COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

Proceeding by the Department on its own Motion to Implement the Requirements of the Federal Communications Commission's Triennial Review Order Regarding Switching for Mass Market Customers	)	D.T.E. 03-60

INITIAL PANEL TESTIMONY OF VERIZON MASSACHUSETTS

(Mass Market Switching, Transport, and Loops)

Members of the Panel:

John Conroy
John White

November 14, 2003

TABLE OF CONTENTS

ATTACHMENTS:

I. INTRODUCTION

Q. MR. CONROY, PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is John Conroy, and I am Vice President – Regulatory for Verizon Massachusetts ("Verizon MA"). My business address is 185 Franklin Street, Boston, Massachusetts.

Q. PLEASE DESCRIBE YOUR EDUCATION AND WORK EXPERIENCE.

A. I was employed by New England Telephone in June, 1972, after graduating from Stonehill College with a Bachelor of Arts degree in Economics. Since then, I have held various assignments of increasing responsibilities in the Revenue Matters, External Affairs, Customer Services, Marketing and Technology, and Public Affairs and Corporate Communications departments.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY?

A. Yes. I have appeared as a witness before the Department, the Maine, New Hampshire and Rhode Island Public Utilities Commissions, and the Vermont Public Service Board.

Q. MR. WHITE, PLEASE STATE YOUR FULL NAME AND BUSINESS ADDRESS.

A. My name is John White. My business address is 1095 Avenue of the Americas, New York, NY 10036.

Q. BY WHOM ARE YOU EMPLOYED, AND IN WHAT CAPACITY?

A. I am employed by Verizon Services Corporation. Currently, I am an Executive

Director for Fiber to the Premises for Verizon.

Q. PLEASE BRIEFLY DESCRIBE YOUR EXPERIENCE IN THE TELECOMMUNICATIONS INDUSTRY AND EDUCATIONAL BACKGROUND.

A. I have been employed by Verizon or by its affiliates and predecessor companies since 1966. Before joining Verizon, I worked for a number of engineering and construction firms. During my first 12 years at Verizon, I was involved in every aspect of Outside Plant telephone engineering. From 1979 to 1994, I held managerial positions in Construction, Installation and Maintenance, and Engineering, in both line and staff capacities. I was then appointed Executive Director for Transport Technology Planning in 1994 and became Executive Director Wholesale Services in June 2000 with a responsibility for introduction of wholesale digital services. In March of 2003, I was appointed Executive Director for Fiber to the Premises. I began undergraduate engineering studies at the University of Buffalo and went on to receive a Bachelors Degree in Business Administration and a Masters in Business Administration from Pace University. I have also continued graduate work at Pace University in Finance and Economics as part of Doctorate of Professional Studies Program.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY?

A. Yes. I have previously testified before the Department as well as before state regulatory agencies in Maine, New Hampshire and Rhode Island.

Q. MR. CONROY AND MR. WHITE, WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of our testimony is to present evidence demonstrating that under the standards set forth in the Federal Communications Commission's ("FCC") *Triennial Review Order*, Verizon Massachusetts ("Verizon MA") is not required to unbundle mass market switching for the relevant markets or dedicated transport for the specific routes described in our testimony.

The *Triennial Review Order* established a two-step process for demonstrating "no impairment." As a threshold matter, we understand that the Department must find no impairment if certain objective tests or "triggers" are satisfied. If the triggers are met, then the Department is required to find no impairment without further analysis. Only if the triggers are not met would the Department proceed to the second step and consider evidence of "potential deployment" of the relevant network elements. For both mass market switching and dedicated transport, this testimony demonstrates that the FCC's objective triggers are satisfied for particular markets and specific transport routes.

Section II of our testimony addresses the FCC's triggers for mass market switching. We describe the two triggers established by the FCC for mass market switching, which are "a principal mechanism for use by states in evaluating whether requesting carriers are in fact not impaired in a particular market." *Triennial Review Order* ¶ 498. A trigger is a set of objective standards established by the FCC that, if met, requires the state Commission to find "no impairment." Next, we describe the

relevant market definitions for applying the triggers, including the geographic market and the cutoff point for differentiating between "mass market" and "DS1 enterprise" customers within the relevant geographic market. Third, we describe the evidence that Verizon MA has gathered to support its showing under the self-provisioning trigger for mass market switching. Fourth, we identify the markets in Massachusetts that meet the FCC's switching trigger based on the evidence. In particular, the testimony demonstrates that there are a substantial number of CLECs that are using their own switching to serve mass market customers within Verizon MA's serving territory in four Metropolitan Statistical Areas ("MSAs") in Massachusetts. As a result, those market areas satisfy the FCC's switching trigger, both at the MSA level and within Density Zones 1, 2 and 3 within the Boston-Cambridge-Quincy MSA, within Density Zone 3 within the Providence-New Bedford-Fall River MSA, and within Density Zones 2 and 3 in the Springfield and Worcester MSAs.

Section III of our testimony shows that Verizon MA is not required to unbundle dedicated transport on specific fiber transport routes based on the two objective triggers set forth in the FCC's *Triennial Review Order*. The FCC requires a state commission to find that competing carriers are not impaired without access to Verizon MA's unbundled dedicated interoffice transmission (or transport) facilities if Verizon MA meets either of two objective triggers. Our testimony describes the FCC's "triggers" and applies them in the two Massachusetts LATAs – LATA 126 (which includes Western Massachusetts) and LATA 128 (which includes Eastern

Massachusetts). We then present evidence, drawn largely from internal and public sources, showing that other carriers have deployed fiber transport routes in specific areas of both LATAs meeting one or both of the FCC's triggers.

In Section IV, we briefly address the issue of high capacity loops. In the *Triennial Review Order*, the FCC established two triggers for the state commission to apply to determine whether competing carriers are impaired without access to Verizon MA's unbundled high capacity loops. Information about where carriers other than Verizon MA have deployed high capacity loops is almost exclusively within the control of those other carriers, and consequently, we have been unable to rely on internal sources for presenting a case. Moreover, the timing of other carriers' responses to the Department's information requests has prevented us from conducting a detailed analysis prior to this filing. Verizon MA will continue to review and analyze the data it received from the other carriers in the discovery process, but will be unable to present a triggers case for high capacity loops until it has had sufficient time to analyze the data and build its case. Consequently, Verizon MA is not seeking relief at this time for high capacity loops.

II. MASS MARKET SWITCHING TRIGGERS

Q. PLEASE EXPLAIN THE FCC'S TRIGGER ANALYSIS FOR MASS MARKET SWITCHING.

A. In the *Triennial Review Order*, the FCC found that "there are few barriers to deploying competitive switches to serve customers in the enterprise market at the

DS1 capacity and above, and thus no operational or economic impairment on a national basis." *Triennial Review Order* ¶ 451. By contrast, the FCC determined that, on a national basis, CLECs are impaired without access to unbundled local circuit switching for mass market customers (*i.e.*, residential and business customers served over loops operating below the DS1 level). *Triennial Review Order* ¶ 459. Nevertheless, the FCC recognized that "a more granular analysis may reveal that a particular market is not subject to impairment in the absence of unbundled local switching." *Triennial Review Order* ¶ 461. Therefore, the FCC directed the states to apply a two-step process to determine whether there is no impairment in a particular market within a state.

First, state commissions must apply two mandatory, objective triggers, which look at evidence of actual facilities-based competition in the market. Under the "self-provisioning trigger," a state "must find 'no impairment' when three or more unaffiliated competing carriers are serving mass market customers in a particular market with the use of their own switches." *Triennial Review Order* ¶ 501. Under the "competitive wholesale trigger," states must find no impairment where there are two or more unaffiliated CLECs that offer wholesale switching service to other carriers in a particular market using their own switches. *Triennial Review Order* ¶ 504. There are currently few wholesale providers of switching, other than ILECs. Therefore, Verizon MA is not attempting at this time to make a showing under the competitive wholesale facilities trigger for switching, but will rely instead on the self-provisioning trigger.

It is only after the Department has examined the objective trigger evidence, and made a determination that neither trigger is met in a market, that the Department may then conduct an analysis of the potential for CLECs to deploy their own switches to serve mass market customers in the relevant geographic market, given economic and operational conditions in that market. *Triennial Review Order* ¶ 506. Of course, if the triggers have been met – indicating that a number of real world CLECs are already operating their own switches in a market – there is no need to prove in theory that they potentially might operate in that market. Verizon MA does not intend to offer a potential deployment case in Massachusetts at this time, and therefore, this testimony does not analyze the potential for new switch deployment. It presents only objective evidence of actual existing CLEC switch deployment under the trigger test.

