BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

IN RE: INVESTIGATION INTO APPROPRIATE METHODS TO COMPENSATE CARRIERS FOR EXCHANGE OF TRAFFIC SUBJECT TO SECTION 251 OF THE TELECOMMUNICATIONS ACT OF 1996	)))))	DOCKET NO. 000075-TP

REBUTTAL TESTIMONY

OF

WILLIAM E. TAYLOR, Ph.D.

ON BEHALF OF

BELLSOUTH TELECOMMUNICATIONS, INC.

JANUARY 10, 2001

n/e/r/a
Consulting Economists

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I. INTRODUCTION AND SUMMARY

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

A. 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.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL, PROFESSIONAL, AND BUSINESS EXPERIENCE.

A. I have been an economist for over 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 Florida Public Service Commission ("Commission") in Docket Nos. 900633-TL, 920260-TL, 920385-TL, 980000-SP, 980696-TP, and 990750-TP. 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.

Q. PLEASE DESCRIBE NERA, YOUR PLACE OF EMPLOYMENT.

A. Founded in 1961, National Economic Research Associates or 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.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by BellSouth Telecommunications, Inc. ("BellSouth")—an incumbent local exchange carrier ("ILEC")—to address economic issues raised in the testimonies of witnesses representing several alternative local exchange carriers ("ALECs") in this proceeding. To this end, I review and comment on the testimonies of Lee L. Selwyn (representing AT&T Communications of the Southern States, Inc., TCG of South Florida, Global NAPS, Inc., MediaOne Florida Telecommunications, Inc., Time Warner Telecom of Florida, LP, Allegiance Telecom of Florida, Inc., Florida Cable Telecommunications Association, Inc., and Florida Competitive Carriers Association, Michael R. Hunsucker (representing Sprint Corporation or "Sprint"), and James C. Falvey (representing e.spire Communications, Inc. or "e.spire").

Q. PLEASE SUMMARIZE YOUR RESPONSE TO THE POSITIONS TAKEN BY WITNESSES REPRESENTING ALECS IN THIS PROCEEDING.

A. My response to the testimony of ALEC witnesses is summarized as follows:

1. The ALEC witnesses contend that the jurisdictional status of Internet-bound traffic is no different from that of local voice traffic and, therefore, the only form of inter-carrier compensation that should apply to it is reciprocal compensation. This is false. While the FCC's jurisdictional analysis based on the endpoints of the communication inherent in Internet calls is correct, the fundamental economic principle of cost causation reinforces the conclusion that the transmission of Internet-bound calls between local exchange carriers is analogous not so much to the exchange of local voice calls as to the transmission of long distance calls. The ILEC subscriber that calls the Internet does so as a customer of the ISP from which he or she obtains Internet access, not of the ILEC itself. The ALEC witnesses pay lip service to cost causation but fail to correctly apply the principle in their analysis.

2. The ALEC witnesses assert that Internet-bound traffic and local voice traffic are, in effect, functionally or "technically" identical. Therefore, they argue, reciprocal compensation ought to apply to Internet-bound traffic just as it does for local voice traffic. This is false. For determining who should compensate whom, it is irrelevant

how a service is used, what facilities are used to provide the service, or how much cost is generated. What matters only is how cost is generated. The answer to this question comes from the cost causation principle which traces the cost of the Internet-bound call from its source (the economic decision) to its incidence. Also, the costs of transporting and switching traffic are not determined by what network elements are used; rather, they are determined by how the network elements are used. Therefore, although the facilities used to transport and switch an Internet-bound call may be similar to those used to transport and switch local voice calls, there are characteristics of Internet-bound traffic that make its incremental cost of transport and switching (as measured by TELRIC) different from that for local voice traffic.

