department from relying exclusively on rolling averages for the reasons I discuss earlier in my testimony (including that such use masks problems that may be occurring in particular months).

Q: Are there other aspects of your analysis that are relevant?

A: Yes. Eastern Massachusetts encompasses a wide range of regions, including densely populated metropolitan areas, suburban areas and rural, sparsely populated areas. Therefore the average results for Eastern Massachusetts likely mask a wide range of service quality throughout the area.

It is important to recognize that average performance throughout Eastern Massachusetts does not shed light on the specific levels of service quality offered in the numerous

[108] / Verizon response to AG-VZ 5-11 attachment (a)

communities throughout the eastern part of the state.

Furthermore, even if and where service quality as measured by a particular metric for a particular time period may show reasonably comparable service in Eastern and Western Massachusetts, if the level of service quality being measured is inadequate throughout the state, then such reasonable comparability does not mean that service quality in Western Masssachusetts is adequate.

Q: Did you review the data that Verizon MA submits on a monthly basis to the Department regarding the timeliness of Verizon's repair of residential basic local exchange service?

A: Yes. Table 5 is based on the data that Verizon MA submits to the Department, and shows that Verizon MA never meets the Department-established standard of 60% or the target of 70% for repairing out-of-service and service-affecting troubles within 24 hours for residential consumers anywhere in the Commonwealth. Table 5 also shows that the clearance of 49.9% of troubles for BayPath is far less than the clearance of 58.6% troubles in the North/Northeast region.

Table 5[109]

Analysis of Timeliness of Overall Repair of Residential Basic Local Exchange Service

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[109] / September Monthly Report. As Exhibit SMB-1 shows, Western Massachusetts is only a portion of the SBU entitled "BayPath."

Percent of Troubles Cleared within 24 Hours

October 2008 through September 2009

		Bay Path SBU		Mass Bay SBU		NO/NE SBU		Massachusetts	
		Res.	Bus.	Res.	Bus.	Res.	Bus.	Res.	Bus.
October 2008	*	**47**	84	**43**	81	**58**	84	**49**	83
November 2008	*	**37**	84	**41**	75	**53**	78	**43**	78
December 2008	*	**43**	75	**48**	80	**58**	79	**48**	77
January 2009	*	**40**	84	**45**	75	**48**	**71**	**44**	76
February 2009		**57**	90	**48**	80	60	79	**55**	82
March 2009		65	91	**56**	84	63	82	61	85
April 2009	*	**49**	86	**44**	82	**57**	83	**49**	83
May 2009		**54**	89	**46**	83	66	82	**54**	85
June 2009	*	**52**	87	**47**	84	**57**	80	**52**	83
July 2009	*	**47**	84	**44**	81	**57**	79	**48**	81
August 2009		**49**	87	**48**	83	63	79	**52**	83
September 2009		**59**	88	**52**	83	63	81	**58**	83
12-month average		**49.9**	85.8	**46.8**	80.9	**58.6**	79.8	**51.1**	81.6

Western Massachusetts is included in the Bay Path SBU. Target for Residential customers is 70%; Standard is 60%. Target for Business customers is 85%; Standard is 75%. Shading indicates missed Target. Shading and bold indicates missed Standard. * indicates that Verizon missed the Residential Standard in all three SBUs for the month.

The troubles that consumers report raise concerns of poor service quality in Western Massachusetts.

Q: Did Verizon provide the number of trouble reports per 100 lines separately by wire center in response to data requests?

A: Yes. Verizon MA provided data for eight months – January through August 2009 – showing the number of trouble reports per 100 lines separately by wire center.[110] These data confirm that wire centers in Western Massachusetts experience more problems on a

[110] / Verizon response to AG-VZ 3-71 attachment (d).

per-line basis than do other areas in the Commonwealth.

Q: What specifically did you find?

A: I aggregated wire centers by the six areas Verizon MA specified in its response to AG-VZ 3-71 attachment (d) – Metro North, Northeast, Boston, Southeast, Springfield, and Marlboro.[111] I then calculated the number of "reporting instances" for each region by multiplying the number of wire centers in the region by the number of months for which data are available, that is, 8. Table 6 below shows several summary statistics for trouble reports. First, the region with the highest average number of trouble reports per 100 lines is the Springfield region (which corresponds with Western Massachusetts). Springfield region's average number of trouble reports per 100 lines for this period was 2.7, compared to 1.2 in the Boston, Northeast, and Metro North regions.

Table 6[112]

Trouble Report Rate by Region

Region	Number of Wire Centers	Total Number of Reporting Instances	Average Trouble Report Rate	Number of Instances > 3.0	Percent of Instances > 3.0	Number of Instances > 4.0	Percent of Instances > 4.0
Boston	19	152	1.2	3	2%	0	0%
Marlboro	76	608	1.8	40	7%	17	3%
Metro North	17	136	1.2	1	1%	1	1%
Northeast	42	336	1.2	7	2%	5	1%
Southeast	51	408	2.3	36	9%	13	3%
Springfield	**63**	**504**	**2.7**	**91**	**18%**	**45**	**9%**

Second, wire centers in the Springfield region reported 91 instances (out of a possible

[111] / These six areas correspond also with the separate regions contained in the wire center report portion of Verizon's monthly service quality report.

[112] / Verizon response to AG-VZ 3-71 attachment (d).

504 instances) of the report rate per 100 lines ("RPHL") exceeding 3.0. In order to compare this statistic with those for other regions, I normalized this number for each region by dividing it by the total number of reporting instances in the region. The normalized data clearly show that the Springfield region had proportionally more RPHL > 3.0 than any other region, at 18%. Springfield also had more RPHL > 4.0 than any other region, at 9%. Exhibit SMB-1 shows that the wire centers included under the description "Springfield" correspond with the Western Massachusetts wire centers at issue in this proceeding.

Q: Please summarize the results of Table 6 above.

A: Table 6 provides evidence that customers in Western Massachusetts, as indicated by the "Springfield" designation, experience lower quality of service than do other customers in Massachusetts. The average number of trouble reports per 100 lines demonstrates that consumers in Western Massachusetts report proportionally more service problems than do customers in other regions. The percentages of instances of RPHL > 3.0 and RPHL > 4.0 show that not only do customers in the Springfield region report *more* troubles per 100 lines, they also report more *high extremes* of trouble reports per 100 lines.

Q: Did you also look at the wire center component of the service quality report?

A: Yes. I examined the report for wire centers in the Springfield region. Of the 63 wire centers, five (the 413-285 Amherst wire center, and the wire centers in Colrain, Cummington, West Stockbridge, and Worthington) had more that 3 trouble reports per 100 lines in September. Worthington is an example of persistently poor performance. Of

the nine months of data shown in this report, Worthington had six months with more than 4 trouble reports per 100 lines. The fact that consistently poor service such as this can go unaddressed for months at a time points to a major shortcoming in the SQI as currently constructed.