Q. IN APPLYING THE SELF-PROVISIONING TRIGGER, MAY THE DEPARTMENT LOOK AT SUBJECTIVE EVIDENCE OF IMPAIRMENT?

A. No. The self-provisioning trigger is deliberately objective. It is assessed entirely through the application of data, rather than by the consideration of more subjective experiences, theories, estimates, opinions, and predictions. This objectivity allows trigger determinations to be made quickly and accurately, and avoids the need for "protracted proceedings." *Triennial Review Order* ¶ 498. In fact, other than the objective count of CLECs, the FCC indicated that "states shall not evaluate any other factors, such as the financial stability or well-being of the competitive switch providers." *Triennial Review Order* ¶ 500 (emphasis added).

In its September 17, 2003 *Errata*, the FCC clarified that subjective considerations, such as a CLEC's economic and operational ability to serve all customers in a market, or a CLEC's willingness to do so, do not apply to the self-provisioning switching trigger. *Errata* at No. 21. Instead, this trigger is straightforward: the Department must find "no impairment" for unbundled switching when three or more unaffiliated competing carriers are serving mass market customers in a particular market.

A. Market Definition

Q. HOW IS THE RELEVANT GEOGRAPHIC MARKET DEFINED FOR THE TRIGGER ANALYSIS?

A. The FCC instructed the states to apply the switching triggers on a granular basis to each identifiable geographic market in the state. Rule 319(d)(2)(i) provides:

> Market definition. A state commission shall define the markets in which it will evaluate impairment by determining the relevant geographic area to include each market. In defining markets, a state commission shall take into consideration the locations of mass market customers actually being served (if any) by competitors, the variation in factors affecting competitors' ability to serve each group of customers, and competitors' ability to target and serve specific markets profitably and efficiently using currently available technologies. A state commission shall not define the relevant geographic area as the entire state.

47 C.F.R. § 51.319(d)(2)(i). The FCC gave further guidance in the text of the Order, cautioning "states should not define the market so narrowly that a competitor serving that market alone would not be able to take advantage of available scale and scope economies from serving a wider market." *Triennial*

Review Order ¶ 495. Moreover, the FCC expected that the market definition for switching would be broader than for transport (which is narrowly defined by the FCC on a route-by-route basis), since "a switch can theoretically serve wide areas." *Triennial Review Order* ¶ 495 n.1536.

The FCC noted that a state commission may choose to consider various factors, including "how UNE loop rates vary across the state," "how retail rates vary geographically," among other considerations. *Triennial Review Order* ¶ 496. However, it is not necessary to reinvent the wheel, since the FCC authorized state commissions to use existing geographic market definitions for the purposes of the trigger analysis. *Triennial Review Order* ¶ 496.

Q. WHAT IS THE APPROPRIATE GEOGRAPHIC MARKET DEFINITION FOR MASSACHUSETTS?

A. The Department should adopt an existing geographic market definition for application of the self-provisioning trigger. Among the existing definitions, Metropolitan Statistical Areas ("MSAs") and Density Zones are the most appropriate. MSAs have well-established geographic boundaries set by the federal Office of Management and Budget ("OMB") that are available from publicly available sources and are specifically designed to capture economic communities of interest.[1] For this reason, MSAs have been used to define local markets for purposes of telecommunications regulation. For example, the FCC itself used MSAs for its

existing unbundled switching carve-out for end users with 4 or more DS0 lines.[2] In addition, in its *Pricing Flexibility Order*, the FCC held that "MSAs best reflect the scope of competitive entry, and therefore are a logical basis for measuring the extent of competition."[3]

Moreover, MSAs meet each of the three criteria for defining the market established by the FCC. MSAs reflect the geographic reach of newspaper, radio, and television advertising. This permits CLECs to "target specific markets economically and efficiently" throughout the MSA. *Triennial Review Order* ¶ 495. Second, MSAs strike a sensible balance between the interests of limiting "variation in factors affecting competitors' ability to serve each group of customers" (*Triennial Review Order* ¶ 495) and ensuring that the implementation of both the impairment test and subsequent regulatory relief do not impose undue administrative burdens on the Department and the parties. The FCC has found that MSAs are "narrow[] enough so that the competitive conditions within each area are reasonably similar, yet broad[] enough to be administratively workable." *Pricing Flexibility* Order at 74. By contrast, the FCC concluded that "defining geographic areas smaller than MSAs

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1 *See* Office of Management and Budget, Standards for Defining Metropolitan and Micropolitan Statistical Areas: Federal Register: December 27, 2000 (Volume 65, Number 249), p. 82238.

2 *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Third Report and Order and Fourth Notice of Proposed Rulemaking (rel. November 5, 1999) (the "*UNE Remand Order*") at ¶¶ 276-98; *Triennial Review Order* at ¶ 497.

3 *Access Charge Reform*, Fifth Report and Order and FNPRM, 14 FCC Rcd. 14,221 (August 27, 1999) ("*Pricing Flexibility Order*").

would force incumbents to file additional pricing flexibility petitions, and, although these petitions might produce a more finely-tuned picture of competitive conditions, the record does not suggest that this level of detail justifies the increased expenses and administrative burdens associated with these proposals." *Id*.

Third, MSAs are appropriate as a market definition in Massachusetts because they "take into consideration the locations of customers actually being served . . . by competitors." *Triennial Review Order* ¶ 495. The evidence and maps described later in this testimony show a correlation between the population centers represented by certain MSAs and where CLECs serve customers with their own switches.

Within MSAs, the Department may choose to define the market more narrowly, by differentiating among the pricing Density Zones within those MSAs. Density Zones reflect "the locations of customers actually being served" by competitors using their own switches. Moreover, Density Zones satisfy the other two criteria established by the FCC. First, they take into account "variation of factors affecting competitors' ability to serve each group of customers." *Triennial Review Order* ¶ 495. For instance, UNE loop rates vary by zone. Thus, CLECs face similar competitive conditions within Density Cells within a particular MSA. As the FCC recognized, "if UNE loop rates vary substantially across a state, and this variation is likely to lead to a different finding concerning the existence of impairment in different parts of the state, the state commission should consider separating zones with high and low UNE loop rates for purposes of assessing impairment." *Triennial Review Order* ¶ 496 n.1538. Moreover, revenue potential

and ease of serving customers in an area are likely to vary based on population density, which is already reflected in the existing UNE Density Zones established by the Department. Second, competitors may be able to target particular customers within particular Density Zones, as the FCC itself recognized. *Triennial Review Order* ¶ 495 n. 1539. Therefore, Density Zones within particular MSAs meet the criteria established by the FCC in the Order.

Q. SHOULD THE DEPARTMENT DEFINE THE RELEVANT GEOGRAPHIC MARKET AT THE WIRE CENTER LEVEL?

A. No, it should not. Defining the market at such an overly granular level would completely ignore available scale and scope economies that the CLEC would enjoy by serving a wider market, contrary to the admonition of the FCC. Requiring that the trigger be satisfied in every individual wire center would completely ignore similar competitive conditions in other areas within the same "community of interest" and in adjoining areas with similar densities of customers and potential revenues. Moreover, CLECs do not enter the mass market at the wire center level, nor do they make their decisions to deploy switches to serve a particular market on a wire center-by-wire center basis, or even at the rate center level. As AT&T argued in an arbitration proceeding with Verizon New Jersey before the New Jersey Public Utilities Board, "[e]fficiency demands that CLECs deploy switches to serve broad geographic areas, and not within each specific rate center for which Verizon has

built out its network."[4] Therefore, wire centers are too small and under-inclusive for purposes of the impairment analysis, and would result in a finding of impairment where there clearly is none based on the objective criteria presented in this testimony.