3. The ALEC witnesses contend that ISPs are no different from any other end-user; therefore, Internet-bound calls are no different from local voice calls and must be eligible for reciprocal compensation. This is false. ISPs are not legitimate end-users but carriers that exist solely to perform the carrier functions that establish a pathway between the Internet user and Internet destinations. The efficient form of inter-carrier compensation for Internet-bound traffic is a usage-based charge (analogous to the carrier access charge) assessed on the ISP by the ALEC serving it. The ALEC and ILEC would then defray their respective costs from ISP payments of that charge. Because of a longstanding FCC exemption from such charges on the class of carriers to which ISPs belong, the second-best cost causative policy is an equitable sharing (between the ALEC and the ILEC) of local exchange revenues earned from ISPs who purchase/lease lines out of local exchange tariffs for the purpose of receiving incoming Internet-bound traffic. Bill-and-keep is the next best option for inter-carrier compensation. Reciprocal compensation at a positive rate (particularly that set for the exchange of local voice traffic) should not be an option at all.

4. The ALEC witnesses insist that inter-carrier compensation for Internet-bound traffic should occur in the form of a reciprocal compensation rate which is (1) symmetric (i.e., the same for both the ILEC and the ALEC) and (2) set at the cost of the ILEC to terminate a local voice call. This recommendation is flawed for several reasons. First, this form of compensation is not based on cost causation. Second, the ILEC's incremental cost to terminate a local voice call may differ significantly from (indeed, be significantly higher than) an ALEC's cost to switch or deliver an Internet-bound call to an ISP, particularly if the ALEC is designed solely to receive (and deliver to ISPs) incoming Internet-bound calls from the ILEC's subscribers. Third, for an ALEC that has a much lower incremental cost to deliver Internet-bound calls to ISPs, a symmetric reciprocal compensation rate set at the level of the ILEC's incremental cost to terminate a local voice call provides a windfall profit margin. Other things being equal, this can further stimulate the ALEC to specialize in call termination services, to the detriment of the overall public policy goal of fostering competition for the full spectrum of local exchange services.

5. The ALEC witnesses provide examples of states that have affirmed reciprocal compensation for Internet-bound traffic. This is a one-sided presentation of the facts.

Almost every state that has retained reciprocal compensation for this purpose has done so by making the determination that an Internet-bound call is jurisdictionally local. At least seven states have ruled that, to the contrary, reciprocal compensation does not apply to Internet-bound traffic. In so doing, they have touched upon various aspects of Internet calls. Without actually deciding whether such calls are local or long distance, some of these states have rejected reciprocal compensation on the basis of detailed economic analyses (of the sort presented in this testimony). Some have opted for bill-and-keep while others are waiting for the expected FCC ruling on a permanent form of inter-carrier compensation for Internet-bound traffic.

6. The ALEC witnesses contend that reciprocal compensation at a symmetric rate for Internet-bound traffic ensures efficient entry and competition and determines the technologies that ALEC entrants adopt and the services they provide. This conveys a misleading picture because such compensation can harm economic efficiency in at least three ways: (1) by inefficient subsidization of Internet users by non-users, (2) by distorting the local exchange market itself and skewing competitive entry towards specialization in call termination services (i.e., serving ISPs), and (3) creating perverse incentives to arbitrage the system at the expense of basic exchange ratepayers, thereby enriching entrants and rewarding rent-seeking behavior.

II. INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS

1. Internet-Bound Traffic: Is it Analogous to Local or Long Distance Traffic? (*Issue 2*)

Q. SOME ALEC WITNESSES [HUNSUCKER, AT 9-10; FALVEY, AT 4; SELWYN, AT 7 AND 18] TAKE THE POSITION THAT INTERNET-BOUND CALLS ARE LOCAL CALLS AND RECIPROCAL COMPENSATION SHOULD BE CONTINUED TO BE PAID FOR SUCH CALLS. DO YOU AGREE?

A. No, for two reasons. First, as the FCC has already correctly determined, calls made to Internet destinations are more likely to be jurisdictionally interstate than local.[1] Second, the cost causation principle implies that the relationship between the end-user and the ISP is analogous to that between the end-user and an inter-exchange carrier ("IXC").

[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 ("*ISP Declaratory Ruling*"), released February 26, 1999.

Therefore, ideally, the ISP should be required to pay usage-based charges to the ILEC and/or ALEC akin to the access charges currently paid by IXCs to the ILEC for all long distance calls carried.