Q: Did you review the data that Verizon MA provided in response to AG-VZ 1-3 regarding trouble report rates?[113]

A: Yes. The response provides the monthly trouble report rate (for residential and business customers) in Western Massachusetts for the two-year period spanning September 2007 through August 2009, and also disaggregates that monthly data between OOS and SA troubles. The total trouble report rate (that is, quantity of troubles reported per hundred lines) ranges between 1.17 and 2.68. The quantity of OOS troubles per hundred lines ranges between 0.70 and 2.16; and the quantity of SA troubles per hundred lines ranges between 0.25 and 0.55. These data are regional averages, and, therefore, mask any "hot spots" in specific communities. Troubles reported ultimately translate into repairs that Verizon must make, and, therefore, provide evidence about the condition of the outside plant as well as external factors such as weather (which may affect the condition of outside plant). The timeliness of the repair of troubles reported on consumers' basic dial tone is measured by several metrics that Verizon MA reports to the Department and to the FCC:

- The out-of-service interval and the repeat out-of-service interval, typically

[113] / I have reproduced this response as Exhibit SMB-10.

expressed in hours (which Verizon MA does not report to the Department but does report to the FCC for the entire state);

- The percentage of troubles cleared within 24 hours, separately for residential and business customers (which Verizon MA reports to the Department); and
- Missed repair appointments (which Verizon MA does not report to the Department, but does report to the FCC for the entire state).[114]

As part of this proceeding Verizon should demonstrate whether there are enough service personnel to address out of service and service affecting problems in Western Massachusetts,

Q: Did you examine data about the number of technicians available to perform repairs and maintenance in Western Massachusetts?

A: Yes. According to Verizon MA, an Outside Plant Technician ("OPT") is "a technician who places new poles, cable, and equipment in the field."[115] Splice Service Technicians ("SSTs"), on the other hand, "install, remove, adjust, clean and replace cable, coin facilities and outside equipment. They are dispatched to customer locations to resolve trouble reports concerning outside plant, and they interact with customers in order to meet the customer's communications needs."[116] Verizon MA also notes that the terms

[114] / Verizon reports missed installation appointments to the Department. Missed repair appointments cause consumers inconvenience if they must, for example, take time off from work for repair, and they also cause delays in repair.

[115] / Verizon response to IBEW-VZ 3-42.

[116] / Verizon response to IBEW-VZ 1-15. According to Verizon MA, the term "scrubbing" refers to "the process of ensuring that a dispatch is required for an ongoing or current trouble or to determine if a dispatch is needed for a customer installation." The process is done at the Dispatch Resource Center by Administrative Assistants and involves both manual and automated testing of repair tickets. The process includes contacting the customer to ensure that a technician should still be dispatched. Verizon MA does not track the number of scrubbed tickets separately from other closed tickets but did state that 1.3% of repair tickets were closed without dispatching a

OPT and SST are sometimes used interchangeably.[117] There are currently **[CONFIDENTIAL]** Outside Plant Technicians in Western Massachusetts and **[CONFIDENTIAL]** in Eastern Massachusetts.[118] As of June 2009, Verizon MA served **[CONFIDENTIAL]** access lines in Western Massachusetts, and **[CONFIDENTIAL]** access lines in Eastern Massachusetts.[119] This means that OPTs in Western Massachusetts are responsible for **[CONFIDENTIAL]** lines, on average, than are the technicians in Eastern Massachusetts. Table 7 below shows the ratios of lines to OPTs for 2009.

Table 7[120]

Access Lines per Outside Plant Technician, June 2009

[CONFIDENTIAL]

Q: Why is the line to technician ratio important?

A: This ratio provides evidence about the level of resources that Verizon MA allocates to its operations.

Q: Did you review travel time data for technicians in Western Massachusetts?

A: Yes. According to Verizon MA, technicians based in Western Massachusetts traveled an

technician in Massachusetts and Rhode Island from September 9, 2009 through October 6, 2009. Verizon response to IBEW-VZ 6-8. The Dispatch Resource Center for Western Massachusetts is located in Springfield, and has seven managers and 44 associates. Verizon response to IBEW-VZ 6-14.

[117] / Verizon response to IBEW-VZ 3-42.

[118] / Verizon proprietary response to AG-VZ 1-10.

[119] / Verizon proprietary Attachment to Response to AG-VZ 1-10.

[120] / Verizon proprietary response to AG-VZ 1-10.

average of two hours to perform repairs, installation, and maintenance work in 2009. This number is up slightly from 1 hour and 54 minutes in 2008. [121] There are 6 service garages for technicians who regularly work in Western Massachusetts, and there are currently 245 technicians based in these 6 garages.[122]

Q: Is any further breakdown of service personnel available?

A: Yes. According to Verizon MA, there are **[CONFIDENTIAL]**.[123]

Q: How does the density of lines in Western Massachusetts compare to that in the Eastern portion of the state?

A: A Table 8 below shows, the Western part of the state is **[CONFIDENTIAL]** as the eastern part of the state.

Table 8[124]

Line Density in Massachusetts

[CONFIDENTIAL]

Q: Considering the information presented above regarding the ratio of lines to OPTs, the average time all technicians spend driving in Western Massachusetts, and the line densities, what do you conclude about the level of service personnel in Western Massachusetts?

[121] / Verizon response to AG-VZ 3-73.

[122] / Verizon response to IBEW-VZ 3-10.

[123] / Verizon proprietary response to IBEW-VZ 1-21.

[124] / Verizon response to AG-VZ 3-11 and AG-VZ 1-10.

A: Given the **[CONFIDENTIAL].**

Q: Why is the level of staffing important in this proceeding?

A: Staffing levels can affect the ability to properly maintain infrastructure and can affect the ability to respond to out of service and service affecting problems. While the Company is not under any staffing level requirements in Massachusetts, its staffing levels should be reviewed as part of this proceeding to determine whether they are adequate to maintain Verizon MA's vast and aged infrastructure in Western Massachusetts and whether staffing is contributing to delays in addressing out of service and other service calls.

The age of Verizon MA's infrastructure in Western Massachusetts merits examination.

Q: You mention the age of infrastructure in Western Massachusetts. Did you examine information from Verizon MA about the age of its infrastructure?

A: Yes. In an effort to understand the root causes of the service problems reported by customers, I examined the age of cable in Western Massachusetts. I found numerous cables that were deployed in the 1960s and 1970s. Table 9 below provides some insight into the age of Verizon MA's cabling.

Table 9[125]

Age of Selected Cable in Western Massachusetts

Vintage	Total Feet	Percentage of Total
pre-1960	6,046	3%
1960-1964	5,130	2%
1965-1969	72,356	30%
1970-1974	39,464	17%
1975-1979	7,974	3%
1980-1984	23,154	10%
1985-1989	46,067	19%
1990-1994	13,651	6%
1995-1999	7,148	3%
2000-2004	9,265	4%
2005-2009	5,247	2%
Unknown	2,000	1%
Total	237,502	100%

Q: Does Table 9 above include all cables in Western Massachusetts?