Q. HOW SHOULD THE DEPARTMENT DIFFERENTIATE BETWEEN MASS MARKET CUSTOMERS AND DS1 ENTERPRISE CUSTOMERS IN MASSACHUSETTS?

A. According to the FCC, "DS1 enterprise customers are characterized by relatively intense, often data-centric, demand for telecommunications service sufficient to justify service via high-capacity loops at the DS1 capacity and above." *Triennial Review Order* ¶ 451. Therefore, for the purposes of its impairment analysis, DS1 enterprise customers are "those customers for which it is economically feasible for a competing carrier to provide voice service with its own switch using a DS1 or above loop." *Triennial Review Order* ¶ 451 n. 1376.

Mass market customers, on the other hand, "are analog voice customers that purchase only a limited number of POTS lines, and can only be economically served via DS0 loops." *Triennial Review Order* ¶ 497. "Mass market" refers not only to residential customers, but also to business customers that do not use DS1 capacity facilities. The FCC recognized that, "[a]t some point, customers taking a sufficient number of multiple DS0 loops could be served in a manner similar to that described above for enterprise customers – that is, voice services provided

[4] Panel Rebuttal Testimony of AT&T Communications of NJ, L.P. et al., Docket No.

over one or several DS1s, including the same variety and quality of services and customer care that enterprise customers receive." *Triennial Review Order* ¶ 497. However, the FCC left it to the states to determine where the cutoff point should be between mass market and enterprise customers, which "may be the point where it makes economic sense for a multi-line customer to be served via a DS1 loop." *Id.*

At its simplest, this "cutoff" should be between customers actually being served with one or more voice grade DS0 circuits and customers actually being served by DS1 loops. It is the objective behavior of the CLEC that should drive the determination of whether or not it "makes economic sense" for that CLEC to serve particular customers over DS1 loops, rather than over multiple voice grade DS0 lines. If a CLEC is currently serving a customer using DS0 loops – regardless of how many – it has already made the determination on its own that it is most economical to serve the customer as a mass-market customer, rather than as a DS1 enterprise customer. In other words, if it made "economic sense" to serve the customer over a DS1, then the CLEC would, in fact, be doing so. This objective test is more reliable, and grounded in the realities of the marketplace, than an arbitrary "cutoff" at a particular number of lines, regardless of whether the customer is actually being served as a DS1 customer. Indeed, AT&T has argued that the FCC should define mass market customers as "any customer location that

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TO00110893 (March 18, 2003), at 46.

a CLEC serves with voice-grade loops." Comments of AT&T Corp. at 204-205, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, WC Docket No. 01-338 (FCC filed Apr. 5, 2003). Moreover, other CLECs have argued for a crossover point as high as 18 lines or more, claiming, for example, that a lower cut-off for mass market customers "does not reflect the real-world economics of serving a customer through self-provisioned switching, and should be changed [to 18 lines] to reflect those economic realities." Comments of Z-Tel Communications Inc., *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, WC Docket No. 01-338 (FCC filed Apr. 5, 2003), at 50-51 (emphasis added).

Therefore, the mass market "cut-off" should reflect the economic realities of serving real world customers – as reflected by the CLECs' marketplace choice between deploying DS0 loops or DS1 loops to particular customer locations. If the CLEC has made the economic decision to treat the customer as a mass market customer and to serve the customer location using voice-grade loops, then the DS0 lines at that customer location should be counted as such for the purposes of the switching impairment analysis.

B. Evidence Of Actual Deployment In Massachusetts

Q. HAS THERE BEEN SUBSTANTIAL DEPLOYMENT OF CLEC-OWNED SWITCHES IN MASSACHUSETTS?

A. Yes. The record of competitive switch deployment in Massachusetts establishes that

competitors are already serving customers of all kinds using their own switches on a widespread basis throughout the Commonwealth. Competing carriers operate at least 42 *known* local circuit switches that are physically located within Massachusetts, and approximately 25 competing carriers of all sizes have deployed local circuit switches in Massachusetts.[5] *See* Table 1 below.

Table 1. CLECs That Have Deployed Local Circuit Switches in Massachusetts

CLEC	Switch Total	CLEC	Switch Total
AT&T	10	Global NAPS	1
Worldcom	5	ICG Communications	1
Comcast	3	Intermedia	1
Choice One	2	Lightship Telecom	1
NECLEC	2	Net2000	1
Adelphia	1	Network Plus	1
Allegiance Telecom	1	PaeTec	1
Broadview	1	RCN	1
Comav	1	Richmond Connections	1
Conversent	1	SBC	1
Focal Communications	1	Teligent	1
Global Crossing	1	Winstar	1
		XO	1

Source: February 2003 LERG.

[5] The information in this table reflects data as it appears in the Local Exchange Routing Guide ("LERG"). There may be instances in which a CLEC switch is assigned to a particular CLEC in the LERG, but where it has in fact been assigned for use by another competitive carrier, such as a successor carrier. *See* Telcordia, *February 2003 LERG*.

This is consistent with the record nationwide, where competing carriers operate approximately 1,300 circuit switches, including more than 500 within Verizon's 30-state region.[6]

In addition, CLEC packet switches are already a very significant competitive alternative to ILEC circuit switches, as the FCC has recognized. Packet switches substitute for circuit switches to the extent that traffic can be routed directly to a packet switch, without first being routed through a circuit switch. All forms of telecommunications traffic can now be transmitted and switched, end-to-end, in digital rather than analog format.

To illustrate the significant deployment of switches of all kinds, the map attached as Attachment 1 shows the locations of CLEC switches being used to provide local service in Massachusetts (including packet switches, circuit switches, remote switches and "soft" switches), based on data obtained from the Local Exchange Routing Guide ("LERG").

Q. ARE CLECS USING THESE SWITCHES TO SERVE MASS MARKET CUSTOMERS IN MASSACHUSETTS?

A. Yes, the evidence clearly demonstrates that many of these switches are being used for mass market services, as we explain below. Indeed, a single switch can serve an entire LATA or state, or multiple LATAs and/or states.[7]

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6 *See* Telcordia, *February 2003 LERG*; *New Paradigm Resources Group, Inc. CLEC Report 2003* at Chapter 5.

7 *See UNE Remand Order* ¶ 261 ("[S]witches deployed by competitive LECs may be able to serve a larger geographic area than switches deployed by the incumbent

Q. WHAT TYPE OF EVIDENCE DID VERIZON MA USE TO SATISFY THE SELF-PROVISIONING TRIGGER?

A. Verizon MA has collected and analyzed data, at the wire center level, using two sources of data which it maintains. First, Verizon MA used its internal databases to determine where, and to whom, Verizon leases stand-alone UNE loops in Massachusetts (the "Line Count Study"). Second, Verizon supplemented the Line Count Study with residential listings in the E911 database to determine the number of residential customers served by carriers that bypass Verizon MA's network to serve mass market customers over their own loop facilities (such as cable telephony providers) and to identify those carriers.

Q. HOW DOES THE LINE COUNT STUDY SHOW WHERE CLECS ARE PROVIDING THEIR OWN MASS MARKET SWITCHING?

A. Voice service carriers that lease stand-alone UNE loops from Verizon MA, without unbundled switching from Verizon MA, are necessarily using their own switches to provide service to the customers connected to those loops. Therefore, to determine where CLECs are serving mass market customers, Verizon MA identified, by wire center, all CLECs leasing loops from Verizon MA as of June 30, 2003, below the DS1 level, that is, 2-wire or 4-wire stand-alone voice grade loops (including EELs). Verizon MA counted the number of individual UNE loops ordered at each customer

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LEC, thereby reducing the direct, fixed cost of purchasing circuit switching capacity and allowing requesting carriers to create their own switching efficiencies.").

address (not merely each building address, since there may be multiple customer addresses within a building). Verizon MA counted affiliated carriers as a single carrier to avoid double-counting affiliates within a particular wire center. In addition, Verizon MA did not count CLECs that provide solely data services over copper loop facilities, without offering voice services.

Q. DOES THE LINE COUNT STUDY ALONE CAPTURE ALL MASS MARKET CUSTOMERS SERVED BY CLECS USING THEIR SWITCHES?

A. No. The Line Count Study is under-inclusive because it does not identify CLECs that serve mass market customers using both their own switching and their own loop facilities, thus by-passing Verizon MA's network entirely. The most obvious of these are cable telephony providers that use their own cable facilities, along with their own switching, to provide telecommunications services to their (largely) residential customers. In its rules, the FCC expressly includes "intermodal providers of service comparable in quality to that of the incumbent LEC" for the purposes of the switching triggers. 47 C.F.R. § 51.319(d)(2)(iii)(A)(1)-(2). Although the FCC found that wireless service was not yet comparable to ILEC services for the purposes of the triggers and thus it did "not expect state commissions to consider CMRS providers in their application of the triggers," *Triennial Review Order* ¶ 1549 n.499, it imposed no such limitation on cable telephony, which offers the same voice quality and broadband capabilities to customers as traditional voice service over telephone company loops.

