BEFORE THE WASHINGTON

UTILITIES AND TRANSPORTATION COMMISSION

IN THE MATTER OF THE CONTINUED	**)**	
COSTING AND PRICING OF	**)**	**DOCKET UT-003013**
UNBUNDLED NETWORK ELEMENTS	**)**	
AND TRANSPORT AND TERMINATION	**)**	**PART B**
	)	

Direct Testimony

of

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on behalf of

Qwest Corporation

August 4, 2000

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I. IDENTIFICATION OF WITNESS

PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT POSITION.

My name is William E. Taylor. I am Senior Vice President of National Economic Research Associates, Inc. ("NERA"), head of its Communications Practice, and head of its Cambridge office located at One Main Street, Cambridge, Massachusetts 02142.

PLEASE DESCRIBE YOUR EDUCATIONAL, PROFESSIONAL, AND BUSINESS EXPERIENCE.

I have been an economist for twenty-five years. I earned a Bachelor of Arts degree from Harvard College in 1968, a Master of Arts degree in Statistics from the University of California at Berkeley in 1970, and a Ph.D. from Berkeley in 1974, specializing in Industrial Organization and Econometrics. For the past twenty-five years, I have taught and published research in the areas of microeconomics, theoretical and applied econometrics, which is the study of statistical methods applied to economic data, and telecommunications policy at academic and research institutions. Specifically, I have taught at the Economics Departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology. I have also conducted research at Bell Laboratories and Bell Communications Research, Inc.

I have participated in telecommunications regulatory proceedings before several state public service commissions, including the Washington Utilities and Transportation Commission ("Commission") in Docket Nos. UT-991358, UT-990300, and UT-003006. In addition, I have filed testimony before the Federal Communications Commission ("FCC") and the Canadian Radio-television Telecommunications Commission on matters concerning incentive regulation, price cap regulation, productivity, access charges, local competition, interLATA competition, interconnection and pricing for economic efficiency. Recently, I was chosen by the Mexican Federal Telecommunications Commission and Telefonos de Mexico ("Telmex") to arbitrate the renewal of the Telmex price cap plan in Mexico.

I have also testified on market power and antitrust issues in federal court. In recent work years, I have studied—and testified on—the competitive effects of mergers among major telecommunications firms and of vertical integration and interconnection of telecommunications networks.

Finally, I have appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer. My curriculum vita is attached as Exhibit WET-1.

PLEASE DESCRIBE NERA, YOUR PLACE OF EMPLOYMENT.

Founded in 1961, National Economic Research Associates, Inc. ("NERA") is an internationally known economic consulting firm. It specializes in devising economic solutions to problems involving competition, regulation, finance, and public policy. Currently, NERA has more than 275 professionals (mostly highly experienced and credentialed economists) with 10 offices in the U.S. and overseas offices in Europe (London and Madrid) and Sydney, Australia. In addition, NERA has on staff several internationally renowned academic economists as Special Consultants who provide their professional expertise and testimony when called upon.

The Communications Practice, of which I am the head, is a major part of NERA. For over 30 years, it has advised a large number of communications firms both within and outside the U.S. Those include several of the regional Bell companies and their subsidiaries, independent telephone companies, cable companies, and telephone operations abroad (e.g., Canada, Mexico, Europe, Japan and East Asia, Australia, and South America). In addition, this practice has supported a large number of legal firms and the clients they represent, and routinely provided testimony or other input to governmental entities like the FCC, the Department of Justice, the U.S. Congress, several

state regulatory commissions, foreign regulatory commissions, and courts of law. Other clients include industry forums like the Unites States Telephone Association.

II. PURPOSE OF TESTIMONY

WHAT IS THE PURPOSE OF YOUR TESTIMONY?

I have been asked by Qwest Corporation ("Qwest") to provide an economist's perspective on the issue of intercarrier compensation for Internet-bound traffic.

III. SUMMARY OF TESTIMONY

PLEASE SUMMARIZE YOUR POSITION ON INTERCARRIER COMPENSATION FOR INTERNET-BOUND TRAFFIC.

My position on that issue is summarized as follows:

The FCC has ruled that calls bound for Internet Service Providers ("ISPs") are jurisdictionally interstate, not local. From a jurisdictional perspective, the proper model of interconnection that applies to ISP-bound calls is not that between an originating ILEC and a terminating CLEC, but that between an originating ILEC and an inter-exchange carrier ("IXC"). Even though the FCC has now been asked by a court to clarify its position on the jurisdictional status of Internet-bound calls, any end-to-end analysis of those calls clearly demonstrates that they are interstate.

Regardless of whether ISP-bound calls are *jurisdictionally* local or interstate, the correct economic perspective on inter-carrier compensation is formed from the principle of cost causation. On the basis of that principle, reciprocal compensation should not be paid by

the originating ILEC for ISP-bound calls. Instead, the ISP should compensate that carrier (and any other carrier that switches the ISP-bound call) for the end-to-end cost caused by the ISP customer, and recover that cost directly from the ISP customer.

Any incidental resemblance between how local voice calls and ISP-bound calls use carrier networks may help to determine how much those calls cost but is irrelevant for determining how the cost of those calls should be recovered, i.e., who should pay and who should receive compensation. Only cost causation matters for resolving that question.

The economic role of the ISP is not that of an end-user (of a serving CLEC) but rather of a carrier. Therefore, like the IXC that pays carrier access charges to partially defray the cost of a long distance call, the ISP should pay analogous charges to defray costs incurred by other carriers on its behalf to switch an ISP-bound call.

Persisting with reciprocal compensation (from the ISP customer's originating ILEC to the CLEC that ultimately switches the call to the ISP) would generate an inefficient subsidy for Internet use, distort the local exchange market, and generate unintended arbitrage opportunities for CLECs. Such compensation creates opportunities for CLECs to specialize in serving ISPs with the sole aim of accumulating reciprocal compensation revenues.

That specialization in serving ISPs and rapid growth in Internet traffic combines to shift the burden of the new network facility costs of carrying that traffic almost exclusively to the ILEC. Historically, these costs were never part of the calculations that regulators made to set residential local exchange service prices and to determine the implicit subsidy needed from other services offered by the ILEC. The substantial new costs of serving the Internet traffic under current circumstances would only worsen the ILEC's revenue deficit from residential local exchange service and put strong upward pressure on the price of that service and other retail services. Raising prices would not only prove untenable under growing competition, it would also be counter to current telecommunications law in the U.S. which requires that implicit subsidies be removed from service prices as expeditiously as possible.

1. Based on the FCC ruling that ISP-bound calls are primarily interstate, six states (Massachusetts, New Jersey, South Carolina, Louisiana, Colorado and Arizona) have determined that the payment of reciprocal compensation by ILECs

originating ISP-bound calls be stopped. Massachusetts and Louisiana regulators, in particular, have noted that by encouraging arbitrage opportunities, the reciprocal compensation regime of inter-carrier compensation for ISP-bound calls subverts real local exchange competition. The Colorado Commission has applied the economic analysis outlined here and concluded that reciprocal compensation should not be paid for ISP-bound traffic.

2. Because the FCC currently exempts ISPs from paying access charges, the next-best cost-causative form of compensation would be an equitable sharing (between the ILEC and the CLEC) of revenues earned by the CLEC from the lines and local exchange usage that it sells to the ISP. This form of revenue sharing may not be sufficient for the ILEC and CLEC that jointly provide access service to fully recover their costs, but the degree to which they under-recover those costs (or, equivalently, subsidize Internet service) will be the same proportion of their respective costs and, hence, competitively neutral. The third-best and a reasonable interim form of compensation would be bill and keep or, in effect, exchange of ISP-bound traffic between the ILEC and the CLEC at no charge to each other. Because it is not based on cost causation, reciprocal compensation should not be an option at all.

8.IV.INTER-CARRIER COMPENSATION FOR ISP-BOUND CALLS

A. INTRODUCTION

SHOULD RECIPROCAL COMPENSATION BE PAID FOR ISP-BOUND CALLS?

No, for two reasons. First, as the FCC has already determined, calls made to Internet destinations are much more likely to be jurisdictionally interstate than local.[1] Second, and

[1] FCC, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* and *Inter-Carrier Compensation for ISP-Bound Traffic*, CC Docket Nos. 96-98 and 99-68, Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68 ("*Internet Traffic Order*"), released February 26, 1999. The United States Court of Appeals for the District of Columbia vacated the *Internet Traffic Order* in a decision issued March 24, 2000. (*Bell*

(continued...)

more importantly, the economic principle of cost causation implies that the relationship between the end-user and the ISP is analogous to that between the end-user and an IXC. In fact, regardless of the exact jurisdictional status of Internet calls, there are sound *economic* reasons to (1) reject reciprocal compensation for such calls and (2) require that the ISP pay charges to the ILEC and/or CLEC akin to the access charges paid by IXCs to the ILEC for all long distance calls carried.

WHAT IS THE SIGNIFICANCE OF THE COST CAUSATIVE BASIS FOR REJECTING RECIPROCAL COMPENSATION FOR ISP-BOUND CALLS?

Regardless of the precise jurisdictional status of ISP-bound calls (i.e., whether they are interstate, local, or something else), the proper application of economic principles holds the key to determining what form of compensation is appropriate for ISP-bound calls, and who should compensate whom. I explain later in my testimony how cost causation helps to make that determination.

PLEASE FIRST EXPLAIN THE FCC'S FINDING THAT ISP-BOUND CALLS ARE

(...continued)

Atlantic v. FCC, No. 99-1094, D.C. Cir., March 24, 2000). In doing so, the court remanded the case back to the FCC for further explanation of its conclusion that ISP-bound traffic is predominately interstate. In response to the court's decision, the FCC's Common Carrier Bureau Chief observed that the ruling does not alter his view that ISP traffic is interstate but, instead, requires the FCC to provide further explanation of that conclusion. (*TR Daily*, March 24, 2000)

JURISDICTIONALLY MORE LIKELY TO BE INTERSTATE.