Q. PLEASE EXPLAIN THE FCC'S FINDING THAT INTERNET-BOUND CALLS ARE JURISDICTIONALLY MORE LIKELY TO BE INTERSTATE.

A. This finding has been discussed in depth by BellSouth witness Beth Shiroishi (Direct Testimony, at 3-7). I note briefly here the FCC's stated view that the jurisdictional nature of communications has traditionally been determined by the *end points* of the communication, not by intermediate points of switching or exchanges between carriers.[2] More importantly, based on this premise, the FCC explained that calls made to the Internet do not terminate at the ISP's local server (in the sense a local voice call terminates at a carrier's switch) but, rather, continue on to Internet destinations that are frequently located in other states.

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) along the way to its destination.[3] This distinction 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

[2] *ISP Declaratory Ruling*, ¶10.

[3] *ISP Declaratory Ruling*, ¶18.

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 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.

Q. IS IT ACCURATE TO CHARACTERIZE THIS VIEW OF THE INTERNET CALL AS ONE ONLY PROPAGATED BY SELF-INTERESTED ILECS?

A. Not at all. Dr. Selwyn [at 25-26] claims:

> This shows that there is no merit to the ILEC suggestion that an end-user's call to an ISP does not really "terminate" with the ISP, but instead in some mythical sense "continues" on into the Internet. ... Put bluntly, however one might fairly characterize what it is that "continues" on into the Internet, it is certainly not the end-user's "call." That call "terminates" (in the sense of the FCC's rules) at the end office switch serving the ISP, and "terminates" (in a more colloquial sense) at the ISP's CPE...

As is evident from its own consideration of this issue, the FCC (not just ILECs) does not share Dr. Selwyn's fractured analysis. Even following the DC Circuit Court of Appeals' remand of the *ISP Declaratory Ruling* back to the FCC for a better explanation of its conclusions about the nature of Internet-bound traffic, the Chief of the Carrier Common Bureau at the FCC publicly reaffirmed the view of such traffic first articulated in the *ISP Declaratory Ruling*. Ms. Shiroishi's Direct Testimony also documents other instances in which the FCC concluded that the service provided by a local exchange carrier to an ISP is exchange access, rather than local exchange, and that calls to the Internet typically cross state jurisdictional boundaries before terminating at Internet websites.

Q. AMONG THE ALEC WITNESSES, ONLY DR. SELWYN APPEARS TO RAISE [AT 28] THE ISSUE OF COST CAUSATION IN THE ANALYSIS OF INTER-CARRIER COMPENSATION FOR INTERNET-BOUND TRAFFIC. HOW IS IT GERMANE TO THE ISSUE AND DOES DR. SELWYN HAVE IT RIGHT?

A. Cost causation is *the* fundamental economic foundation for devising any mechanism of

inter-carrier compensation under arrangements of network interconnection. Accordingly, my testimony places great emphasis on employing the cost causation principle correctly. It also demonstrates why the form of inter-carrier compensation for Internet-bound traffic being advocated by the ALEC witnesses, namely, reciprocal compensation, violates the cost causation principle.

Dr. Selwyn is correct to say that the end-user that originates an Internet call is the cost-causer. However, he errs in failing to properly and fully consider the carrier's role in the end-user's exercise (in Dr. Selwyn's words) of "free will in deciding to place the call." The ISP that offers Internet access service acts as the cost-causing end-user's *agent* in an economic decision (the Internet call) that gives rise to the cost. As I explain in this testimony, this is exactly analogous to the ILEC's role as the end-user's agent in the decision to make a local voice call and the IXC's role as the agent in the decision to make a long distance call.

Q. PLEASE EXPLAIN HOW COST CAUSATION DETERMINES THAT ISPs ARE ANALOGOUS TO IXCs AND SHOULD, IDEALLY, PAY CHARGES THAT ARE ANALOGOUS TO ACCESS CHARGES.