In Massachusetts, Comcast (formerly AT&T Broadband) first deployed circuit-switched cable telephony in Boston in October 1998.[8] Today, Comcast offers telephone services over its cable networks in over 120 Massachusetts cities and towns. Indeed, prior to its acquisition by Comcast, AT&T Broadband had called Boston its "strongest performing market."[9]

Likewise, RCN has deployed cable telephony in Massachusetts and has been providing service since April 1998.[10] RCN is now providing exchange services utilizing its own switch in over thirty cities and towns throughout the Commonwealth.

Q. HOW HAS VERIZON MA IDENTIFIED CUSTOMERS OF CLECS BYPASSING ITS NETWORK?

A. To determine the location of these bypass customers, Verizon MA looked at residential listings in the E911 database for customers of known cable telephony providers in Massachusetts.

Q. WHAT DO THE LINE COUNT STUDY AND E911 DATA SHOW?

A. The results of the Line Count Study with the E911 additions described above are set forth in the chart attached to this testimony as Attachment 2. In addition, the map attached as Attachment 3 illustrates graphically the markets where, based on this

[8] CED/iNDEPTH, *Convergence Emergence: The Advanced Services Deployment Handbook* at 18 (Oct. 2002).

[9] AT&T Broadband, *Investor Presentation* at 16 (July 2001).

[10] CED/iNDEPTH, *Convergence Emergence: The Advanced Services Deployment Handbook* at 18 (Oct. 2002).

data, CLEC activity meets the self-provisioning trigger in Massachusetts. In particular, Attachment 3 shows the number of CLECs serving mass-market customers by density zone within the MSA boundaries in Massachusetts based on the data in Attachment 2.[11]

As the data and the map demonstrate, Verizon MA meets the mass market switching trigger in: Density Zones 1, 2 and 3 within the Boston-Cambridge-Quincy MSA; Density Zone 3 in the Providence-New Bedford-Fall River MSA; and Density Zones 2 and 3 in the Springfield and Worcester MSAs. In particular, the data show that there are a total of 10 unaffiliated CLECs currently serving mass market customers with their own switches in these four MSAs. In addition to the objective evidence that they are serving mass market customers from the Line Count Study and E911 data, each of these carriers holds themselves out as providing voice service to residential or business customers, or both, in Massachusetts. *See* Attachment 4 (CLEC Tariff References). Of these, 10 are serving mass market customers in the relevant density zones in the Boston-Cambridge-Quincy MSA; 5 are serving mass market customers in the Providence-New Bedford-Fall River MSA; 4 are serving mass market customers in the Springfield MSA; and 7 are serving mass market customers in the Worcester MSA – all using their own switches. This is more than sufficient to satisfy the self-provisioning trigger in each of these markets.

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[11] Verizon has used the most recent MSA definitions adopted by the OMB in June 2003, Attachment, OMB Bulletin No. 03-04 http://www.whitehouse.gov/omb/bulletins/b03-04.html.

Q. ARE THERE ANY OTHER CARRIERS PROVIDING VOICE SERVICE TO MASS MARKET CUSTOMERS IN THE RELEVANT GEOGRAPHIC MARKETS USING THEIR OWN SWITCHES THAT ARE NOT CAPTURED BY THIS DATA?

A. Yes. For example, the data do not capture competition from packet-switched, Internet Protocol telephony service, such as the service provided by Vonage – "the broadband phone company."[12] Vonage provides phone service to customers over residential broadband Internet connections, such as cable modem service. In one year, Vonage has gained over 25,000 subscribers nationwide, and transmits 1.5 million calls per week over its VoIP network.[13] Vonage represents that its service is not just comparable in quality, but superior to, Verizon service. Vonage refers to itself as an "all-inclusive home phone service" that is "like the home phone service you have today - only better!"[14] It claims to be the "key to easy and affordable communications, by offering flat-rate calling plans that include all of the features, as well as many features not available from Verizon like online voicemail retrieval and area code selection."[15]

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12 *See* Vonage, *Vonage DigitalVoice: The Broadband Phone Company*, http://www.vonage.com/.

13 Vonage Press Release, *Vonage Becomes First Broadband Telephony Provider To Activate 25,000 Lines* (May 22, 2003).

14 http://www.vonage.com/learn_tour.php.

15 Vonage Press Room, News, *Vonage, A Leading Provider of Broadband Phone Service is Now Serving New Bedford,* (Nov. 2, 2003) (quoting Vonage chairman and CEO Jeffrey Citron), http://www.vonage.com/corporate/press_news.php?PR=2003_11_02_0.

Vonage is marketing its services in Massachusetts. According to press releases, Vonage launched its DigitalVoice service using VoIP technology in the Metropolitan Boston Region and its surrounding suburbs in May 2002, "enabling Vonage customers to choose telephone numbers within the popular (617, 978, 781, and 508) area codes."[16] In November 2003, it "announced the availability of service in New Bedford, Massachusetts, enabling Vonage customers in those areas to "keep their current numbers or choose telephone numbers within the 774 area code."[17] According to its consumer website, Vonage is currently offering service in substantially all of the 617, 508, 978, 781, 413, 774 and 339 area codes in Massachusetts.[18] In fact, in announcing the launching of service in New Hampshire, Vonage's CEO stated "[t]he addition of New Hampshire and Western Massachusetts completes our New England roll-out extending affordable, unlimited voice service to two-thirds of consumers and small businesses across the region."[19] To date, however, Verizon MA has not been able to identify the physical location of actual Vonage customers based on Verizon MA's own data, and thus Verizon MA has not counted Vonage toward its trigger showing at this time.

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16 *See* Vonage Press Release, *Vonage DigitalVoice Expands Service to the Boston Region* (May 21, 2002). Vonage provides service in the following Massachusetts area codes: 617, 508, 978, 781, 413, 774 and 339. Vonage, *Available Area Codes*, http://www.vonage.com/area_codes.php.

17 Vonage Press Room, News, *Vonage, A Leading Provider of Broadband Phone Service is Now Serving New Bedford* (Nov. 2, 2003).

18 http://www.vonage.com/area_codes.php.

19 Vonage Press Release, *Vonage Launches Service in New Hampshire* (January 14, 2002).

Q. ARE THERE ANY OTHER REASONS WHY VERIZON MA'S TRIGGER DATA UNDERCOUNT THE NUMBER OF MASS MARKET CUSTOMERS SERVED BY COMPETITIVE SWITCHES?

A. Yes. For example, the Line Count Study and the E911 data do not include business customers of cable telephony providers using their own loop facilities. Although cable networks are ubiquitous in residential markets, they also reach many small business customers. While it is difficult to obtain figures limited to just small businesses, Credit Lyonnais estimates that "six million small- to medium-sized businesses (SMB) are located within a few hundred feet of the local hybrid fiber/coaxial network . . . [w]ith the current cable infrastructure passing nearly 2.5 million SMBs today."[20] By comparison, there are an estimated 10.5 million small and medium businesses nationwide (2.2 million with 5-99 employees; 85,000 with 100-999 employees; and 8.2 million characterized as small office/home office).[21] And, of course, because smaller businesses tend to be concentrated in areas that cable passes already, the percentage of small businesses passed by cable today is even higher than for small and medium-sized businesses combined. Cable operators themselves have acknowledged that there are many businesses that lie on or in close proximity to their networks.[22]

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[20] J. Shim & R. Read, Credit Lyonnais Securities, *The U.S. Cable Industry – Act I* at 196 (Nov. 20, 2002).

[21] Kneko Burney, In-Stat/MDR, *The Big Comeback? Excerpts from 'Business Broadband in a Changed Economy* at 2, 4 & Fig. 2 (May 2002).

[22] *See*, *e.g.*, A. Figler, *Turning Businesses into Customers*, CableWorld (Dec. 9, 2002) (Charter spokesman David Andersen: "over 600,000 small- and medium-sized

Nevertheless, while they may appear as business listings in the E911 database, those listings do not differentiate between mass market business customers and DS1 enterprise customers. For this reason, rather than make an arbitrary assumption about how many of these business customers are mass market, Verizon MA did not count them in its analysis at this time.