A: No. Table 9 only summarizes the responses to discovery about particular areas where trouble has been reported and the Attorney General asked for the age of the cable in those areas.[126]

Q: Where are the cables detailed above located?

A: These cables are located in Alford, Otis, Leverett, Rowe, New Marlboro, Conway, and

[125] / Verizon responses to AG-VZ 4-2, AG-VZ 4-3, AG-VZ 4-10, AG-VZ 4-11, AG-VZ 4-12, AG-VZ 4-14, AG-VZ 4-20, AG-VZ 4-21, AG-VZ 4-22, and AG-VZ 4-23.

[126] / Verizon responses to AG-VZ 4-2, AG-VZ 4-3, AG-VZ 4-10, AG-VZ 4-11, AG-VZ 4-12, AG-VZ 4-14, AG-VZ 4-20, AG-VZ 4-21, AG-VZ 4-22, and AG-VZ 4-23.

Williamsburg.[127]

Q: Are you suggesting that the data presented in the table above are representative of all of Verizon MA's Western Massachusetts infrastructure?

A: No. I do not have the data necessary to demonstrate that 35% of *all* of Verizon's cabling is at least 40 years old. But for all of the cabling that Table 9 summarizes this is the case.

Q: Please discuss the data in Table 9 further.

A: It shows that, for the areas examined, 35% of the cabling identified is at least 40 years old; 20% is between 30 and 40 years old; and 29% of the cabling examined is between 20 and 30 years old. That leaves only 16% that has been deployed in the past 20 years. The age of the plant may bear on Verizon MA's service quality.

Q: Did you request information about the amount of defective cable located in Western Massachusetts?

A: Yes. Verizon MA responded that there are currently 92,334 feet of cable identified for replacement in Western Massachusetts.[128] In response to another discovery request, Verizon MA stated that it "currently has 38 work orders to replace defective cable in the 413 area for 2009, and approximately 22,000 feet of cable is in the process of being

[127] / *Id.*

[128] / Verizon response to AG-VZ 3-53.

replaced in 2009."[129] There were 64 engineering work orders to replace underperforming cable completed in 2008 and 43 in 2007.[130] Verizon MA has no specific cable replacement plans for 2010.[131] Verizon MA also indicated that it expects to replace the majority of the 92,334 cable identified in response to AG-VZ 3-53 in 2009 and the remainder in 2010.[132] According to Verizon MA, the "identification of cable to be replaced does not necessarily mean that the cable is defective or is in need of immediate replacement."[133]

Q: What percentage of the cable in Western Massachusetts does 22,000 feet represent?

A: I don't know. The Attorney General inquired about the total amount of cable in Western Massachusetts, but Verizon MA responded "Verizon MA does not have the information requested by Eastern or Western Massachusetts. Verizon MA has the information at the state level."[134] However, in another data response, Verizon MA stated "Verizon MA maintains a record of each cable, its location, year placed, cable footage, type of cable and other information in a cable schematic layout format called a cable plat. Electronic images of these plats are kept in a database called the PMT system. The PMT system is not capable of extracting specific data points, including cable age, from these images. The PMT database is maintained by the local engineering team in the local engineering

[129] / Verizon response to AG-VZ 3-56.

[130] / Verizon response to IBEW-VZ 7-20.

[131] / Verizon response to AG-VZ 3-56.

[132] / Verizon response to AG-VZ 7-4.

[133] / *Id.*

offices throughout the state."[135]

In response to the Attorney General's request for the total sheath miles of copper cable and fiber separately for Eastern and Western Massachusetts, Verizon MA provided the number of sheath kilometers of copper and fiber cable for all of Massachusetts. For 2008, the number of sheath kilometers of copper was 94,326, and the number of sheath kilometers of fiber was 29,956.[136] Converting these amounts to feet, the 2008 total for copper was about 309 million feet and the 2008 total for fiber was about 98 million feet.[137] Using this total for Verizon's MA's copper, Verizon MA's plan to replace 22,000 feet of copper in Western Massachusetts represents about 0.01% percent of its total Massachusetts copper cable.

Q: How many transducers does Verizon MA have in Western Massachusetts, and what is your understanding of the purpose of transducers?

A: As of September 11, 2009, Verizon MA had 1,779 pressure and flow transducers in Western Massachusetts.[138] These transducers are used to monitor air pressure and air flow in various environments, and to "generate alarms when transducer readings drop of

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[134] / Verizon response to AG-VZ 3-48.

[135] / Verizon response to IBEW-VZ 1-22.

[136] / Verizon response to AG-VZ 3-48.

[137] / One kilometer equals about 3,281 feet.

[138] / Verizon response to AG-VZ 3-59.

increase beyond set parameters."[139]

Q: How often do these transducers go into "alarm mode" each year in Western Massachusetts?

A: Verizon reports that the number of transducer alarms in Western Massachusetts has recently ranged from 232 in 2006 to 342 in 2007.[140] Up to September 11, 2009, however, Verizon has already had 297 alarms. This means that, assuming no seasonal variation, Verizon is on track to face about 427 transducer alarms in 2009, a significant increase over previous years.[141] See Table 10 below.

Table 10[142]

Transducer Alarms in Western Massachusetts

	2004	2005	2006	2007	2008	YTD 2009	*2009 (est.)*
# Devices	1746	1762	1767	1778	1780	1779	*1779*
# Devices in Alarm	273	304	232	342	298	297	*427*
% in Alarm	16%	17%	13%	19%	17%	17%	*24%*

Q: Why is the number of transducer alarms relevant to service quality?

A: Alarms signal potential problems in the environment of Verizon MA's equipment, such as leaks in the cables.

Q: Does Verizon MA routinely test batteries in its remote terminals?

139 / Verizon response to AG-VZ 3-60.

140 / Verizon response to AG-VZ 3-61.

141 / This extrapolation assumes that there is no seasonality regarding transducer alarms.

142 / Verizon response to AG-VZ 3-61.

A: Verizon states: "Based on Verizon MA's routine checks of these batteries and the tests conducted during the recent field evaluations referenced in response to Information Request AG-VZ 1-1," that it is "unaware of any batteries in remote distribution units in the 413 area that are unable to sustain an 8 hour power outage."[143] However, Verizon also indicates that there is no formal battery replacement schedule for its 408 remote terminals, but that it replaces batteries if they are unable to sustain an eight-hour outage, and that "based on visual inspections performed by technicians during regular repairs and installations, technicians refer requests for battery testing to their local managers."[144] It is not clear whether Verizon determines after-the-fact that batteries require replacement, that is, after they have been unable to sustain an eight-hour outage. Similarly, it is not clear whether reliance on visual inspections by technicians is a sufficient approach for preventing battery failures during power outages.

Q: Have you reviewed information about Verizon MA's network policies and procedures that it provided in response to data requests?

A: Yes.