A. To understand this point, it is first necessary to understand the economic principle of cost causation itself. According to this principle, the cost that arises from any economic decision must be recovered from its source; only by doing so, are resources allocated efficiently (i.e., put to their best uses), consumers pay fully for the value of resources they consume, and suppliers are fully compensated for the cost of resources they expend in order to meet consumption demand.

Next, it is necessary to recapitulate the erroneous view of the network that underlies many ALECs' belief (including those in this proceeding) that an Internet call is jurisdictionally local. Implicit in this erroneous view are two crucial assumptions:

1. The ILEC subscriber that calls the Internet is acting as a *customer* of the originating

ILEC,[4] even when the call goes through the ISP to which he or she pays a monthly access fee.[5]

2. The ISP itself is not a carrier but an end-user of the ALEC that terminates the Internet call for the ISP.

These assumptions are epitomized by the following assertions by Mr. Falvey and Dr. Selwyn, respectively:

> ... when a Verizon end-user places a local call to an end-user served by e.spire, e.spire terminates the call originated by Verizon and provides the same functionality to Verizon, regardless of whether the Verizon end-user dials an ISP or any other e.spire local services end-user. Thus, the compensation mechanism—reciprocal compensation at Commission-approved cost-based rates—for the transport and termination of local traffic, should be the same. Both calls use the same path and the same equipment to reach their ultimate destination.[6]

and

> ... while I'm not an attorney and do not offer a legal opinion, in my view ISPs, unlike IXCs, are distinctly not telecommunications carriers as defined under current law. Rather, ISPs are themselves end-user customers of telecommunications carriers, and are thus entitled to exactly the same treatment as any other end-user customer.[7]

The first statement confirms the predominant ALEC view that the cost of an Internet-bound call made by the ILEC's subscriber must be recovered from the ILEC, just as cost is recovered for a local voice call made by that ILEC subscriber. The second statement reflects the ALEC view that an ISP is just another end-user.

Under these assumptions, the ILEC subscriber that makes the Internet call appears to be an end-user of the originating ILEC (paying local residential rates for line charges) and

[4] 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 as a customer 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-based cost for that carrier. Similarly, I cause cost for the long distance carrier when I use *its* long distance service.

[5] The ISP is assumed to have a point of presence in the local calling area of the Internet caller.

[6] Direct testimony of James C. Falvey, at 9.

[7] Direct testimony of Lee L. Selwyn, at 21.

the ISP appears to be an end-user of the terminating ALEC (paying local business rates for line charges). The monthly Internet access charges paid by the ILEC subscriber to the ISP and the leased high-speed line charges paid by the ISP to Internet backbone networks are only incidental to this model and have no further role in determining jurisdiction. In this view of the network, therefore, the portion of the Internet call that lies entirely within the circuit-switched network, i.e., up to the ISP, resembles a local call under an interconnection arrangement between two local carriers. From this it would appear that the ALEC that terminates the Internet-bound call is entitled to reciprocal compensation under the FCC's rules.

This conclusion is fundamentally incorrect because it ignores cost causation, specifically, that the ILEC subscriber that makes the Internet call does so *while acting as a customer of the ISP* to which it pays monthly fees for Internet access and which, in return, markets directly to the customer and provides a point of presence in the customer's local calling area in order to provide easy access. Thus, the same subscriber that acts in the capacity of a customer of the originating ILEC when making a local voice call is seen to act in the capacity of a customer of the ISP when making an Internet call. This situation is not an unfamiliar one; in fact, it is exactly analogous to the subscriber acting in the capacity of a customer of an IXC when making a long distance call.

This analogy—and the proper cost causation view of Internet calling—rests on two different assumptions:

1. The ILEC subscriber that calls the Internet is acting as a customer of the ISP to which he or she pays a monthly access fee, even though the call is facilitated by both the originating ILEC and the ALEC serving the ISP.
2. The ISP is viewed as a carrier—akin to an enhanced service provider ("ESP")—that routes the Internet call through the backbone network to its final destination. The ISP performs standard carrier functions such as transport and routing, as well as maintains leased facilities within the backbone network.