The Line Count Study and E911 database also fail to capture a large number of mass market customers located in apartment buildings and multi-tenant office buildings, whose lines are aggregated on DS1 facilities, and then disaggregated onto separate DS0 lines to serve multiple customers within the building. These residential and business customers do not meet the definition of DS1 enterprise customers because they are not, on an individual customer line-count basis, served using a DS1. It is only when they are aggregated with other mass-market customers that it makes economic sense to use a DS1 to serve them collectively. Although several CLEC

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businesses located within reach of our networks"); G. Lawyer and C. Wolter, *The Cable Giant Stirs*, Sounding Board Magazine (Dec. 1, 2001), http://www.soundingboardmag.com/articles/1c1vox.html (quoting Geoff Tudor, president and CEO, Advent Networks: "Cox realized there were 300,000 small businesses within 50 feet of their coaxial drops, easily reachable. . . That could greatly expand the network's revenue-generation potential."); A. Figler, *Turning Businesses into Customers*, CableWorld (Dec. 9, 2002) (quoting Ken Fitzpatrick, senior vice president of commercial services for Time Warner Cable: "[w]e've got an infrastructure there that is just ripe for commercial services . . . We pass 1.2 million businesses"); M. Stump, *Road Runner Gears Up 'Business Class' Offer*, Multichannel News (Feb. 25, 2002) (quoting Jason Welz, vice president of commercial services for Time Warner Road Runner: "'[c]able is not incredibly difficult to get to the business," and "[m]ost RBOCs, CLECs and ILECs have ignored that space.").

affiliates of incumbent LECs have taken this approach,[23] the information regarding the number and location of these customers is uniquely within the knowledge of the CLECs, and Verizon MA has limited ability to capture this data for the purposes of its initial case. It is difficult to estimate the extent of the impact including these customers could have on the results we present. While we do not have a figure for Massachusetts, an industry source indicated that approximately 30-35 percent of the population nationwide lives in multi-dwelling units that might be served in this manner.[24]

C. Conclusion Regarding Local Switching Triggers

Q. PLEASE SUMMARIZE YOUR CONCLUSION REGARDING THE LOCAL SWITCHING TRIGGERS.

A. As the data in Attachments 2 and 3 show, Verizon MA meets the mass market switching trigger in Density Zones 1, 2 and 3 of the Boston-Cambridge-Quincy MSA, Density Zone 3 in the Providence-New Bedford-Fall River MSA, Density Zones 2 and 3 in the Springfield MSA, and Density Zones 2 and 3 in the Worcester MSA. Therefore, the Department should find no impairment in each of these markets in Massachusetts.

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[23] New Paradigm Resources Group, Inc., *Competitive IOC Report 2001,* Ch. 4 at 2 (1st ed. 2001).

[24] *See*, *e.g.*, Robert Currey, Vice Chairman, RCN Corporation, Prepared Testimony before the Senate Subcommittee on Antitrust, Business Rights, and Competition, Committee on the Judiciary, *Cable and Video: Competitive Choices*, Federal News Service (Apr. 4, 2001) ("About 30-35 percent of the population lives in multiple dwelling units (MDUs), such as apartments, cooperatives or condominiums.").

III. DEDICATED INTEROFFICE TRANSPORT TRIGGERS

A. Description of the Triggers for Dedicated Interoffice Transport

Q. BY WAY OF BACKGROUND, WHAT ARE DEDICATED INTEROFFICE TRANSPORT FACILITIES?

A. "Dedicated interoffice transmission facilities (transport) are facilities dedicated to a particular customer or competitive carrier that it uses for transmission among incumbent LEC central offices and tandem offices." *Triennial Review Order* ¶ 361. The FCC's definition therefore excludes "shared transport," which are transmission facilities shared by more than one carrier. *Triennial Review Order* ¶ 361, n.1100, ¶ 533, n.1633.

Q. PLEASE DESCRIBE THE FCC'S TWO OBJECTIVE TRIGGERS FOR IDENTIFYING THE INTEROFFICE TRANSPORT ROUTES FOR WHICH COMPETING CARRIERS ARE NOT IMPAIRED WITHOUT ACCESS TO VERIZON'S FACILITIES?

A. In its *Triennial Review Order*, the FCC found that requesting carriers are impaired on a nationwide basis without access to unbundled dark fiber, DS1, and DS3 dedicated transport facilities. *Triennial Review Order* ¶ 359. The FCC recognized, however, that competing carriers often self-provision dedicated transport facilities or obtain them on a wholesale basis from carriers other than the incumbent LEC. The FCC authorized the state commissions to determine the specific routes that meet one or both of two objective triggers – which show that CLECs are already providing non-ILEC transport facilities, either to themselves (self-provisioning trigger) or to

other carriers (wholesale trigger). If a state commission finds that either trigger is met for a route, the state commission "must make a finding of non-impairment," and "the incumbent LEC will no longer be required to unbundle that transport along that route[.]" *Triennial Review Order* ¶¶ 400, 411; *see also Triennial Review Order* ¶ 405. In other words, when a transport route meets one or both of the FCC's triggers, the state commission conducting the route-specific review must find that the FCC's national finding of impairment has been overcome.

The first of the FCC triggers evaluates whether competing carriers have self-deployed or self-provisioned dark fiber and DS3 capacity transport facilities. Under the self-provisioning trigger, the Department must find no impairment if three or more unaffiliated competing carriers have deployed along a particular route their own dark fiber or DS3 transport facilities. *Triennial Review Order* ¶¶ 405-411. The FCC has also determined that the self-provisioning trigger is satisfied if, on a particular route and for dark fiber and DS3 facilities, there are at least two unaffiliated competing carriers using their own interoffice transport facilities, and at least one additional carrier willing to provide transport facilities at wholesale. *Triennial Review Order* ¶ 408 n.1264. Leased "dark fiber" is considered to be that carrier's own fiber for purpose of applying the self-provisioning trigger. If a carrier has attached its own electronics to activate leased dark fiber at a DS3 level, the activated fiber is also considered the carrier's own DS3 facility for the purpose of the self provisioning trigger. *Triennial Review Order* ¶ 408.

The second FCC trigger looks at whether dark fiber, DS1, and DS3 interoffice

transport facilities are available from other carriers on a wholesale basis. Under this test, competing carriers are not impaired without access to Verizon MA's transport facilities if there are "two or more alternative transport providers, not affiliated with each other or the incumbent LEC, immediately capable and willing to provide transport at a specific capacity along a given route between incumbent LEC switches or wire centers." *Triennial Review Order* ¶ 400. Dark fiber that is leased from a carrier other than the incumbent LEC, and then offered on a wholesale basis, is considered to be the buying carrier's own dark fiber. Similarly, dark fiber obtained as an unbundled network element from Verizon MA counts as the buying carrier's own fiber if that carrier attaches its own electronics and offers the activated fiber at wholesale. *Triennial Review Order* ¶ 416.

Q. WHAT IS A ROUTE?

A. As defined by the FCC, a "route" is any direct or indirect connection between two Verizon MA wire centers or switches. In other words, "a 'route' may connect Verizon MA wire centers or switches that are not directly connected to each other." *Triennial Review Order* ¶ 402 n.1246. Thus, under the FCC's definition of a route, if a pair of Verizon MA wire centers meets either of the FCC's two triggers, competing carriers are not entitled to unbundled access to Verizon MA dedicated interoffice transmission facilities that directly or indirectly connect that pair of wire centers.

Q. WHAT DOES THE FCC REQUIRE AS FAR AS OPERATIONAL READINESS?

A. To count toward the triggers, the FCC requires the transmission facility to be operationally ready to provide transport between Verizon MA wire centers. This condition is satisfied if a carrier has an operational collocation arrangement and has pulled fiber into that arrangement (generally known as "fiber-based collocation"). The FCC made clear in its *Triennial Review Order* that "[c]ollocation may be in a more traditional collocation space or fiber can be terminated on a fiber distribution frame." *Triennial Review Order* ¶ 406 n.1257.