Q: What steps does Verizon MA take for preventive maintenance for its outside plant to address problems with moisture, high winds, and general wear and tear?

A: Verizon MA uses its "Proactive Cable Maintenance Program as part of regular maintenance operation" to assist it in identifying potential areas that may be susceptible

[143] / Verizon response to AG-VZ 7-1.

to moisture.[145] Verizon also maintains an air pressure program to assist in preventing moisture from entering cable.[146] Verizon identified twenty wire centers through its Proactive Cable Maintenance process as having areas that are particularly susceptible to increased customer complaints during inclement weather.[147] Of the ten most recent wire center areas where Verizon MA has undertaken an infrastructure evaluation (Exhibit SMB-12), eight are included in Verizon's list of areas that are susceptible to increased customer complaints during inclement weather. I am unaware of whether Verizon MA has plans to conduct infrastructure evaluations in the other twelve wire centers.

Q: Please identify some of the documents that describe Verizon's policies and procedures and that Verizon provided in response to data requests.

A: Some of the documents include:

- Proprietary Attachment AG-VZ 3-7 (concerning Verizon's Proactive Cable Maintenance Process);
- Attachment AG-VZ 6-19(b)) (Air Pressure Outside Plant – Central Office Air Pressure Design);
- Attachment AG-VZ -19(c) (The Basics of Pressure);
- Attachment IBEW-VZ 1-12 (Dispatch Priority Matrix);
- Attachment IBEW-VZ 7-9 (CRAS Deferred Work Procedure);
- Attachment IBEW-VZ 7-22 (Battery Testing); and
- Attachment IBEW-VZ 7-24 (Vertical Clearances for Communication Cable and Messenger).

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[144] / Verizon response to IBEW-VZ 7-22.

[145] / Verizon response to AG-VZ 6-19, citing Proprietary Attachment AG-VZ 3-7.

[146] / Verizon response to AG-VZ 6-1, Attachments B and C.

[147] / Verizon response to IBEW-VZ 7-25, reproduced as Exhibit SMB-11.

Q: What is the significance of these manuals?

A: At a minimum, these and similar manuals, procedures, and guidelines that Verizon uses for determining when and where to deploy resources, to upgrade its infrastructure, and to maintain its outside plant may be useful materials in the implementation of an audit of Verizon's Western Massachusetts network,which I discuss in more detail in Section IV.

Q: Are you aware of other information that Verizon has provided in this proceeding that may be useful for a network audit?

A: Yes. In response to IBEW-VZ 6-45, Verizon provided a voluminous file that includes all service outage reports between January 2006 and August 2009. A detailed examination of this information may shed light on those portions of the network that are most susceptible to network outages and may shed light on potential areas for improvement.

Q: What is your understanding of Verizon's decision-making process for determining when and where to invest in its network?

A: Among the factors that Verizon considers when evaluating maintenance investments are:

- The historical level of maintenance;
- The condition of the infrastructure component under consideration (including tests of that component);
- The overall cost of replacing or repairing the plant; and

- The volume of trouble reports related to the plant.[148]

Verizon indicates that some maintenance work, such as replacing a fallen or broken pole, is simply required and not subject to such evaluation.[149]

Q: Does Verizon provide any further details about its decision-making process?

A: Yes. In its proprietary attachment to its response to AG-VZ 3-7, Verizon provides **[CONFIDENTIAL].**[150]

Q: Why is this information important to this proceeding?

A: All else being equal, upgrading copper plant in rural areas may not be as cost effective as it would be in suburban or urban areas. Furthermore, it is not evident that Verizon, when it considers when and where to invest in its network, considers the cost to consumers of lacking access to reliable dial tone service, the cost to society when consumers cannot reach emergency and public safety agencies, and the cost of externalities when consumers cannot reach or be reached by others.[151]

148 / Verizon response to AG-VZ 3-7.
149 / *Id.*
150 / *Id.*
151 / The positive externality associated with telephone subscription is a long-standing characteristic of telecommunications.

IV. REMEDIES

Remedies for Verizon MA's inadequate service quality in Western Massachusetts would be appropriate.

Q: Based on your review and analysis of the evidence submitted thus far in this proceeding, in your opinion, does a record exist for the Department to direct remedies to address the service quality lapses in Western Massachusetts and to establish additional economic incentives to prevent further lapses?

A: Yes.

Q: Please summarize your recommended remedies.

A: I recommend that the Department, in an effort to improve the oversight and regulation of Verizon's service quality in Western Massachusetts, take the following steps:

- Consider establishing a pilot program in Western Massachusetts by which Verizon must continue to seek to meet the Department-established residential metrics of 60% (the existing standard) and 70% (the existing target) of service-affecting and out-of-service troubles within 24 hours, but would provide a customer credit to any residential customer that waits more than 36 hours for repair, and by which Verizon would report its results to the Department after 12 months.
- Require a network infrastructure audit with timetable for follow-through on recommendations.
- Require filing of the information now included in the ARMIS report with the

Department, even if the FCC discontinues the requirement in 2010.

Verizon MA's current Service Quality Plan masks local service quality issues in Western Massachusetts.

Q: Have you reviewed the mechanics of Verizon MA's Service Quality Plan contained in its Plan of Alternative Regulation under which the Company current operates?

A: Yes. I summarize those mechanics in Section II above.

Q: Given that review and your review of Verizon MA's service quality discussed in Section III above, do you believe the Service Quality Plan is working as intended?

A: No. This is clearly evidenced by the complaints and the series of individual community proceedings that the Department has opened just since 2006. I concur with the Department's conclusion that: "the statewide SQI is not capable of addressing service quality issues on a granular, town level."[152] Lengthy individual proceedings with discovery, testimony/comments, briefs, and evidentiary hearings in lieu of the proper incentives for Verizon to provide adequate service quality to *all* consumers are inefficient and harm those communities with the least resources.

Q: Has Verizon MA suggested that the level of service quality it provides is acceptable?

A: Yes. In its comments opposing the Regional Service Quality Investigation, Verizon MA asserted:

> For years, Verizon MA has met and exceeded the overall service quality standard established by the Department of Telecommunications and Cable

[152] / In re the Board of Selectmen of the Town of Middlefield, Massachusetts, pursuant to G.L. c. 159, §24, regarding the quality of Verizon Massachusetts' telephone service, D.T.E./D.T.C. 06-6, *Order on Motion for Reconsideration, Motion to Reopen the Record, and Motion for Stay Filed by Verizon Massachusetts*, September 18, 2008, at 25.

("Department") in Verizon MA's statewide Service Quality Plan. In 2008, for example, Verizon MA exceeded the individual benchmark standards for eleven out of the twelve service quality metrics in the plan throughout the year and obtained the highest possible score on at least eight of those metrics every month.[153]

Q: How do you respond?

A: The fact that individual towns must petition the Department and that there are quantifiable service quality issues in Western Massachusetts as evidenced by my analysis in Section III of this testimony as well as Verizon's failure to meet the Department-established standard and target for clearing residential troubles within 24 hours clearly demonstrate that the current Service Quality Plan under which Verizon MA is operating has shortcomings.