In its *Internet Traffic Order*, the FCC stated that it:

> traditionally has determined the jurisdictional nature of communications by the *end points* of the communication and consistently has rejected attempts to divide communications at any intermediate points of switching or exchanges between carriers.[2]

Based on this premise, the FCC explained that calls made to the Internet:

> do not terminate at the ISP's local server … but continue to the ultimate destination or destinations, specifically at an Internet website that is often located in another state. The fact that the facilities and apparatus used to deliver traffic to the ISP's local servers may be located within a single state does not affect [the FCC's] jurisdiction. … Indeed, in the vast majority of cases, the facilities that incumbent LECs use to provide interstate access are located entirely within one state.[3]

A call is said to be terminated when it is delivered to the called party's premises.[4] In this sense, an ISP-bound call may *transit* the switch of the carrier serving the ISP, but the call is then delivered to the Internet web site which, as the FCC noted, may be located outside the state in which the call originated. The FCC made it perfectly plain that what matters for determining jurisdiction is the end-to-end transmission itself, not how many different carriers or facilities handle the Internet call on its way. While this ruling has been remanded to the FCC by the D.C. Circuit Court of Appeals

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[2] *Internet Traffic Order*, ¶10. Emphasis added.
[3] *Id*., ¶12. Footnotes omitted.
[4] FCC, *In the Matter of Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order ("*Local Competition Order*"), released August 19, 1996, ¶1040.

for further explanation (see fn. 1, *supra*), an end-to-end analysis of Internet calls clearly demonstrates that they are interstate.

The FCC also noted that while jurisdiction is determined unambiguously when a call originates and terminates entirely within the circuit-switched network, it is a very different matter when the call crosses over from the circuit-switched network into the packet-switched network (that comprises the Internet's backbone network and Internet web sites) on the way to its destination.[5] This is particularly important because the packet-switched network is a "connectionless" network in which termination, in the sense understood within the circuit-switched network, technically does not happen. For example, before it is over, the same Internet call may reach several destination points on the Internet. Also, calls are switched or, more accurately, "routed" over the packet-switched network in a dynamic manner. This means that the Internet call, rearranged in the form of data packets of given length, are sent in a scrambled manner along different available paths within the backbone network, and the "call" is then reconstituted when all of the packets reach the intended Internet destination. This method of transport and routing is nothing like the termination that occurs within the circuit-switched network where, for every call originated and terminated, a dedicated call path is established for

[5] *Internet Traffic Order*, ¶18.

the duration of the call. These crucial differences make it all the more likely that an Internet call will cross several state boundaries—and in a random manner—before it reaches its destination. At best, such a call

> would be "jurisdictionally mixed," as the FCC has already correctly determined.

IN VIEW OF THE COURT'S REMAND DECISION, IS IT NOW NO LONGER VALID TO USE AN END-TO-END ANALYSIS TO DETERMINE WHETHER OR NOT INTERNET CALLS ARE JURISDICTIONALLY INTERSTATE?

No. While the Appeals Court decision found no fault with the *principle* of end-to-end determination of jurisdiction, it did observe that

> (t)he Commission's ruling rests squarely on its decision to employ an end-to-end analysis for purposes of determining whether ISP-traffic is local. There is no dispute that the Commission has historically been justified in relying on this method when determining whether a particular communication is jurisdictionally interstate. But it has yet to provide an explanation why this inquiry is relevant to discerning whether a call to an ISP should fit within the local call model of two collaborating LECs or the long-distance model of a long-distance carrier collaborating with two LECs.

Regardless of the outcomes of the remand decision and the FCC's rulemaking on the issue of compensation for ISP-bound calls, I show in the following sections that (1) an end-to-end analysis of the jurisdiction of a call makes *economic* sense, and (2) the cost-causation principle provides an

economic explanation as to why an Internet-bound call falls within the long-distance paradigm rather than the local. Together, these arguments imply that an Internet-bound call is generally interstate in jurisdiction (because the points of origination and final termination are typically in different states) and should be treated for LEC reciprocal compensation purposes in the same way that other interstate calls are treated (because cost causation requires that the cost of the Internet-bound call ultimately be faced by the ISP's customer). While the so-called ESP exemption[6] rules out cost recovery through interstate access charges, the interstate *paradigm* under which LECs that jointly provide interstate carrier access divide revenues remains the most efficient mechanism for LECs to compensate each other for joint carriage of Internet-bound traffic.

B. END-TO-END ANALYSIS OF INTERNET CALLS AND ECONOMIC EFFICIENCY

HOW DOES DETERMINING JURISDICTION OF A CALL BASED ON AN END-TO-END ANALYSIS PROMOTE ECONOMIC EFFICIENCY?

In general, the jurisdictional assignment of a call determines whether state or federal law or

[6] I discuss the implications of the ESP exemption later in my testimony.

regulation is applicable to the call and is fundamentally a legal matter. However, as in other circumstances in law and economics, an understanding of the economic forces is helpful in determining a sensible outcome. Here, the principal effect on consumers or carriers of the assignment of a call to the interstate jurisdiction would be for FCC regulatory rules to apply and for charges to be assessed in accordance with interstate rather than intrastate tariffs. Both customers and carriers value certainty and consistency in the prices and other terms and conditions of services they purchase, and a regulatory rule that randomly changed the price of a particular call every hour (for example) would certainly make all parties worse off.

Telecommunications customers purchase the ability to call specific telephone numbers. While they care about the points of origination and termination, they are fundamentally indifferent as to how the call is actually provisioned. Similarly, people pay to ship goods between particular points and—except for differences in transit time—don't care about the particular path the carrier actually chooses to take. At the same time, carriers find it convenient and cost effective to change the routing of a particular call, generally depending on network congestion and availability of facilities. For example, CLECs with small networks will often haul traffic back and forth

across state lines in order to serve a wide geographic area with a single switch. Such call routing decisions should not be distorted by regulatory rules: economic efficiency would be reduced in the aggregate if carriers' routing decisions were affected by the jurisdictional classification of the call.

Against this backdrop, the FCC's traditional end-to-end analysis of the jurisdiction of a call provides clear efficiency gains compared with a jurisdictional analysis that takes into account the path the call actually traversed. Customers essentially care only about the end points of the call, and carriers find it cost-effective to route calls between end points differently depending on carrier-specific and call-specific circumstances. Thus, determining the jurisdiction of a call based only on its points of origin and termination reduces the distortion that imposing different interstate and intrastate tariffs would otherwise cause.

For an economist, the important characteristics of a service can be organized into two groups around the concepts of demand and supply. On the demand side, an end-to-end analysis of a call reflects the characteristics of the service that are important to the end user and for which the end user is willing to pay, namely, the point of origination of the message at the customer's

computer and the point of termination of the message at the distant web site. In particular, customers place calls to an ISP, not to reach the ISP in any sense, but rather to use the ISP to reach a remote web site.[7] The consumer has no interest in the path any particular packet takes from origination to termination; all that matters is access to the desired web site at the terminating end. Similarly, on the supply side, the ISP has no interest in the content of the call; rather, it's the function for which its network is built is to deliver the call to the requested web site address in the most efficient way possible. In order that the jurisdictional assignment of the call reflect the economic characteristics of the call that cause customers to purchase the service and suppliers to build networks to provide it, that assignment must be based on the jurisdictions of the end points of the call.

C. Economic Principles for Determining Inter-Carrier Compensation for ISP-Bound Traffic

PLEASE EXPLAIN THE PRINCIPLE OF COST CAUSATION AND ITS RELEVANCE

[7] This relationship between the cost-causing end user and the ISP is precisely the same as the relationship between a long distance customer and an IXC. When a long distance customer dials 1 (or some other code) to reach an IXC, the customer has no interest in dealing with the IXC. Rather, the function of the IXC—for which the customer is willing to pay—is to carry the message unaltered to the number dialed by the customer.

TO COST RECOVERY?

Cost causation is the fundamental economic principle on which all pricing and cost recovery efforts should be based. This principle asks two questions: (1) who or what has caused the cost in question (cost source)? and (2) how much is the cost in question (level of cost recovery)? Once the person or activity that gives rise to a cost has been identified, the amount of cost in question is recovered entirely from that source. This linkage between cost recovery and the cost source stands on its own, and makes no reference whatsoever to the distribution of benefits. That is, even if an activity provides benefits to others besides the cost-causer, its cost should be recovered fully from its source and not from incidental beneficiaries.

Consumers determine what and how much to buy on the basis of prices they pay. Their act of buying also causes cost. To ensure that society's scarce resources are put to their best use, and that only the goods and services of highest value to society are produced and consumed, consumers (cost-causers) must be made to pay prices that fully reflect the costs they cause. Application of the cost causation principle thus leads to prices that fully recover costs and, at the same time, ensure that consumption occurs—and resources are used—efficiently.

PLEASE EXPLAIN HOW COST CAUSATION DETERMINES THAT ISPS ARE ANALOGOUS TO IXCS AND SHOULD THUS PAY CHARGES SIMILAR TO ACCESS CHARGES.

Suppose I am a Qwest subscriber for local service and an Earthlink customer for Internet traffic. Suppose further that Earthlink obtains access service from a CLEC, say Sprint. When I (or my computer) place an Internet-bound call, what costs are incurred and what revenue sources are available to cover those costs? Switching and transmission costs are straightforward: Qwest carries the call from my computer to its point of connection with Sprint, Sprint carries the call to Earthlink, and Earthlink performs protocol conversion and sends the call out into the Internet. Revenue to cover these costs comes from three sources: I pay Qwest a regulated price for residential local exchange service, and I pay Earthlink a competitively-determined price for ISP services. Earthlink pays Sprint a price for network access service[8] that is limited by the FCC's ESP exemption from interstate access charges.[9]

Two economic propositions are important in determining who should pay what to whom in this circumstance:

> When I dial the access number for Earthlink, I am acting as a customer of Earthlink to which I pay a monthly access fee, even though the call is facilitated by the originating ILEC (Qwest) and the co-carrier CLEC (Sprint) serving the ISP.

[8] In view of Sprint's recent acquisition of Earthlink, I assume the payment here is of an internal transfer price.
[9] See fn. 6 *supra*.