These assumptions appropriately depict the Internet-bound call as being much closer in character to an interstate long distance call than to a local call that is contained entirely within the local calling area. They also dispel the notion (such as that expressed by Dr. Selwyn, at 26) that an Internet-bound call is really two calls: the first call ending at the

ALEC serving the ISP, and the second call routed by the ISP through the backbone network to its Internet destination. Indeed, it is quite evident from Dr. Selwyn's testimony that he regards an Internet-bound *call* as equivalent to Internet *access* through the ISP. These are really two completely different entities.

Q. BUT, FROM A CUSTOMER'S PERSPECTIVE, DON'T LOCAL VOICE CALLS AND INTERNET-BOUND CALLS MADE THROUGH ISPS ACCESSIBLE THROUGH LOCAL NUMBERS BOTH APPEAR TO BE "LOCAL" CALLS?

A. Yes, but that mere appearance is not sufficient grounds—from an economic perspective—to designate them both "local" calls or institute reciprocal compensation for both. It is perfectly possible, indeed commonplace, for Internet access (through an ISP) to occur by dialing "local" or seven-digit numbers; indeed, it would seem, that is what leads Dr. Selwyn to make the following unqualified assertion [at 44]:

> From the consumer's perspective, there is no distinction between a local call placed to an ISP and a local call placed to a neighbor; both are dialed in the same manner, priced in the same manner, and are included or not included in the consumer's local calling area on exactly the same basis. In economic terms, ISP-bound calls—specifically the portion of the call that is carried over the local public switched telephone network from the originating caller to the ISP—are "local" in nature and are fully embraced within the applicable state tariffs covering local exchange service.

That ISPs should provide Internet *access* to their customers through local number dialing is neither surprising nor dispositive of the true status of an Internet-bound call: competition among them inevitably drives ISPs to making Internet access as convenient as possible to their customers. However, that is quite different from the fact that the end-to-end Internet call crosses state and jurisdictional boundaries with a very high likelihood. Dr. Selwyn misses three essential points completely.

1. Local or seven-digit dialing does not automatically make the call jurisdictionally local. Firms may use foreign exchange ("FX") lines to haul traffic from considerable distances while still offering service to their customers for the price of a local call.
2. Internet users do not place calls to the ISP; rather, they call Internet destinations. The ISP merely facilitates *access* to those destinations through the packet-switched network. In every regard, ISPs are carriers that facilitate the completion of end-to-end Internet

calls; the Internet access they provide are not *ends* in themselves. Unfortunately, regarding ISPs as "end-users" for the purpose of the access charge exemption (provided by the FCC in order to support an infant Internet "industry" rather than because Internet calls are local) completely clouds this all-important distinction.

3. The *customer's* perspective, such as it is, cannot possibly serve as the basis for determining the efficient form of inter-carrier compensation for Internet-bound traffic. Rather, what matters is solely how cost is caused. As I explained above, cost is caused differently for an Internet-bound call than for a local voice call.

Q. HOW DOES THE COST CAUSATION PRINCIPLE LEAD TO AN EFFICIENT INTER-CARRIER COMPENSATION MECHANISM FOR INTERNET-BOUND CALLS THAT IS DIFFERENT FROM THAT ADVOCATED BY THE ALEC WITNESSES?

A. The cost causation principle implies that, *for the purposes of an Internet call*, the subscriber is properly viewed as a customer of the ISP, not of the originating ILEC (or even of the ALEC serving the ISP). The ILEC and the ALEC 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, with the proper network model being analogous to ILEC-IXC interconnection (access), rather than to ILEC-ALEC interconnection, the proper form of inter-carrier compensation should ideally be usage-based charges analogous (but necessarily equivalent) to carrier access charges for long distance calls, rather than reciprocal compensation.