Q: Can you provide any hypothetical examples of poor service quality resulting in a "pass" in terms of the SQI?

A: Yes. For example, by my calculations, Verizon MA could fail to meet the standard threshold (let alone the target threshold) for both the network trouble report rate and percent of trouble cleared within 24 hours – residence in every month for years on end and never pay a penalty.[154] Likewise, Verizon Massachusetts can fail to meet the standard threshold for all seven of the disaggregated metrics in one of the three geographic regions and still meet the SQI 33 point requirement and not run afoul of the standard miss criteria.

[153] / Comments of Verizon New England Inc re Proposed Regional Service Quality Investigation, February 23, 2009, at 1-2.

[154] / My calculations indicate that scoring a zero in all three geographies for two metrics would still only result

Q: What do you conclude from these examples?

A: First, as discussed in Section III, above, the use of the rolling average instead of actual performance in scoring the SQI weakens the SQI standards. Variations in service quality are averaged out over the course of a year. Second, the 33 point threshold is too low as evidenced by Verizon MA's continued achievement of 33 points despite ongoing service quality problems in Western Massachusetts (and indeed, despite its persistent failure, statewide, to meet the Department's metrics for clearing troubles within 24 hours). Third, the geographic aggregation allows for a lack of penalty for poor performance in one region or wire center.

Q: Doesn't the Service Quality Plan have merit because it provides consumer credits?

A: While it is commendable that consumers receive credits if service quality is unacceptable, the customer affected by the poor service quality should also be compensated.

Q: Did you ask for the theoretical SQI that would result if computed solely for Western Massachusetts?

A: Yes. Verizon MA stated that such a computation is impossible. Verizon MA stated, however, that according to its calculations, for the 12 months ending September 2009, Western Massachusetts would have received the maximum number of points on six of the seven metrics that are scored on an SBU basis.[155] I do not have access to Verizon MA's work papers used to answer the question, but one can reasonably assume that the metric

in two standard misses and an SQI of 40 even the Company scored a 2 on every other metric.

Verizon MA was unable to meet was Percent Troubles Cleared within 24 Hours – Residential. For the reasons that I described in Section III, this is one of the most important metrics and indicators of service quality, yet as shown by Verizon MA, continued poor results are essentially "buried" in an SQI which aggregates data over several metrics, geographies, and time.

Q: What do you recommend?

A: I recommend that the Department hold Verizon accountable to providing basic service at Department-established standards of service quality. The Department should ensure that there are adequate incentives in place to ensure that Verizon invests the proper level of resources to improve and maintain the quality of basic local service.

Q: What then should the Department do?

A: The Department should make it worth Verizon's while to comply and the Department should signal clearly and consistently its intention to enforce its regulations. I recommend that the Department ensure that:

- The economic incentives that Verizon confronts contribute to acceptable service quality;
- Verizon be held accountable to the Department's targets and standards for each of the service quality metrics;
- The customers that suffer sub-par service quality be credited.

Q: Doesn't Verizon already provide a credit for disruptions in service?

Q: Yes, but it is negligible and does not adequately compensate consumers for the inconvenience and possible threat to public safety for out-of-service and service affecting

[155] / Verizon response to AG-VZ 5-12.

troubles on their lines. Verizon MA's tariff includes a "failure of service" credit that provides a credit for a complete failure of service that lasts more than twenty-four hours.[156] The credit is the prorated amount of the monthly charge for the service. The situation must be "brought to the notice of the Telephone Company within ten days" in order for the credit to apply. It is not clear whether the tariff language is intended to mean that each individual consumer must apply for the credit within ten days, or that Verizon MA will credit each customer for an outage in a particular area as long as Verizon is aware of the outage.

Q: Do many other states measure percent of troubles cleared within 24 hours?

A: I am not aware of states that use this metric.[157] Instead, in many states, carriers report the timeliness of the repair of out-of-service troubles. By contrast, in Massachusetts, Verizon reports the timeliness of all repairs, whether concerning out-of-service or service affecting troubles.

Q: Do you recommend that the Department also separately monitor the percentage of OOS cleared within 24 hours?

A: Yes. For the safety and other reasons that I discuss above, I recommend that the Department direct Verizon MA to submit OOS-based data for Western Massachusetts on a monthly basis so that the Department can monitor the duration of residential customers'

[156] / Verizon New England Inc., DTE MA No. 10, Exchange and Network Services, Section 1.4, Responsibility of the Telephone Company, Section 1.4.4, page 20, Sixth Revision, Issued October 7, 2008, Effective November 6, 2008.

[157] / Verizon Response to AG-VZ 1-11, in which Verizon states "Massachusetts is the only state that has a regulatory metric for percentage of troubles cleared within 24 hours." See also Verizon response to AG-VZ 6-21.

lack of dial tone.

The Department should adopt remedies for Western Massachusetts consumers.

Q: Please summarize your recommendations regarding the timeliness of Verizon's residential repairs.

A: I recommend that the Department establish customer credits to compensate customers for unduly long wait times for the restoration of out-of-service lines and the repair of service-affecting troubles. I also recommend that the Department direct Verizon to submit OOS-specific data so that the Department can gauge the duration that residential consumers lack dial tone.

Q: Please describe some options for a customer credit.

A: Under one option, Verizon would modify its tariff to provide credits for out-of-service troubles (i.e., those troubles that prevent a customer from using a dial tone line) as follows and to provide semi-annual bill inserts notifying customers of such credits:

- $15 for service repaired after 24 hours and less than 48 hours;
- $30 for service repaired more than 48 hours and less than 72 hours;
- $45 for service repaired more than 72 hours and less than 96 hours; and
- $75 for service repaired more than 96 hours.

Q: How might a customer credit for service-affecting troubles apply?

A: Verizon could modify its tariff to provide credits as follows and to provide semi-annual bill inserts notifying customers of such credits:

- $15 for service repaired more than 48 hours and less than 72 hours;
- $30 for service repaired more than 72 hours and less than 96 hours; and
- $45 for service repaired more than 96 hours.

These credits would be less than for OOS troubles because consumers with, for example, static on their lines, could still reach emergency 9-1-1 services.

Q: Do you have other suggestions for a customer credit program?

A: Yes. The Department could consider establishing a pilot program in Western Massachusetts such that Verizon would provide a customer credit to any residential customer that waits more than 36 hours for repair (regardless of whether it is an OOS or service-affecting trouble). After twelve months, Verizon would make a filing with the Department describing the results.

Q: Are you then suggesting that the new metric should be 36 hours for clearing troubles?

A: Absolutely not. The reason for the 36-hour threshold is to establish an interval after which Verizon should compensate a customer by, let's say $30,[158] for failing to repair lines in a timely manner. As I discussed earlier, it would be entirely contrary to consumers' interest and the public interest[159] for the existing Department-established residential metrics of 60% (the existing standard) and 70% (the existing target) of clearing service-affecting and out-of-service troubles within 24 hours to be made any more lenient than they already are. Indeed, at some point these metrics should be strengthened.