Earthlink performs the economic functions of a carrier—or an enhanced service provider ("ESP")—that routes the Internet call through the backbone network to its final destination. Earthlink performs standard carrier functions such as transport and routing, as well as maintains leased facilities within the backbone network.

Under these assumptions, an Internet-bound (or, ISP-bound) call is identical in function to an interstate long distance call where the IXC collects the revenue from the cost-causing end-user and pays all the other carriers necessary to complete the call.

The principle of cost causation implies that, *for the purposes of an Internet call*, I am properly viewed as an Earthlink customer placing an Internet-bound call, not a Qwest customer placing a local call. Qwest and Sprint simply provide access-like functions to help the Internet call on its way, just as they might provide originating or terminating carrier access to help an IXC carry an interstate long distance call. Therefore, because the economic relationship is analogous to ILEC-IXC interconnection (access), rather than to ILEC-CLEC interconnection (local), the efficient form of inter-carrier compensation is for the ISP to compensate its serving LEC, which, in turn, shares that compensation with any co-carriers that have incurred costs in handling the call.

Inter-carrier compensation through reciprocal compensation is not

economically efficient in these circumstances. Reciprocal compensation makes economic sense for inter-carrier compensation for *local* traffic, where:

- the ILEC subscriber acts as a customer of the local originating ILEC,[10] purchasing local exchange service out of the ILEC's tariff, and
- the call terminates at a local exchange end-user, i.e., a party that does not receive revenue from the originating end-user for carrying the call.

For my ISP-bound traffic, I am acting as a customer of Earthlink when I place my call. Although the portion of my Internet call that lies entirely within the circuit-switched network, i.e., up to the ISP, *resembles* a local call, its economic function is very different, since the ISP is not simply a passive end-user recipient of my call.[11] Rather, Earthlink has designed, marketed and sold me the service I am using, collected my monthly fee for Internet access,

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[10] I distinguish here between a "subscriber" and a "customer" in order to show cost causation. I subscribe to my local carrier in order to have *access* to the public switched network, but I act as a customer of that local carrier in order to *use* Call Waiting service or of a long distance carrier in order to *use* interstate long distance service. When I am a customer of the local carrier, I cause usage-sensitive cost for that carrier. Similarly, I cause cost for the long distance carrier when I use *its* long distance service.

[11] This point has been made very clearly by the Louisiana Public Service Commission. In becoming the fourth state regulatory agency to deny the payment of reciprocal compensation for ISP-bound traffic, the Louisiana Commission stated:

> There is no prevailing industry custom of treating ISP traffic as "local" for reciprocal compensation purposes. FCC regulations require that ISPs be treated as end users *for only one purpose, the access charge exemption*.

Louisiana Public Service Commission, *In re Petition of KMC Telecom, Inc. Against BST to Enforce Reciprocal Compensation Provisions of the Parties' Interconnection Agreement*, Order in Docket No. U23839 ("*Louisiana ISP Compensation Order*"), October 13, 1999, at 13.

answered my questions, established telephone numbers at which I can access its services without paying toll charges and paid Sprint for access to the public switched telephone network. Thus, the same subscriber that acts in the capacity of a customer of the originating ILEC when making a local voice call acts in the capacity of a customer of the ISP when making an Internet call. This situation is not an unfamiliar one: it is exactly analogous to the subscriber acting in the capacity of a customer of an IXC when making a long distance call.

PLEASE EXPLAIN THE CONTRAST BETWEEN THESE TWO "MODELS" OF INTER-CARRIER COMPENSATION IN MORE DETAIL.

ILEC-CLEC Interconnection Model. When a Qwest subscriber places a local call that terminates to a CLEC subscriber, what functions does Qwest perform? Obviously, it originates the call by providing dialtone, local switching, and transport to the CLEC's point of interconnection. In addition, Qwest has marketed the service to its subscriber (and customer of local calls) and, under regulatory direction, determined both price level and structure and other terms and conditions under which the customer decides to place the call. Qwest will determine if the call has been completed, bill and collect from the customer for the call (if measured service applies) or for flat-rate service, and answer questions regarding the bill or the service. The story is precisely symmetric if the originating party is a CLEC

customer and Qwest or another CLEC terminates the call.

Thus, under ILEC-CLEC interconnection, the originating subscriber is the cost-causing party and is the customer of the originating ILEC. That originating ILEC charges its cost-causing customer for the entire end-to-end call and compensates the CLEC that terminates the call. The originating ILEC's network costs plus the compensation it pays is—in theory—recovered from the local call charge it levies on its (originating) customer. The terminating CLEC's costs are recovered from the compensation payment it receives from the originating ILEC. In this arrangement, both parties recover their costs, and the cost-causer is (again, in principle) billed for the entire cost he or she causes both carriers to incur. Thus, this arrangement is not an arbitrary regulatory or legal construction: for local interconnection between an ILEC and a CLEC, it makes economic sense. It would arise spontaneously in unregulated competitive markets where the ILEC serving the originating subscriber acts effectively as its agent in making necessary network and financial arrangements with a CLEC to terminate the call, just as General Motors purchases goods or services from Ford or Bendix to include in an automobile purchased by a General Motors customer.

ILEC-IXC Interconnection Model. In contrast, when a Qwest subscriber places a long distance call using, e.g., AT&T, Qwest's function is limited to recognizing the carrier code (or implementing presubscription in its switch) and switching and transporting the call to AT&T's point of presence. While, at some level, the functions its network performs are similar to those used to deliver local traffic to a CLEC[12], the economic functions are very different. It is AT&T that has marketed the service to its customer and determined both the price level and structure and other terms and conditions of the call. AT&T will send, explain, and collect the bill from the customer or lose the revenue if it cannot. Thus, under ILEC-IXC interconnection, the originating subscriber is, from an economic perspective, the customer of the IXC, not the originating ILEC.

When an ILEC (or CLEC) subscriber places long distance calls, he acts as a cost-causing customer of the IXC. The ILEC subscriber, acting as an IXC customer, causes costs at various points in the networks involved: for the ILECs/CLECs that originate and terminate the long distance call, as well as for the IXC that transports it between local exchanges. The IXC receives revenue

[12] Qwest supplies the customer's loop and provides dialtone, local switching, and transport to AT&T's point of presence.

from the customer which it uses, in turn, to pay originating and terminating access charges to the ILECs/CLECs involved and to cover its own network and administration costs. In effect, the IXC acts as its customer's agent in assembling the necessary local exchange components of the call. The ILECs/CLECs involved recover their costs from access charges. If more than one such carrier is involved in delivering the call from the end user to the IXC, they typically divide the access charges paid by the IXC in proportion to the costs incurred to provision the access portion of the call. Thus, in principle, the cost-causing customer faces a price that reflects all of the costs the call engenders, and all parties that incur costs to provision the call have a claim on the cost-causer's payment.

From an economic perspective, ILEC-IXC interconnection and ILEC-CLEC interconnection have some important similarities as well as some important differences. In both cases, the originating ILEC subscriber is the cost-causer, and that subscriber pays the supplier (the party with whom the subscriber has contracted for service) for the end-to-end service he receives. The major difference is that in the ILEC-CLEC local interconnection regime, the cost-causing ILEC subscriber is also a customer of the originating ILEC for local

service, while in the ILEC-IXC regime, that cost-causing subscriber acts as a customer of the IXC for long distance service.

FROM AN ECONOMIC PERSPECTIVE, WHY DOES ILEC-CLEC-ISP INTERCONNECTION RESEMBLE THAT BETWEEN THE ILEC AND THE IXC BUT NOT THAT BETWEEN THE ILEC AND THE CLEC?

The question at issue is: when multiple ILECs/CLECs combine to deliver traffic to an ISP, are they interconnecting in an ILEC-CLEC local interconnection regime or an ILEC-IXC interstate access regime? The FCC has characterized the link from an end-user to an ISP as an *interstate* access service and, absent other considerations, ISPs would be subject to charges analogous to interstate access charges. As far back as 1983, the FCC concluded that ESPs (which, today, would include ISPs) are "among a variety of users of access service" in that they "obtain local exchange services or facilities which are used, in part or in whole, for the purpose of completing interstate calls."[13]

The service provided by an ISP exists to enable that ISP's customers to access information and information-related services stored on special computers or web servers at various locations around the world. The ISP

[13] FCC, *In Re: MTS and WATS Market Structure*, CC Docket No. 78-72, Memorandum Opinion and Order ("*MTS/WATS Order*"), 1983.

typically facilitates such access by selling a flat-rated monthly or yearly Internet access service that, in most cases, calls for that ISP customer to make a toll-free call in order to reach the ISP's modems. Besides price, ISPs compete on the extent of geographic coverage, specifically, the number of local calling areas they can offer to ISP customers as possible points of connection ("POCs"), as well as on various components of service quality including provision of specialized information services.[14] The ISP markets directly to the originating ILEC's subscriber, attempting to maximize its number of customers and the amount of traffic *incoming* to it by publishing and advertising as many local calling numbers (at its POCs) as possible, and doing everything within its power to help the potential customer avoid having to incur per-minute or toll charges to have Internet access. If necessary, ISPs may use foreign exchange ("FX") lines to haul Internet traffic from considerable distances while still offering service to the ISP customer for the price of a local call.[15] Some ISPs offer 800 service for their customers to

[14] The POCs are points at which the carrier serving the ISP (which may be a CLEC) terminates the ISP-directed call and routes it to the ISP.

[15] In that respect, the implicit contract is analogous to that which exists between a party with a toll-free "800" telephone number and other parties that are invited to call that number. The holder of the 800 number causes cost by signaling others to call him or her and accepts that cost by being willing to pay for it. Moreover, the holder of the 800 number may control the number of potential callers by choosing the

(continued...)

access their network when flat-rate local calling is unavailable, although there are some which impose a per-minute charge on the subscriber for such access. Some ISPs maintain Internet gateways for their customers and earn revenue from advertisers that depend more or less directly on the number of customers and the number of times its customers access advertised sites. The ISP bills its customers for their access and usage, and stands to lose money if it cannot collect from them. From an economic perspective, then, the party that causes the cost associated with ISP-bound traffic is the originating ILEC's subscriber who acts in the capacity of an ISP customer. In this sense, ISP-bound traffic has the same characteristics as IXC-bound traffic in the ILEC-IXC regime and has characteristics opposite to CLEC-bound traffic in the ILEC-CLEC local interconnection regime.