Q. PLEASE SUMMARIZE THE FCC'S RULES CONCERNING ITS TWO OBJECTIVE TRIGGERS FOR DEDICATED INTEROFFICE TRANSPORT?

A. To summarize the FCC's regulations:

- The FCC's self-provisioning trigger requires that a route connecting a pair of Verizon MA wire centers have at least the same three competing carriers (or at least the same two competing carriers and a wholesale provider), with operational, fiber-based collocation arrangements, and that these carriers have deployed dark fiber or DS3 level transport facilities.
- The FCC's wholesale trigger requires that a route connecting a pair of Verizon MA wire centers have at least two wholesale providers, with operational, fiber-based collocation arrangements, offering dark fiber, DS1 or DS3 level transport facilities to other carriers.
- If either trigger is met, Verizon MA is no longer required to make available unbundled dedicated transport on any Verizon MA transmission routes that directly or indirectly connect that pair of Verizon wire centers.

Q. THE FCC'S TWO TRIGGERS APPLY TO DIFFERENT "CAPACITIES" OF TRANSPORT. WHAT DETERMINES THE CAPACITY AT WHICH FIBER TRANSPORT FACILITIES OPERATE?

A. The capacity of fiber optic cable is almost exclusively based on the equipment that a carrier attaches to activate or "light" the fiber. As the FCC found in its *Triennial Review Order*, when carriers deploy new transport facilities, they deploy fiber optic facilities, and those facilities can operate at a wide range of capacities, from DS0 to OC192. *Triennial Review Order* ¶ 372. Fiber optic cable is also "channelized" – that is, larger capacity facilities are subdivided into smaller capacity facilities – by attaching the appropriate electronics at both ends of the fiber cable to provide these various capacities. For example, lower capacity DS1 and DS3 facilities are channelized simultaneously within the larger capacity OC12 or OC48 facility. The electronic equipment used to activate these various levels of capacity is widely available.

Q. WHAT DOES IT MEAN TO OPERATE A FIBER OPTIC TRANSPORT FACILITY AT OCN, DS1, OR DS3 LEVELS OF CAPACITY?

A. OCn transport refers to the technical distinction (*i.e.*, Optical Carrier or "OC") and the capacity (*i.e.*, "n") of fiber optic cable. For example, an optical carrier-level 3 – or OC3 capacity circuit – is capable of transporting up to three DS3 circuits (an OC3 is approximately 155 Mbps, while three DS3s are 135 Mbps), but terminates on a different type of electronic interface.

DS1 and DS3 transport likewise refer to the technical distinction (*i.e.*, Digital Signal or "DS") and capacity. The elemental DS speed is 64 Kbps, also known as a DS0,

which is predominantly used to transport voice grade circuits. A DS1 capacity circuit contains the equivalent of 24 voice-grade or DS0 channels. A DS3 capacity circuit contains the equivalent of 28 DS1 channels or 672 DS0 channels.

Q. THE FCC'S DEDICATED TRANSPORT TRIGGERS ARE SEPARATELY APPLIED TO DARK FIBER FACILITIES. WHAT IS DARK FIBER?

A. Dark fiber is fiber optic strands of cable that have been deployed, but have not been activated or "lit" through connections to electronics (which would make the fiber capable of carrying communications). *See, e.g.*, *Triennial Review Order* ¶¶ 359 n.1097, 381.

B. Verizon MA's Evidence Of Routes Meeting The Triggers

Q. PLEASE DESCRIBE VERIZON MA'S EVIDENCE OF INTEROFFICE TRANSPORT ROUTES IN MASSACHUSETTS THAT MEET THE FCC'S TRIGGERS FOR INTEROFFICE TRANSPORT?

A. Verizon MA has evidence that 194 pairs of Verizon wire centers -- or 194 direct routes -- in Massachusetts meet one or both of the FCC's triggers. There are three pairs of Verizon MA wire centers that meet one or both of the FCC's triggers in the Western LATA (126) and 191 pairs in the Eastern LATA (128). These results are depicted in the table below:

	Pairs of Verizon Wire Centers With ≥ 3 Self-Provisioning Carriers	**Pairs of Verizon Wire Centers With ≥ 2 Wholesale Providers**	**Pairs of Verizon Wire Centers With Either ≥ 3 Self-Provisioning Carriers Or ≥ 2 Wholesale Providers**
Western (LATA 126)	2	3	3
Eastern (LATA 128)	111	191	191
Total Number of Verizon Wire Center Pairs (or Direct Transport Routes)	113	194	194

Attached to our testimony as Attachment 5 are two maps presenting, by LATA, the evidence summarized in the table above. The first map shows the three direct routes in the Western LATA (126) meeting one or both of the FCC's triggers. The direct routes that meet the FCC's triggers are shown as blue lines. Notably, although there are more than sixty Verizon MA wire centers in the Western LATA, Verizon MA seeks relief for direct routes that originate or terminate in only three wire centers, although there could well be more routes that meet the FCC's triggers.

The second map shows the 191 direct routes in the Eastern LATA (128) meeting the FCC's triggers. The many blue lines in the Greater Boston area illustrating the many direct routes meeting the FCC's triggers, reflect the vast amount of fiber that carriers other than Verizon MA have deployed over the last several years. The wire centers with multiple CLECs and wholesale providers with operational, fiber-based collocation arrangements tend to be clustered in this highly populated urban area.

Q. PLEASE DESCRIBE VERIZON MA'S EVIDENCE OF TRANSPORT ROUTES IN THESE TWO MASSACHUSETTS LATAS MEETING THE SELF-PROVISIONING TEST?

A. Verizon MA's evidence shows that there are 113 pairs of Verizon wire centers in Massachusetts meeting the FCC's *self-provisioning* trigger for dark fiber and DS3 capacity facilities. Each pair has (at least) the same three unaffiliated competing carriers with operational, fiber-based collocation facilities. In fact, approximately 62 pairs of the 113 direct routes meeting the self-provisioning trigger have four or more unaffiliated competing carriers with operational, fiber-based collocation arrangements – exceeding the standard for non-impairment set by the FCC.

Verizon MA's evidence on the direct transport routes meeting the FCC's self-provisioning trigger is presented in Attachments 6.A (LATA 126) and 6.A.1 (LATA 128). The proprietary version of these attachments filed with the Department identifies the CLECs with operational, fiber-based collocation arrangements in the Verizon MA wire centers. CLEC names are removed from the public versions of Attachments 6.A and 6.A.1.

Attachment 6.A shows the pairs of wire centers meeting the FCC's self-provisioning trigger in the Western LATA (126). The first Verizon MA wire center in the pair – Holyoke (HLYKMAMA) -- is shown in the first two columns of Attachment 6.A (labeled "Wire Center 1" and "Wire Center 1 Name"). The third and fourth columns (labeled "Wire Center 2" and "Wire Center 2 Name") show that one other Verizon MA wire center in the Western LATA – Springfield (SPFDMAWO) – has three

CLECs in common with the Holyoke wire center.

The next pair of Verizon MA wire centers identified in the first two columns of Attachment 6.A is Northampton (NATNMAMA) and Springfield (SPFDMAWO). In both Northampton and Springfield, there are the same three CLECs with operational, fiber-based collocation arrangements. Thus, the Holyoke–Springfield and the Northampton–Springfield transport routes meet the FCC's self-provisioning trigger.

Attachment 6.A.1 presents the same information – the pairs of Verizon MA wire centers and the specific CLECs in common – for the Eastern LATA (128). For example, the Billerica (BLRCMAAN) wire center, identified on the first line and first two columns of Attachment 6A.1, has the same three CLECs in common with the Harrison (BSTNMAHA) wire center, shown on the first line and in the third and fourth columns of Attachment 6.A.1.

Q. PLEASE DESCRIBE VERIZON MA'S EVIDENCE OF TRANSPORT ROUTES MEETING THE FCC'S WHOLESALE TRIGGER?

A. In the two Massachusetts LATAs, 194 pairs of Verizon MA wire centers meet the FCC's *wholesale* trigger for dark fiber, and DS1 and DS3 capacity facilities. Each pair of wire centers has (at least) the same two or more carriers that offer transport services to other carriers, including arrangements such as competitive access transport terminations (known as "CATTs").

Verizon MA's evidence on the transport routes meeting the FCC's wholesale trigger is shown, by Verizon wire center and wholesale provider, for the Western

LATA (126) in Attachment 6.B and the Eastern LATA (128) in Attachment 6.B.1. For example, Attachment 6.B shows that, in the Western LATA, there are at least two wholesale transport providers collocated at both the Holyoke and Northampton wire centers and each has fiber facilities exiting its arrangements.