[158] / It may be appropriate for this amount to be increased commensurate with a consumer's wait time.

[159] / Not only are the consumers that lack dial tone harmed but also consumers that seek to reach and be reached by such consumers are harmed. The public interest is broadly implicated because consumers' access to the public switched telephone network directly affects their ability to reach public safety and emergency services.

Q: How did you determine that these levels of service credits would be appropriate for Verizon?

A: I reviewed levels of service credits, penalties, and other remedies in several other states. It is my opinion that the service credits I recommend would increase the probability that Verizon would repair consumers' basic local service more quickly than they now do. Also these credits would provide reasonable compensation to customers for the inconvenience they experience during extended telephone service outages, although of course it is hard to conceive of a customer credit that could compensate a consumer without dial tone seeking prompt and reliable access to E-911 services.

Q: What is the basis of your position that consumers seek more timely repair of basic local service?

A: Although, as I discussed earlier, Verizon asserts that consumers prefer to wait longer for repairs because it is purportedly more convenient for households with two working adults, Verizon has not provided any analyses, surveys, or studies to substantiate that assertion. Furthermore, in numerous other jurisdictions, the regulatory requirement for clearing out-of-service troubles is far more stringent (that is far more favorable to consumers) than it is in Western Massachusetts. I find it difficult to believe that consumers in Western Massachusetts truly "want" slower service than their counterparts in other jurisdictions.

Q: Why should the Department adopt measures in this proceeding that would result in higher service quality standards for Western Massachusetts than exist in Eastern

Massachusetts?

A: My recommendation for standards and remedies for Western Massachusetts are based on my understanding of the origin of this proceeding, which is that it concerns specifically the quality of service in Western Massachusetts. The Department may subsequently determine that there would be merit in adopting some of my recommendations for Eastern Massachusetts as well in an appropriate proceeding. Also, as I discuss above, several unique characteristics of Western Massachusetts underscore and justify the establishment of additional protection for consumers and incentives for Verizon to focus resources on this part of the Commonwealth:

- Wireless coverage in Western Massachusetts is spotty, meaning that even those consumers who might be willing to use wireless service when their landlines are not working, may not have that option.[160]
- The rural nature of Western Massachusetts means that residents need to drive further to reach public safety, businesses, schools, and places of employment than do consumers in Eastern Massachusetts, which means that the consequence and harm of unreliable service is that much greater.
- The many consumer complaints and the multiple municipal complaints demonstrate the significance of this issue to consumers and the economy in Western

[160] / Verizon has not conducted any analyses of the quality of wireless coverage in Western Massachusetts. Verizon response to AG-VZ 5-6. Verizon refers to a map showing the coverage of Verizon Wireless' network at www.verizonwireless.com/b2c/CoverageLocatorController.

Massachusetts. I am unaware of any municipal complaints that have originated in Eastern Massachusetts.

- It is burdensome and costly for municipalities to file complaints with the Department and then to participate in litigated proceedings. Towns may not have budgeted funds for legal counsel. During these times when municipalities face severe budget constraints, expecting consumers and municipalities to bring complaints to the Department's attention and then to participate in regulatory proceedings is unrealistic.
- Access to critically important information is asymmetrical: Verizon MApossesses far more detailed information about its resources, network facilities, and construction and maintenance plans than do either municipalities or the Department. In order to exercise its regulatory oversight properly, the Department requires objective comprehensive information, which could be provided by an audit.

Other states have implemented diverse approaches to establish accountability to service quality standards.

Q: Have you reviewed the manner in which other state regulatory bodies have sought to provide an incentive for Verizon and other incumbent local exchange carriers to provide adequate service quality?

A: Yes. Though I have not conducted a review of all state service quality regimes I outline some approaches that have merit below. The approaches include credits to individual consumers for poor service quality.

Q: Doesn't Verizon MA's current Service Quality Plan utilize a credit system?

A: Yes, while it does provide credit, the credit is provided across the board to all consumers instead of to only those consumers affected by the poor service quality. Furthermore, as I demonstrate earlier in my testimony, despite failing to meet the Department's existing standard and target for clearing troubles within 24 hours, as the SQI is presently structured, Verizon meets the minimum number of SQI "points."

For example, on June 30, 2008, the Public Service Commission ("PSC") opened a general investigation into service quality provided by Verizon West Virginia in response to a petition filed in May 2008 by the Consumer Advocate Division of the PSC and Commission Staff indicating that service quality complaints had risen since 2001.[161] The Joint Stipulation, between Verizon, Commission Staff and the Consumer Advocate Division (and unopposed by Citynet, FiberNet and the Communications Workers of America) provides a Retail Service Quality Plan. Verizon West Virginia agreed to meet several service quality standards and metrics.[162] Verizon West Virginia will provide monthly reports to the Consumer Advocate Division and Staff for one year and quarterly reports thereafter. In addition, Verizon West Virginia agreed to supplement its installation and maintenance force immediate by approximately 49 technicians through at least June 2009; assign a director level operations manager to monitor compliance; and

[161] / *Verizon West Virginia, Inc. Investigation into Quality of Service*, West Virginia Public Service Commission Case No. 08-0761-T-GI, *Commission Order*, December 19, 2008, at 1-2.

[162] / *Id.*, at 2.

invest an additional $11 million for infrastructure improvements.[163] Finally, the agreement includes a system of consumer credits. Verizon West Virginia will provide a $25 credit to consumers if it misses a repair appointment (unless it provides notice by 8 pm the evening before the appointment) and will enhance its existing service interruption bill credits (currently in its tariff) beginning on January 1, 2010 as detailed in Tables 11 and 12 below.

Table 11[164]

Verizon West Virginia Credits for Out of Service	
≥ 72 Hours and < 96 Hours	$10
≥ 96 Hours and < 120 Hours	$15
≥ 120 Hours	$15 plus $5 each 24 Hours thereafter

[163] / *Id.*, at 3.

[164] / Source: Verizon West Virginia, Inc. Investigation into Quality of Service, West Virginia Public Service Commission Case No. 08-0761-T-GI, Commission Order, December 19, 2008, at Appendix A: Verizon West Virginia Inc. Retail Service Quality Plan, December 9, 2008, page 4. The credits will not exceed the total monthly recurring charges that are payable each month.