ARE THERE DIFFERENCES BETWEEN AN IXC-BOUND CALL AND AN ISP-BOUND CALL?

A theoretical difference is that an ILEC subscriber that places a long distance call does not

(...continued)
method for disclosing the number (e.g., directory information, word of mouth, special invitation, etc.). Similarly, ISPs that use FX lines to provide local connectivity to distant customers signal a willingness to accept—and pay for—the generally higher cost of providing Internet access to those customers. They too can control the number of potential ISP customers by choosing both how many points of connection to offer for providing local connectivity and pricing options for its Internet access service.

incur a local usage charge on the originating end, while an ISP customer, in principle, does. As a practical matter, however, this difference is irrelevant. Flat and measured basic local exchange rates have *not* been set to reflect the added cost of serving ISP-bound traffic, and a longstanding public policy concern with the level of basic exchange rates limits the ability of the regulator to recover these costs from all local exchange customers.[16] In addition, ISPs compete, in part, by providing local exchange numbers so that their customers can reach them without incurring per-minute charges from the serving ILEC or CLEC. Because ISP-bound traffic is caused by the ISP's customer, the ISP would generally bear the cost of the local connection, just as the IXC does for long distance traffic. And, in fact, competitive forces in the ISP market have encouraged ISPs to incur costs and lease facilities so that their customers do not pay additional local exchange costs. For both of these reasons, it would be naïve to think that the originating ILEC's subscriber fully compensates that ILEC for the end-to-end cost of the ISP-bound call.[17]

Thus, I conclude that the ILEC should not be required to pay reciprocal compensation (or, a call "termination" charge) to CLECs for Internet calls by

16 Indeed, because the longer holding times of ISP-bound traffic impose costs different from those for ordinary voice traffic, raising prices for all local exchange customers to recover costs imposed by the ISP's customers would constitute a subsidy to ISP access. ILECs that originate ISP-bound traffic would effectively charge ISP customers less than incremental cost and ordinary voice customers more than otherwise for local exchange usage.

17 This problem is likely to be even more acute when the ILEC's subscriber pays flat-rated local charges rather than per-call rates for local service.

the ILEC subscriber, i.e., the ILEC-CLEC local interconnection regime should not apply for such calls. Instead, I also conclude that the ISP should pay the ILEC (and the CLEC that also serves it) usage charges analogous to carrier access charges paid by IXCs, i.e., the ILEC-IXC interconnection regime should apply. Only such a payment would close the gap between the full cost of the call up to the ISP and the local call charge that is assessed to the end-user by the originating ILEC. In this economically correct view of inter-carrier compensation, the CLEC that switches Internet calls for the ISP is compensated not from reciprocal compensation paid by the originating ILEC but from charges paid by the ISP. Moreover, this economically correct perspective does *not* depend on the exact jurisdictional status of the ISP-directed call.

DO ISPs PAY CHARGES ANALOGOUS TO CARRIER ACCESS TODAY?

No. No rulemaking has yet occurred at the FCC to establish such charges for ISPs, and the D.C. Circuit Court of Appeal's recent decision calls into question when such rulemaking will occur. In the meantime, ISPs remain beneficiaries of an exemption from paying interstate carrier access charges that has been granted to ESPs since 1983.

WHAT RATIONALE HAS THE FCC USED TO JUSTIFY THE ESP EXEMPTION?

The FCC has generally argued that the ESP exemption was necessary to protect fledgling information service providers from the effects of per-minute charges: i.e.,

> to protect certain users of access services, such as ESPs, that had been paying the generally much lower business service rates from the rate shock that would result from immediate imposition of carrier access charges.[18]

Whether 15 years is adequate to dissipate potential rate shock is an interesting economic question but one that is beside the point, as the FCC and Congress have made it abundantly clear that no per-minute charge will be assessed on ISPs.

HOW DOES THIS RATIONALE FOR THE ESP EXEMPTION APPLY TO THE INTERCARRIER COMPENSATION ISSUE CURRENTLY BEFORE THIS COMMISSION?

If per-minute reciprocal compensation were required, ILECs would be in roughly the same position as the ESPs were when the exemption went into effect. Under reciprocal compensation, ILECs would have to pay the per-minute cost of transport and termination for ISP-bound traffic to CLECs that disproportionately serve ISPs. Where ESPs were thought to be unable to recover those costs from their customers because a per-minute charge would discourage use of the new technology, ILECs are similarly likely to be unable

[18] *Internet Traffic Order*, ¶5, and *MTS/WATS Order*, ¶715.

to recover those costs from their own subscribers, particularly when state regulators are reluctant to recover the cost increases caused by the subset of dial-up Internet customers by increasing basic exchange rates to all customers. Moreover, when ISPs are served by CLECs, ILECs experience an additional net cost from reciprocal compensation, namely, the excess of their reciprocal compensation payments over the costs they avoid when CLECs deliver Internet traffic to ISPs. To recover this additional cost directly, ILECs may be compelled to bill their own subscribers for the difference, but *only* if those subscribers are also customers of ISPs that are served by CLECs. When the ISPs are served by ILECs instead, subscribers of those ILECs do not generate additional costs from reciprocal compensation and thus should not have to pay for them. In other words, dial-up customers of CLEC-served ISPs impose more cost on ILECs than dial-up customers of ILEC-served ISPs. However, while there may be a cost justification for charging local subscribers differently depending on which local exchange carriers serve their ISPs, in reality such differential pricing is unlikely to be practical or politically acceptable.

> Thus, under reciprocal compensation for Internet calls, the ILEC is in the very position from which the ESP exemption was designed to protect ESPs: subject to a per-minute cost for which it has no practical mechanism for recovery. Ironically, the fact that the ILEC has no ability to recover the costs

of reciprocal compensation from the cost-causer is sometimes touted as an advantage of the plan. However, creating a new, additional implicit subsidy in ILEC local exchange rates is hardly wise public policy just as local exchange competition begins to accelerate.

SOME OBSERVERS CLAIM THAT ISP-BOUND TRAFFIC AND LOCAL VOICE TRAFFIC ARE "FUNCTIONALLY IDENTICAL" BECAUSE THEY USE THE SAME NETWORK COMPONENTS. FOR THIS REASON, SHOULDN'T RECIPROCAL COMPENSATION APPLY TO ISP-BOUND TRAFFIC JUST AS IT DOES TO LOCAL VOICE TRAFFIC?

No. First, there has to be a distinction—of the kind drawn by the FCC—between a local *voice* call and a call to an Internet site. Unlike the voice call, the Internet call does not terminate within the CLEC's network but, rather, continues on through the Internet backbone to its ultimate destination. Therefore, when viewed from end to end, an Internet call—which treats the ISP as a point of passage into the Internet's packet-switched world—is essentially quite different in many aspects than a voice call, even if it is similar in others.

Second, the implicit premise of the question itself is incorrect because it ignores cost causation. As I explained earlier, there are cost-causative differences between ISP-bound traffic and ordinary local traffic despite a

superficial functional resemblance between *parts of* the two types of traffic. From an economic perspective, the ILEC-CLEC model of inter-carrier compensation does not apply to Internet-bound traffic, and reciprocal compensation between local exchange co-carriers is not an efficient method of recovering costs. Moreover, any observation that ISP-bound traffic and local traffic use the same network elements is fundamentally a red herring. Technical characteristics of production or the level of cost may be items of interest in themselves, but they are entirely irrelevant for determining who should be made to pay for the cost. Even if the two types of traffic were functionally identical—which they are not—and generated the same level of cost, it would still be economically inappropriate to apply reciprocal compensation to both.

Third, if the cost *per minute* to terminate a local voice call were truly the same as that cost an ISP-bound call imposes on a CLEC, I would have no hesitation in recommending that compensation rates for the two types of traffic be the same. However, the costs per minute for the two types of calls are *not* likely to be the same because of significant differences between them in average call durations, time of day load distributions and the effects of one-

to-one concentration at the switch that serves the ISP.

WOULD THIS FORM OF COMPENSATION DENY A CLEC FAIR PAYMENT FOR USE OF ITS NETWORK BY AN ISP-BOUND CALL FROM A QWEST SUBSCRIBER?

Absolutely not. The point at issue here is whether it should be up to *Qwest* (the ILEC) to compensate the CLEC for the cost the latter incurs in carrying Internet calls to ISPs it serves. While the CLEC is entitled to recover fully the cost it incurs for ISP-bound calls, such recovery (compensation) ought to come—in accordance with cost causation—from the ISP or ISPs it serves, not from Qwest. To have it otherwise— particularly in current circumstances in which CLECs are believed to share reciprocal compensation revenues with the ISPs they serve—would only reinforce the perverse incentive to specialize in providing "termination" services for ISPs (to the exclusion of virtually all other local exchange services) or to generate as much traffic as possible from Qwest's subscribers to ISPs with which those CLECs are allied.[19]

[19] Both the Massachusetts DTE (*Massachusetts ISP Compensation Order*, Section IV and fn. 39) and the FCC (*Internet Traffic Order*, ¶24, fn. 78) took note of —and expressed concern at—that development. Both noted, in particular, the web site claims of ISG-Telecom Consultants International, a Florida-based company formed in the aftermath of the Telecommunications Act of 1996 ("1996 Act"), that promises to turn ISPs into CLECs and IXCs with their own ISP operations. As a rationale for doing so, ISG-Telecom believes that "… as a facility based CLEC, the ISP/CLEC should be able to participate in *reciprocal compensation* with the carriers, providing there is not a negative ruling from the FCC in up and coming months." (emphasis added in part) Clearly, arbitrage opportunities presented by the payment of

(continued...)