Q. PLEASE EXPLAIN THE CONTRAST BETWEEN THESE TWO "MODELS" OF INTERCONNECTION IN MORE DETAIL.

A. ***ILEC-ALEC Interconnection Model.*** When a BellSouth subscriber places a local call that terminates to an ALEC subscriber, what functions does BellSouth perform? Obviously, it originates the call, providing dialtone, local switching, and transport to the ALEC's point of interconnection. In addition, BellSouth has marketed the service to its subscriber (and customer of local calls), determining the price and price structure and other terms and conditions under which the customer decides to place the call. BellSouth will determine if the call has been completed, bill the customer for the call (if measured service applies) or

for flat-rate service, answer questions regarding the bill or the service and collect money from the customer or lose the revenue if it is unable to collect from the customer. The story is precisely symmetric if the originating party is an ALEC customer and BellSouth or another ALEC terminates the call.

Thus, under ILEC-ALEC 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 ALEC 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 ALEC'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 an ALEC, it makes economic sense. It could 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 an ALEC to terminate the call, just as General Motors may purchase 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 BellSouth subscriber places a long distance call using, e.g., AT&T, BellSouth'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 an ALEC[8], the *economic* functions are very different. It is AT&T that has marketed the service to its customer, determined the price and price structure and other terms and conditions of the call. AT&T

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

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 ALEC) 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/ALECs that originate and terminate the long distance call, as well as for the IXC that transports it between local exchanges. The IXC receives revenue from the customer which it uses, in turn, to pay originating and terminating access charges to the ILECs/ALECs 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/ALECs 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.

Thus, from an economic perspective, ILEC-IXC interconnection and ILEC-ALEC interconnection have fundamentally similar characteristics but the actors play different economic roles. In both cases, the originating ILEC subscriber is the cost-causer, and it pays its supplier (the party with whom it has contracted for service) for the end-to-end service it receives in both regimes. The difference is that in the ILEC-ALEC local interconnection regime, the cost-causer is acting as the customer of the originating ILEC, while in the ILEC-IXC regime, the cost-causer acts as the customer of the IXC. This is a significant conclusion because it properly identifies the customer-supplier relationship in each case.[9]

[9] This contrasts with Dr. Selwyn's conclusion [at 19] that "Under the access charge model, the customer of the ILEC is the IXC, not the originator of a long distance call." In that model, the proper customer-supplier or

(continued...)

Q. WHY DOES ILEC-ALEC-ISP INTERCONNECTION RESEMBLE THAT BETWEEN THE ILEC AND THE IXC BUT NOT THAT BETWEEN THE ILEC AND THE ALEC?

A. The question at issue is when multiple ILECs/ALECs combine to deliver traffic to an ISP, are they interconnecting in an ILEC-ALEC local interconnection regime or something analogous to an ILEC-IXC interstate access charge 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 usage-based charges analogous to interstate access charges. However, the FCC concluded as far back as 1983 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."[10]

The service provided by an ISP exists to enable the 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 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 only a local 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

(...continued)

retail relationship remains that between the originating end-user and the IXC. The fact that an IXC may purchase switched access (a wholesale service) from an ILEC or ALEC is irrelevant to this issue and does not alter the path of cost causation. In fact, that path remains unaltered even when the IXC provides a direct (special access) connection to its long distance customer and bypasses the ILEC's (or ALEC's) switches completely. Similarly, the customer-supplier relationship between the originating end-user and the ISP remains unchanged when there is a direct (digital subscriber line) connection between them that bypasses the ILEC's and ALEC's switches.

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

services.[11] 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 FX lines to haul Internet traffic from considerable distances while still offering Internet access service for the price of a local call.[12] Some ISPs offer 800 service for their customers to 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 it is the ISP that loses money if it cannot collect from them. From an economic perspective, then, the party that causes the cost associated with Internet-bound traffic is the originating ILEC's subscriber who acts in the capacity of an ISP customer. In this sense, Internet-bound traffic has the same characteristics as IXC-bound traffic in the ILEC-IXC regime and has characteristics opposite to ALEC-bound traffic in the ILEC-ALEC local interconnection regime.

Q. ARE THERE DIFFERENCES BETWEEN AN IXC-BOUND CALL AND AN INTERNET-BOUND CALL?

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

[11] The POCs are points at which the carrier serving the ISP (which may be an ALEC) accepts the Internet-bound call and routes it to the ISP.