Table 12[165]

Verizon West Virginia Credits for Service Affecting Trouble	
≥ 120 Hours and < 144 Hours	$10
≥ 144 Hours	$10 plus $5 each 24 Hours thereafter

In Arkansas, the Public Service Commission ("PSC") approved a stipulation among Staff, the Arkansas Attorney General, and CenturyTel Northwest of Arkansas, LLC ("CenturyTel"), which addressed matters of revenue requirement, rate design, and service quality.[166] The stipulation and settlement approved by the PSC contained the following restoration of service provisions:

If Century Tel fails to meet the restoration of service within 24 hours requirements for a given calendar quarter in a specific exchange, it will provide a customer credit in the amount of a pro-rata portion (1/30th per day missed beyond a 24-hour period) of the monthly basic local exchange rate for each instance. Century Tel further agreed that if it failed to meet the restoration of service requirements within 5 days requirement it will provide a customer credit in the amount of the entire monthly basic local exchange rate

[165] / Source: Verizon West Virginia, Inc. Investigation into Quality of Service, West Virginia Public Service Commission Case No. 08-0761-T-GI, Commission Order, December 19, 2008, at Appendix A: Verizon West Virginia Inc. Retail Service Quality Plan, December 9, 2008, page 4. The credits will not exceed the total monthly recurring charges that are payable each month.

[166] / I submitted testimony on these issues on behalf of the Arkansas Attorney General. See Attachment A to my testimony.

for each individual instance.[167]

In Illinois, customers also receive credits for poor service quality. Telecommunications carriers are required to provide customer credits for (1) out-of-service over 24 hours; (2) installation occurring after five days; and (3) missed appointments.[168] The credits are as follows:

[167] / *In the Matter of the Application of CenturyTel of Northwest Arkansas, LLC for Approval of a General Change in Rates and Tariffs*, Arkansas Public Service Commission Docket No. 03-041-U, *Order No. 8,* January 29, 2004, at Attachment, Joint Exhibit No. 1: "Joint Stipulation and Settlement Agreement," part 5. See, also, *id*., at 11-13.

[168] / 83 Ill.Adm. Code 732, effective August 1, 2001; Illinois Commerce Commission, Docket No. 98-0252, Illinois Bell Telephone Company Application for review of alternative regulation plan; Docket No. 98-0335, Illinois Bell Telephone Company petition to Rebalance Illinois Bell Telephone Company's Carrier Access and Network Access Line Rates; Docket No. 00-0764, Citizens Utility Board and the People of the State of Illinois -v- Illinois Bell Telephone Company, Verified Complaint for a Reduction in Illinois Bell Telephone Company's Rates and Other Relief, Order, December 30, 2002 ("Illinois Order"), at 196. The Illinois Commerce Commission was among the first state commissions to incorporate a "Q" factor in the initial price cap plan that governed Ameritech-Illinois. The Illinois Commerce Commission adopted a specific service quality component that added as much as two percentage points in a year to Ameritech Illinois' X-Factor if Ameritech Illinois failed to meet all of its service quality performance standards. Petition to Regulate Rates and Charges of Noncompetitive Services Under an Alternative Form of Regulation, *Order*, Illinois Commerce Commission Docket No. 92-0448/93-0239 Consol. (October 11, 1994), at 56-59.

Table 13

Illinois Credits for Out of Service for more than 24 Hours	
24 – 48 Hours	A pro-rated portion of the monthly recurring charges
48 – 72 Hours	33% of monthly recurring charges
72 – 96 Hours	67% of monthly recurring charges
96 – 120 Hours	100% of monthly recurring charges
> 120 Hours	Alternative telephone service or $20/day (customer option)

In Michigan, the Public Service Commission adopted service quality rules for telecommunications on August 1, 2005.[169] Among other requirements, the comprehensive rules require providers to give customers a credit of $25 for a missed repair commitment and either a 50 percent or 100 percent waiver of installation fees, depending on the tardiness of the installation.[170]

Q: Have other state commissions raised concerns about the impact of a carrier's fiber deployment on the carrier's commitment to basic service quality?

A: Yes. In a Florida case that concerns service quality (Docket No. 080278-TL), Verizon argued that the petitioners had not taken competition or its investment in fiber-to-the-

[169] / *In the matter, on the Commission's own motion, to promulgate rules governing the quality of telecommunications services*, Michigan Public Service Commission Case No. U-14435, *Order Adopting Telecommunications Service Rules*, August 1, 2005.

[170] / *Id.*

premises (FTTP) into account.[171] The Florida Public Service Commission ("PSC") describes Verizon's position in the following manner:

> Verizon states that the Petitioners have failed to take into account the company's massive investment in its FTTP network. The company believes that its investment in the FTTP network demonstrates its commitment to its consumers and exhibits the company's more than reasonable efforts to meet the service quality objectives. Verizon also believes that as more customers move from the existing copper network to the FTTP network, the customers' overall service quality should improve. Verizon made no mention of the FTTP network in its 2007 reports. Other than by mention in the reports that Verizon continues to utilize a fluid workforce (construction and fiber), it is unknown if Verizon's workforce was shifted from work on the copper network to work on the FTTP network. Approximately 80% of Verizon's customers are still served by the copper network.
>
> Verizon has indicated that the rate of service line troubles has dropped by almost 95% where the copper network was replaced by fiber. The company also indicated that the FTTP network, in significant part, has contributed to a 34% reduction in out-of-service and service-affecting trouble reports from the fourth quarter of 2005 through 2007. *Despite the reduction in out-of-service and service-affecting trouble reports due to the FTTP network, Verizon's overall service quality declined during the same timeframe. It is our view that an investment in the FTTP network is not a justifiable reason for Verizon's failure to maintain and support its copper network, which currently serves the vast majority of Verizon's customers.*[172]

In fact, the Florida PSC concluded with respect to Verizon's explanation for some of its service-affecting trouble reports that "Verizon did not have adequate personnel to address both the level of service-affecting trouble reports and the level of out-of-trouble reports

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[171] / *In re: Joint petition for show cause proceedings against Verizon Florida LLC for apparent violation of Rule 25-4.070, F.A.C., Customer Trouble Reports, and impose fines, by the Office of the Attorney General, Citizens of the State of Florida, and AARP*, Florida Public Service Commission Docket No. 080278-TL, *Order to Show Cause*, Order No. PSC-09-0015-SC-TL, Issued January 5, 2009, at 3.

[172] / *In re: Joint petition for show cause proceedings against Verizon Florida LLC for apparent violation of Rule 25-4.070, F.A.C., Customer Trouble Reports, and impose fines, by the Office of the Attorney General, Citizens of the State of Florida, and AARP*, Florida Public Service Commission Docket No. 080278-TL, *Order to Show Cause*, Order No. PSC-09-0015-SC-TL, Issued January 5, 2009, at 6 (emphasis added).

that were concurrently experienced in 2007. Verizon may have redirected its field personnel to support other objectives."[173]

The Department should require a third-party network infrastructure audit.

Q: Based on your review of information about Verizon MA's service quality performance and about its network infrastructure, what do you recommend?

A: I recommend that the Department require a comprehensive audit of the telecommunications infrastructure and resources available in Western Massachusetts.

Q: Ms. Baldwin, couldn't the complaints that the Department has received regarding service quality in Western Massachusetts simply correspond with isolated network problems that Verizon can address? In other words, why is there a need for a comprehensive assessment of the status of the network and resources in Western Massachusetts?