D. STATE DECISIONS

IN THE ABSENCE OF FCC ACTION TO ESTABLISH INTER-CARRIER COMPENSATION RULES, HOW HAVE THE INDIVIDUAL STATES ACTED?

For a period of time until the FCC's *Internet Traffic Order* was issued in early 1999, a number of states pursued their own rulemaking on the issue. Those states chose to adopt the ILEC-CLEC local interconnection view of the world and required that the originating ILEC pay reciprocal compensation to terminating CLECs for ISP-bound calls just as they would for local voice calls. After the FCC's *Internet Traffic Order* was issued, regulators in Massachusetts, who had previously also adopted the local interconnection view, reversed themselves and declared the unqualified payment of reciprocal compensation for ISP-bound traffic to be antithetical to real competition in telecommunications.[20] Subsequently, regulators in New Jersey, in reversing an arbitrator's recommendation in October 1998, also ordered that reciprocal compensation not be paid for ISP-bound traffic.[21] Regulators in

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reciprocal compensation for ISP-bound traffic, not an inherently efficient network arrangement, lies at the heart of this mission statement.

[20] Massachusetts Department of Telecommunications and Energy ("DTE"), *Complaint of MCI WorldCom, Inc., Against New England Telephone and Telegraph Company d/b/a Bell Atlantic-Massachusetts for Breach of Interconnection Terms Entered Into Under Sections 251 and 252 of the Telecommunications Act of 1996*, Docket No. 97-116-C, Order ("*Massachusetts ISP Compensation Order*"), May 1999. The DTE ordered that all future reciprocal compensation payments by Bell Atlantic be placed in an escrow fund until final disposition on the matter of inter-carrier compensation. The CLECs serving ISPs in Massachusetts currently do not themselves receive any compensation for ISP-bound traffic.

[21] New Jersey Board of Public Utilities, *In the Matter of the Petition of Global Naps, Inc. for Arbitration of*

(continued...)

South Carolina[22] and Louisiana,[23] too, have directed that such compensation not be paid. Recently, Massachusetts regulators dismissed petitions by several CLECs for a reconsideration of their May 1999 ruling against reciprocal compensation for ISP-bound traffic and called on the parties to negotiate alternative compensation mechanisms for such traffic.[24] More recently, the Colorado Commission explicitly adopted the ILEC-IXC interconnection model for ISP-bound traffic in support of its decision opposing the payment of reciprocal compensation for ISP-bound traffic.[25]

WHAT REASONS DID MASSACHUSETTS REGULATORS GIVE FOR THIS REVERSAL?

The Massachusetts Department of Telecommunications and Energy explained its reasons for the reversal thus:

> The unqualified payment of reciprocal compensation for ISP-bound traffic, implicit

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Interconnection Rates, Terms, Conditions and Related Arrangements with Bell Atlantic-New Jersey Pursuant to Section 252(b) of the Telecommunications Act of 1996, Docket No. T098070426, Order, July 7, 1999.

22 South Carolina Public Service Commission, *In re Petition for Arbitration of ITC^DeltaCom Communications, Inc. With BellSouth Telecommunications, Inc. Pursuant to the Telecommunications Act of 1996*, Docket No. 1999-259-C, Order No. 1999-690, Order on Arbitration, October 4, 1999.

23 *Louisiana ISP Compensation Order*.

24 "Mass. 'Recip Comp' Order Brings GNAPs, Bell Atlantic Back to FCC," *Telecommunications Reports*, March 6, 2000, at 30.

25 Colorado Public Utilities Commission, Initial Commission Decision, Docket No. 00B-011T ("*Colorado Decision*"), May 5, 2000. This decision was emphatically affirmed in the Colorado Commission's Decision Denying Application for Rehearing, Reargument, or Reconsideration, adopted June 7, 2000.

> in our October Order's construing of the 1996 Act, does not promote real competition in telecommunications. Rather, it enriches competitive local exchange carriers, Internet service providers, and Internet users at the expense of telephone customers or shareholders. This is done under the guise of what purports to be competition, but is really just an unintended arbitrage opportunity derived from regulations that were designed to promote real competition. A loophole, in a word. … But regulatory policy … ought not to create such loopholes or, once having recognized their effects, ought not leave them open.
>
> Real competition is more than just shifting dollars from one person's pocket to another's. And it is even more than the mere act of some customers' choosing between contending carriers. Real competition is not an outcome in itself—it is a means to an end. The "end" in this case is *economic efficiency* … Failure by an economic regulatory agency to insist on true competition and economic efficiency in the use of society's resources is tantamount to countenancing and, encouraging waste of those resources. Clearly, continuing to *require* payment of reciprocal compensation … is not an opportunity to promote the general welfare. It is an opportunity only to promote the welfare of certain CLECs, ISPs, and their customers, at the expense of Bell Atlantic's telephone customers and shareholders.[26]

ON WHAT DID THE COLORADO COMMISSION BASE ITS DECISION THAT RECIPROCAL COMPENSATION SHOULD NOT APPLY TO ISP TRAFFIC?

The Colorado Commission relied on the economic analysis outlined above.

> The Commission finds that U S WEST's analogy is the more reasonable….The ILEC-IXC analogy suggests that the ISP should compensate both U S WEST and Sprint for the costs they incur in transmitting this call. Even if that analogy were not employed, applying the principle of cost causation would lead to the same conclusion, namely that the ISP should pay access charges to both U S WEST and Sprint for the cost caused by the customer….
>
> While ISP calls appear to be interstate in nature, our conclusion is not necessarily based upon that determination. Even if this traffic were considered to be local in

[26] *Massachusetts ISP Compensation Order*. Emphasis added (in part) and in original (in part).

> nature, the Commission still would not embrace reciprocal compensation with a positive rate. Such a scheme would, in our view, bestow upon Sprint an unwarranted property right, the exercise of which would result in decidedly one-sided compensation. In addition, we find that reciprocal compensation would introduce a series of unwanted distortions into the market. These include: (1) cross-subsidization of CLECs, ISPs, and Internet users by the ILEC's customers who do not use the Internet; (2) excessive use of the Internet; (3) excessive entry into the market by CLECs specializing in ISP traffic mainly for the purpose of receiving compensation from the ILECs; and (4) disincentives for CLECs to offer either residential service or advanced services themselves. In short, we agree with U S WEST that reciprocal compensation for ISP traffic would not improve overall social welfare; it would simply promote the welfare of some at the expense of others.[27]

HAVE OTHER STATES REACHED DIFFERENT CONCLUSIONS ON THIS ISSUE?

Yes. Prior to the FCC's ruling that Internet traffic is primarily interstate, over half the states in the U.S. had concluded that ISP-bound traffic was "local" and eligible for reciprocal compensation. While the reversal of that position by the above-mentioned six states is noteworthy, several states have re-examined the issue and re-affirmed their original position that reciprocal compensation should be paid. It is my understanding, however, that in most of those instances state regulators rendered their opinion on the appropriate form of inter-carrier compensation for Internet calls with reference only to the terms of then-existing interconnection agreements that predated the *Internet Traffic Order*. In other words, regulators did not find grounds in those existing agreements for stopping the payment of

[27] *Colorado Decision*, ¶C(j).

reciprocal compensation for ISP-bound calls. In other cases, regulators have opted for the reciprocal compensation status quo while waiting for a final FCC decision. With *new* interconnection agreements going forward (like those recently arbitrated between Qwest and Sprint in Colorado and Arizona), arbitrators and regulators now have a fresh opportunity to revisit the question of appropriate inter-carrier compensation for ISP-bound calls.

E. THE COST OF ISP-BOUND TRAFFIC

ARE THE FACILITIES USED TO TRANSPORT AND SWITCH AN ISP-BOUND CALL SIMILAR TO THOSE USED TO TRANSPORT AND SWITCH OTHER TYPES OF CALLS?

The costs for transporting and switching traffic are not determined by *what* network elements are used—they are determined by *how* the network elements are used. Therefore, while the facilities used to transport and switch an ISP-bound call are similar to those used to transport and switch other types of calls, there are characteristics of ISP-bound traffic that make the *cost* of transport and switching (as measured by TELRIC) different for ISP-bound calls. The major differences are:

Call Duration. Because ISP-bound calls have a much longer average duration than voice calls, the per-minute cost of call setup is much lower for ISP-bound calls than for an average voice call.

Use of Network Elements: Because dedicated circuits are used for ISP-bound traffic,

traffic-sensitive switching costs are lower for ISP-bound traffic than they are for voice traffic.

Load Distribution. The proportion of ISP-bound traffic that arrives at the busy hour of the switch may differ from that of ordinary voice traffic. If the load distribution of ISP-bound traffic is flatter than that of voice traffic, then, on average, an incremental minute of ISP-bound traffic would cause a smaller increase in the capacity requirements of the switch than an incremental minute of voice traffic.

Thus, even though similar facilities are used to switch and transport ISP-bound and voice traffic, the TELRIC of ISP-bound traffic can differ significantly from the TELRIC of average local exchange traffic.

WOULD YOU PLEASE ELABORATE ON THE IMPACT THAT CALL DURATION HAS ON COSTS?

Yes. For every call, there are broadly two types of cost: a *fixed* cost (invariant to the length of the call) for call setup at both ends of the call, and an incremental or *variable* cost that arises for every minute a call passes through a switch. The full *per minute* cost of that call is the sum of the variable cost of that minute plus the fixed cost averaged over the total length of the call. The latter component would obviously diminish as the fixed cost is averaged over an increasing number of minutes. Thus, if the average ISP-bound call is about five to thirteen times longer than the average voice call,[28] the average *fixed* cost component for the

[28] See, e.g., Susan Biagi, "A Tale of Two Networks," *Telephony*, August 3, 1998.

former would be considerably smaller than that for the latter. *Even if* the variable cost component of both types of calls were the same, the *per minute* cost of the average ISP-bound call would still end up being considerably less than that for the average voice call. A simple numerical example illustrates this fact.