[12] 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 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 Internet-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.[13] 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 ALEC. Because Internet-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, as I stated earlier, competitive forces in the ISP market encourage 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 Internet-bound call.[14]

All of these are reasons why instead of the ILEC paying reciprocal compensation (or, a terminating charge) to ALECs as in the ILEC-ALEC local interconnection regime, for Internet calls by the ILEC subscriber, ISPs should pay the ILEC (and the ALEC that also serves it) usage-based charges analogous to carrier access charges paid by IXCs. Only such a payment will 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 ALEC that switches Internet calls for the ISP is compensated not from reciprocal compensation paid by the originating ILEC but from usage-based charges paid to it by the ISP.

[13] Indeed, if the longer holding times of Internet-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 Internet-bound traffic would effectively charge ISP customers less than incremental cost and ordinary voice customers more than otherwise for local exchange usage.

[14] 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.

2. Functional Equivalence and the Cost of Internet-Bound Traffic (*Issues 3 and 4*)

Q. BOTH DR. SELWYN [AT 7 AND 40] AND MR. FALVEY [AT 9] ASSERT THAT INTERNET-BOUND TRAFFIC AND LOCAL VOICE TRAFFIC ARE, IN EFFECT, FUNCTIONALLY OR "TECHNICALLY" IDENTICAL. THEREFORE, THEY ARGUE, RECIPROCAL COMPENSATION OUGHT TO APPLY TO INTERNET-BOUND TRAFFIC JUST AS IT DOES FOR LOCAL VOICE TRAFFIC. DO YOU AGREE?

A. No. First, the basic Selwyn-Falvey premise here is incorrect because it completely ignores cost causation. I explained earlier the cost-causative differences between Internet-bound traffic and other local traffic, whatever the degree of *functional* resemblance between them. Even if it were true that the two types of traffic are functionally or technically identical—which they are not—both Dr. Selwyn and Mr. Falvey miss or ignore the fundamental point: cost recovery necessarily depends on who causes the cost in question, *not* on the level of cost or technical characteristics of the underlying service. Thus, for the purposes of making policy, what matters is not whether two different types of traffic use exactly the same network facilities, or even whether they generate the same level of cost. What only matters for that purpose is determining who gives rise to a cost—and in what circumstances—and should, hence, be held responsible for paying for it. Technical characteristics or the level of cost may be items of interest in themselves, but they are totally irrelevant for determining who should be made to pay for the cost. Even if the two types of traffic were functionally identical and generated the same level of cost, it would still be economically inappropriate to apply reciprocal compensation to both.

Second, if the cost *per minute* to terminate a local voice call were truly the same as that cost for an Internet-bound call, I could still understand (though not accept) Dr. Selwyn's statement [at 7]:

> In fact, *there is no technical difference in the manner by which these two types of traffic are handled in the ILEC's network* and by suggesting otherwise, such ILECs are attempting to introduce a market-driven price discrimination based upon the *use* to which local telephone service is put rather than upon the

processes by which it is produced or the costs incurred in its production.[15] However, the costs per minute for the two types of calls are *not* likely to be the same for several reasons documented below.

Q. WITH REFERENCE TO DR. SELWYN'S CHARGE OF AN ATTEMPT AT "MARKET-DRIVEN PRICE DISCRIMINATION," PLEASE EXPLAIN AGAIN YOUR POINT THAT THE ECONOMICALLY APPROPRIATE FORM OF INTER-CARRIER COMPENSATION SHOULD DEPEND ON COST CAUSATION, NOT ON THE LEVEL OF COST OR ON FUNCTIONAL EQUIVALENCE.