A: First, my analyses of various service quality metrics, discussed above, show that service quality problems are pervasive and persistent. Second, Verizon MA should be a step ahead of problems rather than in a reactive mode. Waiting until problems surface to address them dis-serves consumers. Instead the goal should be to prevent them from occurring in the first place.

Q: Are you a network engineer or have you ever worked as an outside plant technician?

[173] / *Id.*, at 5.

A: No.

Q: Then on what basis do you conclude that a network infrastructure and resources evaluation is appropriate?

A: Consumer complaints, the age of the outside plant, the disproportionate number of troubles reported and Verizon MA's delay in repairing troubles all point to fundamental problems with the level of resources being assigned to Western Massachusetts and the state of the infrastructure. In order to fulfill its regulatory oversight role, the Department requires detailed information from an objective third party. I am not persuaded that the interests of Verizon MA and consumers in Western Massachusetts are fully aligned. Network expenditures may not yield reasonable returns on investment but may be necessary all the same to ensure adequate service quality. Monies not spent on and resources not allocated to the copper plant in Western Massachusetts are then available for regions in the Commonwealth where Verizon may confront relatively greater competition.

Q: Is there any data in the record regarding the cost to conduct field audits?

A: Yes.

- Verizon MA estimates that the cost to conduct the field investigations in Leverett, Shutesbury, and Williamstown was about $11,000,[174] required approximately 200

[174] / Verizon response to AG-VZ 6-2.

person hours, and was conducted during March and April 2009.[175]

- According to Verizon MA, "management personnel with experience and expertise in outside plant operations and engineering" would be the ones to evaluate how many lashing wires do not meet standards, i.e., are not wrapped tightly, and such a study would require an examination and evaluation of every aerial cable, which "would be extremely costly and time consuming."[176]
- Verizon MA estimates that a field investigation of the infrastructure in the entire 413 area (i.e., the entire Western Massachusetts region) would take on average two Verizon MA managers three to four days for rural municipalities and 10-15 days for suburban and urban municipalities. Verizon MA estimates a total cost of approximately $500,000 (requiring approximately 8,500 person-hours) for such a comprehensive infrastructure evaluation.[177] Verizon did not specify the total calendar time required for such an audit.

Q: Are you aware of any previous occurrence where the Department has directed such an audit?

A: No.[178] However, in my view, the unique circumstances of this proceeding (such as the multitude of consumer complaints; the harm to consumers living in sparsely populated

[175] / Verizon response to AG-VZ 6-6.

[176] / Verizon response to AG-VZ 6-4.

[177] / Verizon response to AG-VZ 6-5 (reproduced as Exhibit SMB-13).

[178] / I am aware, however, of the Middlefield Infrastructure Report.

region of the state with spotty wireless coverage when they lack basic dial tone; the asymmetry of information between Verizon and the Department regarding the adequacy of Verizon's infrastructure; and the apparent lack of economic incentives for Verizon to meet the Department's existing standard for clearing troubles within 24 hours) warrant such a directive.

Q: Assuming that a Department-directed audit is undertaken, is there any data in the record regarding the cost to upgrade equipment and plant?

A: Yes.

- The cost to replace a battery for remote units depends on the type, size and location of the battery.[179] The average cost to replace the batteries associated with the field work in Leverett, Shutesbury, and Williamstown was $600.[180]
- The cost to replace a cable depends on the size, length, gauge, type, and location of the cable.[181]
- The cost of replacing the cable that Verizon described in response to AG-VZ 3-56, that is the 22,000 feet that it has replaced, is approximately $500,000.[182]

[179] / Verizon response to AG-VZ 6-2.

[180] / Verizon response to AG-VZ 6-2, supplemental reply.

[181] / Verizon response to AG-VZ 6-2.

[182] / Verizon response to AG-VZ 7-4. Verizon indicates that it relies on the document included as Proprietary Attachment AG-VZ 3-7 to determine when and where to replace cable. Verizon response to AG-VZ 7-4. In its response to AG-VZ 7-4, Verizon refers to its responses to AG-VZ 3-55, AG-VZ 3-7, IBEW-VZ 4-1, and IBEW-VZ 4-2 for additional information regarding its decision-making process for replacing cable.

- The cost to replace lashing wire is approximately $2.20 per foot.[183]
- The work resulting from the evaluations described in response to AG-VZ 1-1 is still ongoing,[184] and Verizon indicates that it "continues to work toward completion of all repairs/replacements identified in the evaluation."[185]

Q: Did you seek information about Verizon's recent infrastructure evaluations and the outcome of such evaluations?

A: Yes. In response to AG-VZ 6-8, which I have reproduced as Exhibit SMB-12, Verizon MA lists the ten towns in which it has conducted the most recent infrastructure evaluations, and separately for each town Verizon identifies the quantity of "conditions found." Verizon MA did not, however, describe the outcome of the evaluation (other than to quantify the conditions found).[186] For example, Verizon MA conducted an infrastructure evaluation in Ashfield and found 45 conditions. The question does not seek nor does the response indicate when the evaluations occurred, nor how the conditions were addressed.

Q: Please describe the way in which Verizon MA investigated service quality issues in Leverett, Shutesbury, and Williamstown.

A: Verizon "evaluated the concerns expressed" by towns with multiple complaints by

[183] / Verizon response to AG-VZ 6-2.

[184] / Verizon response to AG-VZ 6-6.

[185] / Verizon response to AG-VZ 6-3.

[186] / The towns include Ashfield, Blandford, Charlemont, Colrain, Heath, Lee, Northfield, Rowe, Russell, and

engaging in a "physical inspection" of its facilities in Williamstown, Shutesbury, and Leverett as well as reviewing repair history records and computerized stress tests of facilities. Verizon evaluated two major infrastructure categories: (1) Digital Loop Carrier ("DLC") Battery Backup and (2) Outside Plant.[187] The purpose of battery back up is to enable the network to continue to provide service when commercial power is lost. As part of its evaluation, Verizon tested each battery in these communities to determine the level of capacity that each battery could sustain.[188] Outside plant includes cables, wires, and the supporting structures that Verizon uses to deliver service from its central offices to customers' locations. The evaluation of the infrastructure in these towns was finished in March and April of 2009 and Verizon MA indicated that it has "completed a number of projects to correct potential troubles areas" based on the evaluation. Specific actions taken include replacing all batteries that were unable to sustain power for longer than 8 hours; closing open plant areas with "demonstrated service issues"; and replacing lashing wire that "did not meet standards." Verizon MA stated that it continues to monitor infrastructure to ensure "continued quality service."[189]

Sandisfield. Verizon response to AG-VZ 6-8.

[187] / Verizon response to AG-VZ 1-1 (reproduced as Exhibit SMB-14).

[188] / Verizon response to AG-VZ 1-1.

[189] / *Id.*

V. CONCLUSION

1 **Conclusion**

2 **Q: Does this conclude your testimony?**

3 A: Yes.