Suppose the variable cost for each minute is 0.5¢ (for ease of exposition, it is assumed to be constant for all minutes). Then, a 3-minute call would have a total variable cost of 3×0.5 = 1.5¢ and a 20-minute call would have a total variable cost of 20×0.5 = 10¢. Suppose the fixed cost of call setup—which does not vary with the length of the call—is 2¢. Then the *total* cost of the 3-minute call (inclusive of call setup) would be 1.5+2 = 3.5¢, and that for the 20-minute call would be 10+2 = 12¢. To figure what each call costs on a per-minute basis, simply divide the total cost of each by the respective number of minutes. Thus, the 3-minute call would cost 3.5÷3 = 1.17¢ per minute and the 20-minute call would cost 12÷20 = 0.6¢ per minute. That is, as the call duration increases, the cost per minute would fall. This reflects simple common sense and is a conclusion reached by all who seriously consider the cost structure underlying each type of call.

HOW DOES THE TRAFFIC LOAD AFFECT COSTS?

The cost drivers for transmitting or terminating any type of traffic (e.g., Internet-bound traffic, local traffic, toll) include the number and duration of calls in the busy hour. Incoming call attempts during the busy hour for the CLEC switch determine the capacity requirements for switch components involved in call-setup, which include the central and peripheral processors and measurement equipment. Call duration during the busy hour determines the capacity requirements for the line and trunk equipment in the switch that are used to provide a call path for the call.

It is likely that the load distribution of ISP traffic—number and duration of calls in the busy hour as a percent of total traffic—is different than for other types of calls. Generally, the peak for voice traffic normally occurs sometime during the business day. ISP traffic is likely to have a flatter load distribution due to the nature of demand. Whereas the business day is approximately confined to an 8 hour period with little evening or weekend activity, consumers frequently use the internet during the evening and weekends. These usage patterns flatten the load distribution for ISP traffic, in the sense that the fraction of usage falling in the busy hour is smaller for ISP-bound traffic than for ordinary voice traffic. This means that ISP-bound traffic requires less investment and costs per minute to provide capacity to meet

peak demand than does ordinary voice traffic.

HOW DOES THE USE OF NETWORK ELEMENTS AFFECT THE COSTS TO TRANSPORT AND SWITCH ISP-BOUND TRAFFIC AS COMPARED TO VOICE TRAFFIC?

Besides merely examining the network elements used to provide a service, it is important that the cost analyst also examine the *manner* in which network elements are used to provision service. Intercarrier compensation rates should recover the incremental (additional) costs of delivering the specific type of traffic. When determining intercarrier compensation rates for any type of traffic, only those costs that are traffic sensitive, i.e., vary with additional usage, should be recovered in rates. *Non-traffic sensitive costs, i.e., costs that do not vary with additional usage, should not be recovered in intercarrier compensation rates.* This follows as a matter of general economic principle and as a requirement of the Telecommunications Act of 1996 which states in Section 252(d)(2) that prices for the "transmission and routing of telephone exchange service and exchange access" be based on incremental costs.

It is important that one analyze the manner in which network elements are used for different types of traffic because this may affect not only the level of costs but, more importantly, the manner in which the costs should be properly recovered. For certain types of network elements, the manner in which they

are used indicate that what was once a shared facility—and the costs properly recovered from all customers who use that facility—is now a dedicated facility, the costs of which should be properly recovered from the cost-causing customer.

PLEASE EXPLAIN.

An examination of the typical line-to-trunk concentration ratio for different types of traffic shows why it is incorrect to conclude that the costs for different types of traffic are the same merely because identical network elements are used. An important factor in switch investment costs is the busy hour line CCS (hundred call seconds) costs. Busy hour line CCS is a measure of the type of concentration required on the line side of the switch and is determined by the number of line circuits sharing a trunk circuit—and sharing a circuit path through the switch processor. A concentration ratio of eight to one, for example, means that eight line circuits share one trunk circuit and one circuit path through the switch processor.[29] Using basic engineering guidelines, the switch is sized and engineered, i.e., a concentration ratio is determined, to accommodate a certain level of traffic so that a minimum level of blocking occurs if traffic volume during the busy hour is higher than the volume suggested

[29] An ordinary voice loop is generally engineered for 3 CCS at the busy hour, while the interoffice trunks that concentrate those loops are engineered for about 27 busy hour CCS. Thus, for ordinary voice traffic, it is not unusual to observe 8 or 9 loops for every trunk.

by the concentration ratio that is chosen. For traditional voice traffic, busy hour line CCS costs, i.e., costs due to the type of concentration ratio required to achieve an acceptable quality standard, are traffic-sensitive in nature because they arise from a shared facility. namely, one circuit path through the switch processor that is shared among eight customer lines. Since the circuit is shared among various lines, the use of the facility during the peak imposes congestion costs on other users in the form of rationing or call blocking. Since line CCS costs arise from a resource that is shared among various users, a recovery mechanism that apportions costs to cost-causing entities provides proper signals at the margin and increases economic efficiency.

Line CCS costs for ISP-bound traffic, however, are not traffic-sensitive. CLECs which focus on Internet traffic rely on ISDN Primary Rate Interfaces ("PRI") to serve ISPs and build switches at a concentration ratio of one to one. For those carriers, line CCS costs are fixed with respect to usage. Each line serving an ISP has a *dedicated* path through the switch processor and increased usage from other lines does not impact the use of the line serving the ISP. No matter what the demand is from other lines, the path serving the ISP will be available for customers calling the ISP. Since the circuit is dedicated to the ISP line, the use of the facility does not impose congestion costs on other users and no rationing or call blocking is imposed on the

network as a result.

For this reason, even though the same network elements are used, intercarrier compensation for ISP-bound traffic should not include line CCS costs because those costs do not vary with additional usage and are, therefore, not incremental costs of delivering ISP calls.

F. RECIPROCAL COMPENSATION FOR ISP-BOUND TRAFFIC HARMS ECONOMIC EFFICIENCY AND DISTORTS LOCAL EXCHANGE COMPETITION

WHY WOULD THE ILEC-CLEC LOCAL INTERCONNECTION REGIME WITH PAYMENT OF RECIPROCAL COMPENSATION FOR ISP-BOUND TRAFFIC HARM ECONOMIC EFFICIENCY AND FAIL TO PROMOTE TRUE COMPETITION?

The harm to economic efficiency in an ILEC-CLEC local interconnection regime with payment of reciprocal compensation for ISP-bound traffic occurs for three reasons:

Inefficient subsidization of Internet users by non-users.

Distortion of the local exchange market.

Creation of perverse incentives to arbitrage the system at the expense of basic exchange ratepayers.

1. Inefficient Subsidization

PLEASE EXPLAIN HOW THE ILEC-CLEC INTERCONNECTION REGIME FOR ISP-BOUND TRAFFIC COULD CAUSE INEFFICIENT SUBSIDIZATION OF INTERNET USERS BY NON-USERS.

The principle of cost causation requires that the *ISP customer* pay at least the cost his call imposes on the circuit-switched network.[30] Suppose intercarrier compensation for ISP-bound traffic is treated as in the ILEC-CLEC interconnection regime. This regime assumes at the outset that the customer initiating the call has paid the originating ILEC for the end-to-end carriage of the call, typically, the per-call equivalent of the local call charge. Out of what it receives, the ILEC then pays reciprocal compensation to the CLEC that carries the Internet call to the ISP. This compensation is a per-minute call "termination" charge which, ideally, should reflect the incremental cost that the ILEC *avoids* by not having to deliver the call itself. In this scenario, problems can emerge from two sources.

First, if the local call charge is itself not compensatory, i.e., below the incremental cost of carrying a local voice call from end to end, then it cannot be sufficient to allow recovery of both the ILEC's incremental cost to originate the call and the CLEC's incremental cost to deliver the call. In

[30] It is assumed that the cost imposed by that customer for the packet-switched network portion of the Internet call is recovered through monthly access charges by the ISP serving that customer.

other words, once reciprocal compensation has been paid, the ILEC would fail to recover its cost of carrying the ISP-bound call when the local call charge itself is non-compensatory or inefficient. If the ILEC still manages to break even for *all* of its services in these circumstances, that could only mean that Internet use (for which the cost exceeds revenue) must be being subsidized by non-Internet and, most likely, non-local exchange services. This scenario is likely to play out whenever, in order to promote universal service, the local residential call charge in a state is set below the incremental cost of that call.

Second, if the per-minute cost to deliver an ISP-bound call is *less* than the per-minute cost to terminate the average voice call (on which most reciprocal compensation arrangements are based), then the CLEC would actually earn revenue in excess of its cost. Even if the local per-call charge were compensatory, the ILEC could still end up with a higher cost liability than necessary or economically efficient (the sum of its own originating cost and the CLEC's inflated termination charge). If the CLEC could then funnel back some of the excessive compensation so received to the ISP or the Internet user through, e.g., lower monthly charges for Internet use, then the *net* price

paid for the ISP call would be below the cost imposed on the originating ILEC.[31] This would be equivalent to receiving a subsidy.

This form of subsidization of Internet use within the circuit-switched network would stimulate demand for Internet services inefficiently and further aggravate the ILEC's tenuous position under the ILEC-CLEC interconnection regime. Additional negative consequences would be (1) greater congestion at local switches engineered for voice traffic generally and, as a result, poorer quality of voice traffic, and (2) CLECs making the opportunistic choice to specialize only in the delivery of ISP-bound traffic. I discuss the resulting distortion of the local exchange market below.

WHEN ISP-BOUND TRAFFIC IS ALMOST ENTIRELY ONE-WAY (FROM U S WEST'S SUBSCRIBERS TO ISPs SERVED BY CLECS), WHAT PRACTICAL EFFECT IS THE CONTINUED REQUIREMENT FOR U S WEST TO PAY RECIPROCAL COMPENSATION FOR SUCH TRAFFIC LIKELY TO HAVE?