Many competing carriers that have deployed fiber transport facilities for their own use have also indicated in public statements and filings that they will lease those facilities to other carriers. For this reason, based on the criteria that Verizon MA used to identify which carriers offer transport facilities at wholesale (described below), the same pairs of Verizon MA wire centers that meet the self-deployment trigger also meet the wholesale trigger. In addition, companies have deployed fiber transport facilities primarily, if not exclusively, for use by other carriers. In Massachusetts, these companies include NEESCOM, NEON (formerly Northeast Optic Networks), and Metromedia Fiber. This explains why there are 81 pairs of Verizon MA wire centers that meet the FCC's wholesale trigger, but not the self-provisioning trigger.

Attachment 6.C depicts the pairs of wire centers that meet either of the triggers in the Western LATA (126) and Attachment 6.C.1 shows the pairs of wire centers that meet either trigger in the Eastern LATA (128).

Q. ARE THE TRANSPORT FACILITIES THAT VERIZON MA HAS IDENTIFIED AS MEETING THE FCC'S TRIGGERS OPERATIONAL, AND DO THEY CONTAIN FIBER?

A. Yes. To count toward either of the FCC's triggers, the transport facility must be

"operationally ready to provide transport into or out of" the Verizon MA wire centers, *i.e.*, the carrier's collocation facility must be provisioned and powered, and its fiber must have been pulled into the collocation arrangement. *Triennial Review Order* ¶ 406 nn.1256, 1257.

In order to verify these facts, Verizon MA conducted physical inspections of all collocation arrangements included in this triggers case.[25] Inspectors checked each collocation facility in those Verizon MA wire centers to verify that there is powered equipment in place (*i.e.*, it is operational), and that the collocating carrier had non-Verizon fiber optic cable that both terminated at its collocation facility and left the wire center.[26] Verizon MA adopted rigorous controls to ensure the reliability of these data, including supervision by the director in charge of provisioning collocation throughout Verizon MA, written procedures for each step of the inspection process, standard forms that were filled out by each inspector, signed statements by the inspectors verifying the accuracy and reliability of the information

[25] More specifically, Verizon MA conducted physical inspections of collocation arrangements in fewer than 20% of the wire centers in LATAs 126 and 128. Because conducting these physical inspections is labor intensive and time consuming, Verizon MA did not inspect every wire center in LATAs 126 and 128 where there was a potential that multiple competing carriers have placed equipment and installed fiber transport facilities into these arrangements. For this reason, Verizon MA expects that data submitted by competing carriers in this proceeding may identify additional transport routes that are not identified in Verizon's initial triggers case, which, nevertheless meet one or both of the FCC's triggers.

[26] In a very few cases, Verizon MA could not confirm that fiber facilities physically left the Verizon MA wire center through the cable vault. However, because these collocation arrangements were operational at the time of inspection, Verizon MA reasonably assumes that the fiber facilities exited the wire center.

provided and the inspector's compliance with the written procedures, and signed statements by each inspector's supervisor confirming that the inspector followed the appropriate procedures. A collocation arrangement is included in Verizon MA's triggers case only if, through this rigorous process of inspection and verification, it was found to be operational and to have non-Verizon MA fiber. Copies of the Methods and Procedure for conducting the physical inspections, and verification forms, are attached to our testimony as Attachment 7.

Verizon MA's approach to this case has been conservative. Verizon MA inspected less than 20 percent of its Massachusetts wire centers and seeks relief from the Department for routes that originate and terminate in an even lower percentage of Verizon MA wire centers. Put differently, there are *over 23,000* possible intraLATA direct transport routes in Massachusetts, but Verizon MA is asking the Department for relief for only 194 direct routes or pairs of wire centers (less than 1 percent).

Q. IF A CARRIER HAS OPERATIONAL FIBER IN TWO VERIZON MA WIRE CENTERS IN A LATA, IS IT REASONABLE TO ASSUME THAT THE CARRIER HAS A TRANSPORT ROUTE BETWEEN THOSE VERIZON MA WIRE CENTERS?

A. Yes. When carriers deploy their own fiber transport facilities, they typically deploy fiber optic rings that connect to their points-of-presence (or "POPs") in the LATA and various customer premises, in addition to connecting to Verizon MA's wire centers. Therefore, if the same carrier has fiber-based facilities in two Verizon MA wire centers in a LATA, it is reasonable to assume that those fiber facilities are part

of a CLEC-operated ring and that traffic can be routed from one Verizon MA wire center to the other. It is also reasonable to assume that these CLEC-operated fiber rings connect to the CLEC's POP, and that traffic can flow to and from all parts of the carrier's network through the POP. Indeed, substantial public information distributed on numerous facilities-based carrier websites confirms that carriers engineer their fiber optic networks specifically to interconnect ILEC central offices to InterExchange Carriers ("IXC") and CLEC POPs as well as larger customer premises. For example, NEESCom's website states that "NEESCom and NSTARCom have recently interconnected their dark fiber networks" and "have connections to more than 50 ILEC central offices".[27] NEESCom's website indicates that almost all of the more than 50 ILEC central offices to which it has connections are Verizon MA wire centers located in Massachusetts. Additionally, MFN's website indicates that its "network has been specifically designed to meet the unique requirements that service providers demand" and that its "dense metropolitan fiber optic networks provide access to Carrier Hotels, Data Centers, Commercial Office Buildings and ILEC Central Offices."[28] Further, MFN offers a "Central Office, Optical Access Ramp (CO-OARs) service that "provides direct access into RBOC central offices with MFN dark fiber rings." MFN's website goes on to explain that its "[R]ings can be designed to connect Central Office to Central Office and POP to Central Office."

[27] URL: http://www.neescom.com/
[28] URL: http://www.mfn.com/products/carrier.shtm

Of course, Verizon MA does not have direct knowledge of how a carrier uses its fiber facilities. However, absent a showing by a carrier that its transport facilities do not and cannot connect pairs of Verizon MA wire centers, the Department should rely on Verizon's evidence that these carriers' networks connect together the transport facilities we have shown exist at each end of each identified route.

Q. DOES THE EVIDENCE ASSUME THAT THESE FIBER TRANSPORT FACILITIES DEPLOYED BY OTHER CARRIERS ARE USED FOR DS1 AND DS3 TRANSPORT?

A. Yes. The identification of the routes meeting the FCC's triggers assumes that when competing carriers deploy fiber and attach OCn electronics (*e.g.*, OC48 multiplexers), they then subdivide -- *i.e.*, channelize -- the OCn system into the lower transport levels required by their customers, including DS3s and DS1s. While fiber transport facilities are capable of operating at various levels of capacity; the capacity of the fiber is almost entirely a function of the electronics that a carrier attaches, not something inherent in the fiber itself. Once the fiber is deployed, it is operated at a DS1, DS3, OC48 or higher level – or at all of these levels simultaneously – simply by changing the electronics. The electronics used to channelize the OCn system to DS1 and DS3 transport levels are commonly available.

Verizon MA's assumption that competing carriers who deploy fiber optics generally build OCn level transport facilities, capable of channelization to DS1 or DS3, is consistent with standard industry practices. Few if any carriers deploy transport facilities to accommodate only a DS1 or only a DS3. *Triennial Review Order* ¶¶

386, 391. To the contrary, as the FCC found in its *Triennial Review Order*, carriers deploying fiber transport facilities almost always build at an OCn speed. *Triennial Review Order* ¶ 382 ("The record indicates that when competing carriers self-deploy transport facilities, they often deploy fiber optic facilities that are activated at OCn levels."). For example, AT&T reports that it, along with "most carriers, including incumbent LECs," *Triennial Review Order* ¶ 372 n.1144, generally constructs its interoffice transport networks at an OC48 capacity. Verizon MA's interoffice transport facilities likewise are generally built at an OC48 capacity.