One often overlooked practical effect of the continued requirement to pay reciprocal compensation despite such traffic imbalance[32] is the ultimate pressure on Qwest's prices for

[31] See fn. 19, *supra*.
[32] Traffic is said to be "balanced" when originating and terminating volumes are similar.

retail services, including residential local exchange service. Under current practice, Qwest is allowed to collect a flat monthly amount from each of its residential customers for local exchange service. In principle, this amount is supposed to compensate Qwest, on average, for the actual cost of providing that service to each customer. In the U.S., however, it is commonplace to encourage greater subscribership by setting the monthly (flat-rated) price of local exchange service to residential customers affordably low and frequently *below* the incremental cost to serve each customer. The revenue deficit which results from this is usually made up with implicit (i.e., price-based) subsidies from other services offered—often competitively—by the ILEC. To the extent that Qwest is not exempted from this practice, *any* addition to that incremental cost can only exacerbate the revenue deficit from local exchange service and compel Qwest to seek recovery by raising *further* its prices for retail services, including residential local exchange service.

The fact is that residential local exchange service prices were never set with the additional and, generally, large Internet traffic-related costs in view. Even if reciprocal compensation rates were properly set so that Qwest only paid the CLEC the cost it *actually* avoided to deliver traffic to ISPs, Qwest could never escape the growing spiral of network facilities-related costs it would have to incur in order to serve the ever-increasing volumes of one-way

Internet-bound calls made possible by the perverse incentives presented to ISP-serving CLECs by reciprocal compensation revenues.[33] Faced with having to recover costs seriously in excess of revenues available from residential local exchange service, Qwest would have little choice but to petition this Commission for increases in the price of residential local exchange service in Washington. Raising other retail service prices to effect such recovery may also be an option, but one fraught with two serious problems. First, as those other services become increasingly competitive in the market, raising their prices, rather than lowering them, will prove untenable and counter-productive for Qwest. Second, raising those other service prices will only continue, rather than mitigate, the current practice of relying on extensive implicit subsidies in the pricing of telecommunications services. The 1996 Act made it very clear that those implicit subsidies are to be removed as expeditiously as possible.

HOW WOULD THE ILEC-IXC INTERCONNECTION REGIME WITH THE PAYMENT OF ACCESS-LIKE CHARGES SOLVE THE PROBLEM OF INEFFICIENT SUBSIDIZATION?

[33] I explain the perverse incentives issue in greater detail later in my testimony.

In the ILEC-IXC regime, the ISP customer is held responsible for causing and, therefore, paying all of the origination, transport, and switching costs of an Internet call. Under current FCC rules, the only exception to this would be the explicit subsidy granted to the ISP by exempting it from having to pay interstate access charges. Because of the access charge exemption, ILECs and CLECs that jointly supply access services to ISPs would never be fully compensated for the costs they incur on ISP-bound calls. However, if the ILEC-IXC interconnection regime were to apply, the ILECs and CLECs that jointly provision ISP-bound calls would each contribute to the ISP access subsidy no more than the same proportion of their respective costs. This arrangement would be competitively neutral because *all* ILECs and CLECs so involved would have to contribute to the subsidy rather than just the ILECs that originate ISP-bound traffic. In this regime, an ISP would have no particular incentive to become a CLEC itself, nor would the competition among ILECs and CLECs to serve ISPs be distorted by incentives to seek compensation for delivering calls.

2. Market Distortions

PLEASE EXPLAIN HOW THE ILEC-CLEC INTERCONNECTION REGIME FOR ISP-BOUND TRAFFIC COULD CAUSE THE LOCAL EXCHANGE MARKET TO BE DISTORTED.

Under the ILEC-CLEC interconnection regime, the compensation paid to CLECs *for ISP-bound*

traffic evidently exceeds their cost of delivering such traffic and also exceeds whatever costs Qwest might save when CLECs deliver that traffic on its behalf. That such compensation for ISP-bound traffic does not reflect costs should not be surprising. In Washington, compensation is based on Qwest's forward-looking total element long run incremental cost ("TELRIC") of terminating traffic averaged over a wide range of end-users, services, and service locations. This has important implications for setting compensation for *ISP-bound calls* on the same basis.

First, the per-minute *incremental* cost of terminating or delivering traffic to particular end-users can vary a great deal, depending upon their location and the characteristics of the traffic. Second, as I explained earlier, because of average call durations, the *full* per-minute cost of termination (inclusive of both incremental and fixed costs) for averaged voice traffic is typically higher than the full per-minute cost of delivering ISP-bound traffic.

When traffic between the ILEC and the CLEC is balanced, the accuracy of the estimated underlying cost of termination as the basis for reciprocal compensation is less material. Because the same compensation rate applies in both directions, any overpayment (or underpayment) by an ILEC to terminate traffic on the CLEC's network is offset by a corresponding

overpayment (or underpayment) by the CLEC to terminate traffic on the ILEC's network. Thus, when traffic is balanced, no individual ILEC or CLEC is helped or handicapped in competing for retail customers in the local exchange market by the requirement that interconnection compensation be based on costs averaged over all customers.

However, when traffic between the ILEC and the CLEC is grossly unbalanced, e.g., when the CLEC terminates traffic from the ILEC but returns little or no traffic to it, the accuracy of the cost-based compensation becomes critical. Suppose, for simplicity, Qwest's own cost to deliver Internet traffic to an ISP that it serves is the same as the cost experienced by a specialized CLEC that serves a collocated ISP. That is, Qwest's own cost of carrying ISP-bound traffic is the same as the cost it avoids when a CLEC handles such traffic instead. If Qwest is then required to pay reciprocal compensation for ISP-bound traffic at an averaged cost-based rate that reflects *all* forms of local traffic, its total cost of local service would necessarily be higher than if compensation levels were properly tied to the *type*—hence, the cost—of traffic terminated. This cost increase would not be offset by a similar increase in revenue from handling the CLEC's ISP-bound traffic (because the

CLEC does not originate any traffic). Thus, local exchange competition would be distorted by the inapplicability of the averaged cost-based compensation to ISP traffic; CLECs that primarily serve ISPs (and originate little or no traffic) would receive revenues in excess of cost while ILECs (or even other CLECs) that serve all types of customers would experience an increase in costs without a commensurate increase in revenues.

DOES THAT MEAN THAT RECIPROCAL COMPENSATION IS ILL-ADVISED BECAUSE TRAFFIC BETWEEN THE ORIGINATING ILEC AND THE CLEC THAT DELIVERS ISP TRAFFIC IS UNBALANCED?

Yes, but the problem here is not simply that traffic is unbalanced. First of all, ISP-bound traffic is *not* local and, therefore, not eligible for reciprocal compensation, a form of inter-carrier compensation reserved for local interconnection only. However, even regarding the matter of traffic balance, it is worth noting that reciprocal compensation was never envisioned as appropriate inter-carrier compensation when all traffic is essentially one-way. This would be particularly true when the true cost to terminate for the carrier that only *receives* traffic is actually lower than the termination cost (experienced by the carrier that *sends* traffic) on which a symmetrical compensation arrangement is based. But, even with balanced traffic, requiring reciprocal compensation payments for ISP-bound calls would violate the

economic principle of recovering cost in accordance with cost causation.

WOULD RECIPROCAL COMPENSATION FOR ISP-BOUND TRAFFIC DISTORT LOCAL COMPETITION?

Yes, in two ways. First, since end-users that generate ISP-bound traffic would not pay the full incremental cost of carrying it, LECs would have an incentive to avoid competing to serve such customers. As most switched ISP-bound traffic comes from residential users, the incentives to compete to serve residential users would be artificially diminished. Second, the ISPs themselves are better off if their customers obtain their local telephone service not from the CLECs that deliver ISP-only traffic but from the ILEC or other CLECs that do not serve ISPs. Suppose, for example, the ILEC serves 95 percent of the residential local exchange traffic in a market. If an ISP obtained access service from the ILEC, only 5 percent of its traffic would generate reciprocal compensation payments. If it signed up with a CLEC, 95 percent of its traffic would generate such payments. When the reciprocal compensation price exceeds the CLEC's cost to handle the traffic, this imbalance gives it a strong financial incentive to seek access service from CLECs as opposed to ILECs. This creates a further distortion in the local exchange market, contrary to the vision of competition embodied in the 1996 Act.

It is not surprising, therefore, that the DTE in Massachusetts felt compelled

to opine:

> We note also that *termination* of the obligation for reciprocal compensation payments for ISP-bound traffic (because that traffic is no longer deemed local) removes the incentive for CLECs to use their regulatory status "solely (or predominately)" to funnel traffic to ISPs.[34]

3. Arbitrage

PLEASE EXPLAIN HOW THE ILEC-CLEC INTERCONNECTION REGIME FOR ISP-BOUND TRAFFIC COULD CREATE PERVERSE INCENTIVES TO ARBITRAGE THE SYSTEM AT THE EXPENSE OF BASIC EXCHANGE RATEPAYERS.

Arbitrage is frequently a response to a market distortion. As the DTE in Massachusetts and the FCC have clearly recognized, unintended arbitrage opportunities can easily emerge when competition in the local exchange market is distorted by basing inter-carrier compensation for ISP-bound traffic on the ILEC-CLEC local interconnection regime. When the compensation available to the CLEC for delivering ISP-bound traffic exceeds its actual cost of delivering that traffic, the CLEC will have a strong incentive to deliver as much ISP traffic as possible. The desire to maximize profits can bring forth some very inventive schemes that take advantage of this discrepancy but which distort market outcomes and

1 34 *Massachusetts ISP Compensation Order*.

reduce the efficiency of the telecommunications network. For example, the CLEC's profits would increase whenever a Qwest subscriber—or his computer—could be induced to call the ISP and remain on the line 24 hours a day.[35] Sensing this pure arbitrage profit opportunity, CLECs would also have a strong incentive—indeed, have as their *raison d'être*—to specialize in delivering ISP-bound traffic, to the exclusion of offering any other type of local exchange service. These "ISP-specializing" CLECs can—and do—form a three-way axis with a distorted ability and incentive to generate revenues from reciprocal compensation: (1) the CLECs themselves, (2) ISPs served by those CLECs but which may also receive a share of the reciprocal compensation revenues—the spoils of this arrangement—to ensure their loyalty and cooperation, and (3) ISP customers on the originating ILEC's network that generate the ISP-bound traffic.

WHAT TYPES OF ARBITRAGE OCCURS IF THE INTERCARRIER COMPENSATION RATE EXCEEDS THE LEC'S INCREMENTAL COST OF TRANSMITTING ISP-BOUND TRAFFIC?

In this circumstance, CLECs would have an incentive to create sham traffic

[35] Dedicated (private line) connections that bypass the public switched network are most efficient for customers desiring "always-on" or 24 hour connectivity. Despite this fact, such connectivity is sometimes offered in a manner that involves traffic origination through an ILEC's switch and termination through an ISP-serving CLEC's switch. This arrangement is clearly less interested in efficiency or the best use of valuable network resources than it is in generating the maximum possible revenue from reciprocal compensation.

solely for the purpose of collecting windfall intercarrier compensation. That incentive distorts the marketing of its services towards customers who generate incoming traffic, but it also creates an incentive to carry as many minutes as possible to existing ISP customers. The CLEC might even offer to pay the ISP to connect to its network, in order to collect overpriced intercarrier compensation from the ILEC, which has no choice but to deliver its customers' calls to the CLEC—and pay the overpriced compensation. Similarly, CLECs are encouraged to subsidize the ISPs' end user customers, encouraging them to maintain connections 24 hours a day, seven days a week. A recent case in North Carolina that involved BellSouth and US LEC confirms the perverse economic incentives that can be created if the intercarrier compensation rates exceed the CLEC's costs.[36] The North Carolina Commission found:

> US LEC deliberately created a usage imbalance between itself and BellSouth by terminating a greater amount of traffic originating on BellSouth's network than it would be terminating to BellSouth. In furtherance of its plan to create a traffic imbalance and thus large reciprocal compensation revenues for itself, US LEC, among other things, induced MCNC and Metacomm to originate connections on BellSouth's network and terminate them to US LEC telephone numbers by agreeing to pay them 40% of all reciprocal compensation BellSouth paid US LEC for

[36] *In the Matter of BellSouth Telecommunications Inc v. US LEC of North Carolina Inc*, Before the North Carolina Utilities Commission, Docket No P-561, SUB 10, March 31, 2000.

minutes of use for which they were responsible.[37]

And,

> In the fall of 1997, Metacomm and MCNC established networks to generate reciprocal compensation for US LEC and commissions for themselves. They established connections by having routers connected to circuits purchased from BellSouth call routers connected to circuits provided by US LEC. They leased transmission facilities from BellSouth capable of originating up to 672 connections simultaneously. Pursuant to US LEC's instructions, Metacomm and MCNC programmed their routers to disconnect and immediately reconnect each connection every 23 hours and 59 minutes, so that US LEC's switches could create the records US LEC which [sic] needed to bill BellSouth for reciprocal compensation.[38]

This type of behavior also artificially discourages the deployment and use of new broadband technologies (e.g., cable or DSL connections) because such direct connections are not eligible for intercarrier compensation.

WOULD THIS BE TRUE OF A CLEC WHICH, UNLIKE ISP-SPECIALIZING CLECs, IS A LARGE FACILITIES-BASED PROVIDER OF LOCAL EXCHANGE SERVICES?

Yes. All CLECs face these distorted incentives irrespective of the mix of traffic they actually serve. Whether a CLEC passes through a portion of the reciprocal compensation payments

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[37] *Id*., at 7.

[38] *Id*. It should be noted that MCNC withdrew its participation in the reciprocal compensation arrangement after its management learned that the "unusual configuration and mix of equipment" making up the network was intended to generate revenue from connections without regard to actual traffic or content traversing the connections.

it receives to attract ISP customers is irrelevant, because competition among CLECs to serve ISPs will ensure that reciprocal compensation payments in excess of cost will be passed through to ISPs in the form of lower market prices for the network access they buy from CLECs.

HAVE REGULATORS TAKEN EXPLICIT NOTE OF THE FACT THAT THESE ARBITRAGE OPPORTUNITIES ARISE BECAUSE COMPENSATION RATES ARE OUT OF LINE WITH TERMINATION COSTS?

Yes. Where the cost of terminating traffic to a particular type of customer differs greatly from the average, the FCC has recognized the possibility of arbitrage and has declined to use the ILEC's TELRIC of termination as a proxy for those of the CLEC:

> Using incumbent LEC's costs for termination of traffic as a proxy for paging providers' costs, when the LECs' costs are likely higher than paging providers' costs, might create uneconomic incentives for paging providers to generate traffic simply in order to receive termination compensation.[39]

Instead, the FCC has required separate cost studies to justify a cost-based termination rate which the FCC explicitly expects would be lower than the wireline ILECs' TELRIC-based rate. Note that the paging case also involves one-way calling; like ISPs, paging companies do not originate traffic.

More recently, the FCC has acknowledged that:

[39] *Local Competition Order*, ¶1093.

efficient rates for inter-carrier compensation for ISP-bound traffic are not likely to be based entirely on minute-of-use pricing structures. In particular, pure minute-of-use pricing structures are not likely to reflect accurately how costs are incurred for delivering ISP-bound traffic.[40]

This is clear recognition of the fact that TELRIC-based rates, such as those developed in Washington, are fundamentally unsound for intercarrier compensation for ISP-bound traffic. Echoing the FCC's sentiment, the Massachusetts DTE has stated flatly that:

> The revenues generated by reciprocal compensation for … incoming traffic are most likely in excess of the cost of sending such traffic to ISPs. … Not surprisingly, ISPs view themselves as beneficiaries of this "competition" and argue fervently in favor of maintaining reciprocal compensation for ISP-bound traffic. However, the benefits gained, through this regulatory distortion, by CLECs, ISPs, and their customers do not make society as a whole better off, because they come artificially at the expense of others.[41]

WHAT HAS THE COLORADO COMMISSION, IN PARTICULAR, NOTED ABOUT COMPENSATION FOR ONE-WAY TRAFFIC?

This Commission recognized that where one-way calling is involved (as with paging), the true cost-causer is *not* the caller's originating ILEC, but rather the party that is being called and, by proxy, the carrier that delivers the call to the called party. The parallel in this regard between the paging provider and the ISP (that does not originate or return any traffic to the

[40] *Internet Traffic Order*, ¶29.
[41] *Massachusetts ISP Compensation Order*. Emphasis added.

ILEC's network) is striking. Thus, the Commission opined:

> Dr. Taylor reasoned that reciprocal compensation is not warranted because calls are not terminated on the pager terminals. Rather, [Qwest] incurs the cost for both originating and terminating the calls. The Commission agrees with this reasoning. Moreover, we find that the traditional originating-carrier-as-cost-causer assumption, which applies to two-way interconnection, does not apply to one-way providers. A paging service exists for one reason only, namely to enable paging customers to be contacted by specific individuals to whom the number has been given. It is, therefore, the provider of paging services, such as AirTouch, who is he cost-causer. As such, compensation should be due to [Qwest], not the other way around.[42]

This finding on the Colorado Commission's part has relevance well beyond the paging case. Whenever the potential exists for inter-carrier traffic to be essentially one-way, be it for technical reasons (paging service provider) or because excessive reciprocal compensation creates the incentive for the compensated carrier to receive, but not return, traffic (ISP-specializing CLEC), the true cost-causer cannot be the originating ILEC. Rather, the true cost-causer is, in the case of paging, the party that wishes to be paged *acting as a customer of* the paging service provider and, in the case of Internet traffic, the ILEC's subscriber *acting as a customer of* the ISP. In either case, compensation should really be due from the cost-causing carrier to all other

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[42] Colorado Public Utilities Commission, *In the Matter of the Petition of AirTouch Paging, Inc., for Arbitration of an Interconnection Agreement with U S WEST Communications, Inc. Pursuant to 47 U.S.C. § 252*, Decision Regarding Petition for Arbitration, Docket No. 99A-001T, adopted April 23, 1999, fn. 7.

carriers (ILEC and/or CLEC) facilitating the call.

WHAT DO YOU CONCLUDE IN LIGHT OF THESE ACKNOWLEDGEMENTS?

In light of these acknowledgements, it is reasonable to expect that a fairer system of inter-carrier compensation may yet be more widely adopted for all forms of one-way traffic. The ILEC-IXC interconnection regime offers one such alternative. More importantly, under that alternative:

- perverse incentives and unintended arbitrage opportunities are removed,
- cost causation guides cost recovery (including the payment of access-like charges by ISPs to ILECs and CLECs that handle their traffic),
- more efficient use is made of network resources,
- inefficient entry for the sake of earning opportunistic arbitrage profits is prevented, and
- true competition (undistorted by the gain from specializing in terminating one-way traffic) can be realized in the local exchange market.

IN CONCLUSION, IS COST CAUSATION-BASED COMPENSATION THE ONLY FORM OF INTER-CARRIER COMPENSATION FOR ISP-BOUND CALLS THAT THE COMMISSION SHOULD CONSIDER?

Yes. From the economic standpoint, any method of inter-carrier compensation for ISP-bound calls should be based on cost causation. Ideally, such compensation should occur in the form of usage-based charges (analogous to carrier access charges) paid by the ISP to the

ILEC and the CLEC that transport and switch Internet calls to it. However, because the FCC currently exempts ISPs from paying access charges, the next-best cost-causative form of compensation would be an equitable sharing (between the ILEC and the CLEC) of revenues earned by the CLEC from the lines and local exchange usage that it sells to the ISP. This form of revenue sharing may not be sufficient for the ILEC and CLEC that jointly provide access service to fully recover their costs, but the degree to which they under-recover those costs (or, equivalently, subsidize Internet service) will be the same proportion of their respective costs and, hence, competitively neutral. The third-best and a reasonable interim form of compensation would be bill and keep or, in effect, exchange of ISP-bound traffic between the ILEC and the CLEC at no charge to each other. In my opinion, because it is not based on cost causation, reciprocal compensation should not be an option at all.

DOES THIS CONCLUDE YOUR TESTIMONY?

Yes.