These OCn facilities are then subdivided or channelized to a DS1 or DS3 level because these are the levels at which transport is typically requested by end user customers. There is considerable public evidence, including tariffs on file with the Department, that competing carriers deploy DS3 and DS1 circuits over their OC transport facilities in Massachusetts. For example:

- Allegiance Telecom of Massachusetts offers Dedicated Transport Services with transmission speeds ranging from 2.4Kbps to 2.4 Gbps, including DS1 and DS3 services;[29]
- MCI, which claims to have "the most scalable IP network available," offers end users "speeds from dial to OCn48;"[30] and

[29] Allegiance Telecom of Massachusetts, Inc. M.D.T.E. Tariff No.2, *see also* http://www.algx.com/pdf/maaccess.pdf

[30] http://global.mci.com/about/network. MCI advertises private line services encompassing "all speeds from Voice Grade to OC12c." see http://www.global.mci.com/us/engerprise/data/privatelines/domestic.

- AT&T offers private line services at all speeds up to OC192, including DS3.[31]

Attachment 8 contains a list of references to CLEC tariffs for dedicated transport on file with the Department.

The assumptions underlying Verizon MA's self-deployment trigger case are entirely consistent with the way transport facilities commonly are constructed and operated. The Department therefore should find that self-provisioned fiber optic transport facilities carry individual DS3 circuits -- unless a carrier shows, for a particular route, that it is not carrying DS3 circuits over its fiber facility.

Q. DO THESE FIBER TRANSPORT FACILITIES ALSO CONTAIN DARK FIBER?

A. Since dark fiber is simply fiber optic cable "that has not been activated through connections to optronics that light it, and thereby render it capable of carrying communications," *Triennial Review Order* ¶ 381, all fiber transport facilities, regardless of the capacities at which they now operate, once consisted entirely of dark fiber. Put differently, evidence of "lit" fiber is also evidence that a carrier has self-provisioned dark fiber.

Additionally, as a matter of standard industry network engineering design and sound economics, the vast majority of self-provisioned fiber transport facilities will have spare dark fibers. Carriers simply do not incur the large fixed and sunk costs required to self-provision fiber transport facilities, including the costs of obtaining

[31] AT&T Communications of New England, Inc.. D.T.E. – Mass. No. 9 see also

rights of way, digging up the streets and attaching cable to poles, and placing the fiber, without leaving even a single strand of dark fiber. Fiber transport facilities are always installed with extra fiber strands to meet projected demand growth. Furthermore, fiber cables are commonly manufactured and deployed in increments of 12 fiber strands (*i.e.*, 12, 24, 48, etc., fibers per cable). Verizon MA looked at data from fiber-based collocation applications in Massachusetts. These data indicated that most CLECs requested the ability to pull at least 48 fibers through Verizon MA's cable vault to their collocation arrangements. OCn electronics (*e.g.*, fiber multiplexers) generally require only 4 fibers to activate ("light") the fiber to provide dedicated transport. The difference between the large number of fibers CLECs anticipated pulling into their collocation arrangements and the small number of fibers required for dedicated transport strongly suggests the existence of spare fiber. And if there is unlit fiber in a self-deployed transport facility, the facility meets the FCC's self-deployment trigger for dark fiber.

Again, Verizon MA does not have direct knowledge of how much dark fiber a carrier has provisioned. However, absent a showing by a carrier that its transport facilities do not connect pairs of wire centers, the Department should rely on Verizon MA's evidence that these carriers' fiber networks also include available dark fiber on each identified route.

Q. HOW DID VERIZON MA IDENTIFY CARRIERS OFFERING TRANSPORT FACILITIES ON A WHOLESALE BASIS, AND THE CAPACITIES AT WHICH THOSE FACILITIES ARE OFFERED?

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http://serviceguide.att.com/servicelibrary/business/ext/files/MA09SD.pdf#page=1

A. There is considerable evidence that allows Verizon MA to identify routes that are likely to qualify for the wholesale trigger.

- If a carrier holds itself out as a wholesale provider on its website -- and does not limit its representation to particular routes -- Verizon MA identified the carrier as a wholesale provider.
- If a carrier has a CATT arrangement in any of Verizon MA's wire centers, which is an arrangement specifically designed for wholesale providers, Verizon MA considered the carrier to be a wholesale provider.
- Carriers that supply transport facilities to Universal Access, Inc. are wholesale providers, and Verizon identified them as such. Universal Access is a broker of transport services, and is a certificated carrier in all of Verizon's territories, including Massachusetts. *All* carriers that sell transport facilities to Universal Access are selling to another carrier, and, therefore, are appropriately considered wholesale providers. In addition, Universal Access indicates in its website materials that many of its customers are carriers, further supporting Verizon's conclusion that Universal Access' suppliers are wholesale providers.
- Verizon MA identified a carrier as a wholesale provider if it is listed in the *New Paradigm CLEC Report 2003* as offering dedicated access transport, unless the offering is limited to particular routes, and unless the carrier indicates that it will not provide its dedicated access transport to other

carriers. The New Paradigm Resources Group ("NPRG"), which prepared the *New Paradigm CLEC Report*, provides, among other things, business planning advice to CLECs. NPRG reports that it gets information from the CLECs themselves, and provides these carriers with the opportunity to provide direct input on coverage.

The vast majority of the carriers that Verizon MA has identified as offering wholesale transport services or facilities meet more than one of these criteria. For example, Choice One is identified in the *New Paradigm Report* as offering dedicated access transport (and there is no indication that Choice One will not sell to another carrier), and also advertises its wholesale services on its website. Verizon MA's evidence shows that these carriers hold themselves out as offering transport facilities on a wholesale basis. Absent particularized, route-specific evidence to the contrary, the Department should rely on Verizon MA's evidence of a carrier's general willingness to offer its transport facilities on a wholesale basis and treat all such carrier's transport facilities as available for leasing at wholesale. The carriers that Verizon MA has identified as offering transport facilities to other carriers in the Western and Eastern LATAs, and the evidence supporting that designation, are identified in Attachment 8 to our testimony, and include the following:

- Fibertech Networks offers "open access" networks that connect ILEC central offices, carrier hotels, data centers, and other traffic aggregator

points, enabling numerous telecommunications providers the ability to offer facilities-based services;[32]

- AboveNet (formerly MFN) offers wholesale dark fiber transport, [33] and "speeds up to OC 48;"[34]
- NEON Communications' Central Office Access Service provides wholesale, high bandwidth SONET private line connectivity to key ILEC COs for carriers and service providers serving the enterprise market. NEON offers SONET private line connectivity from OC-3 through OC-48 as well as electrical DS3s. NEON also offers individual dark fiber strands to its carrier customers.[35]

Therefore, unless there is specific evidence that a carrier has refused to sell to other carriers specific capacities and dark fiber on a particular transport route, the Department should find that a wholesale provider will sell DS1 and DS3 transport over its fiber facilities, as well as dark fiber.

C. Conclusion Regarding Dedicated Transport Triggers

Q. PLEASE SUMMARIZE THE CONCLUSIONS YOU DRAW FROM YOUR TESTIMONY ON DEDICATED INTEROFFICE TRANSPORT?

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32 http://www.fibertech.com/about.cfm.

33 http://www.mfn.com/products/darkfiber.shtm.

34 www.abovenet.com/products/transport-jpbandwidth.html.

35 http://www.neoninc.com/

A. Verizon MA has presented evidence that, in both the Eastern and Western LATAs, 194 direct routes (or pairs of Verizon MA wire centers) meet one or both the FCC's two objective triggers for dedicated transport. Because Verizon MA has taken a conservative approach in this proceeding by limiting its presentation to only Verizon MA wire centers in those LATAs that it physically inspected to confirm the existence of fiber-based collocation, there may be many more transport routes that meet the FCC's triggers. Verizon MA takes no initial position on those routes at this time but is continuing to evaluate the data it has received in the discovery process and expects that the CLEC data may identify additional transport routes that also meet one or both of the FCC's triggers.

IV. VERIZON MA'S HIGH CAPACITY LOOPS TRIGGERS CASE

Q. IS VERIZON MA PRESENTING EVIDENCE OF THE HIGH CAPACITY LOOPS DEPLOYED BY OTHER CARRIERS THAT MEET THE FCC'S TWO TRIGGERS?

A. Not at this time. Verizon MA does not know the specific buildings to which other carriers have deployed high capacity loops; this information is in the hands of those other carriers. Verizon MA is continuing to evaluate the data it has received in the discovery process and may submit evidence on buildings meeting the high capacity loop triggers once it has received all of the necessary information from other carriers and has had sufficient time to complete its analysis.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.