A. Dr. Selwyn charges [at 7] that the sole reason for an ILEC to want a different form of inter-carrier compensation for Internet-bound traffic than for local voice traffic is its desire to price discriminate based on how local telephone service is *used*. The fact of the matter is that use *per se* has nothing to do with the choice of an efficient inter-carrier compensation mechanism. *How* cost is recovered must always depend on cost causation, i.e., the economic decision or transaction that is the source of the cost. *How much* cost should be recovered is of only incidental interest to this issue: it reflects the manner of use and determine the *magnitude* of recovery, but it does not determine the form of compensation or recovery itself. To explain this point, I note, as before, that the cost-causer for both a local voice call and an Internet call is the same entity: the ILEC subscriber that places either type of call. That same subscriber is also the cost-causer when he places a *long distance* call through an IXC. Therefore, in all three cases, cost recovery must start with that subscriber (the source of the economic decision to make a call that gives rise to cost). The question is: how should the payment received from that subscriber be used to compensate various carriers that participate in carrying each type of call?

The answer to that question is provided by cost causation. Following a crucial distinction I made earlier, for a local voice call, the ILEC subscriber is also a *customer* of

[15] Emphasis in original.

the ILEC (the supplier of local voice connections). For a long distance call, the ILEC subscriber is a customer of the IXC (the supplier of long distance connections). And, for an Internet call, the ILEC subscriber is a customer of the ISP (the supplier of Internet connections). This trichotomy indicating how the same ILEC subscriber can be a customer of different carriers for different services is particularly important. Indeed, it determines which supplier has the right to charge (recover cost) from the end-user for each service and helps to understand how cost causation works. By being a subscriber of the ILEC, that individual maintains a link to the public switched network over which all three types of services are delivered. With that link in place, that individual has the *option* to purchase various types of telecommunications services. Without that link, he cannot consume any of the three services. However, without the ILEC, the IXC, and the ISP offering and marketing the three types of services to that subscriber, there wouldn't be any service to consume.

The long practice of the IXC recovering the cost of a long distance call from the ILEC subscriber and then using that payment to compensate all facilitating carriers (e.g., those providing switched access) is economically sensible and efficient, and serves as the proper model for compensation in the other two cases. For a local voice call, the ILEC must recover the cost of that call directly from its subscriber (acting as its customer) and then compensate all other facilitating carriers (e.g., the ALEC that provides interconnection if the local call crosses network boundaries). In the same vein, the ISP must recover the cost of the Internet call directly from the ILEC subscriber (acting as the ISP's customer) and then compensate all other facilitating carriers (e.g., the ILEC, the ALEC, the backbone network providers, etc.).

Q. GIVEN THE CLAIMS OF DR. SELWYN AND MR. FALVEY THAT THE FACILITIES USED TO TRANSPORT AND SWITCH BOTH INTERNET-BOUND AND LOCAL VOICE CALLS ARE SIMILAR, ARE THE COSTS ALSO SIMILAR FOR THE TWO TYPES OF CALLS?

A. No. The costs of 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 Internet-bound call may be similar to those used to transport and switch local voice calls, there are characteristics of Internet-bound traffic that make its *cost* of transport and switching (as measured by TELRIC) different from that for local voice traffic. The major differences are:

1. *Call Duration*: Because Internet-bound calls are generally much longer than local voice calls, the average cost of call setup is much lower for the Internet-bound call than for the typical local voice call.
2. *Call Direction*: Transport and termination costs involve only terminating traffic. Some features and functions impose capacity costs only at the originating end and would not be included in a study of cost to the ALEC of delivering Internet-bound traffic to ISPs.
3. *Use of Network Elements*: Because dedicated circuits are used for Internet-bound traffic, traffic-sensitive switching costs are lower for Internet-bound traffic than they are for voice traffic.
4. *Load Distribution*: The proportion of Internet-bound traffic that arrives at the busy hour of the switch may differ from that of local voice traffic. If the load distribution of Internet-bound traffic is flatter than that of local voice traffic and peaks at a different hour, then the average incremental minute of Internet-bound traffic would cause a smaller increase in the capacity requirements of the switch than an incremental minute of local voice traffic.

Thus, even though similar facilities are used to switch and transport Internet-bound and local voice traffic, the TELRIC of Internet-bound traffic can differ significantly from the TELRIC of average local exchange traffic, which currently determines the reciprocal compensation rate for local voice traffic.

Q. PLEASE EXPLAIN THE IMPACT OF CALL DURATION ON COSTS.

A. 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 Internet-bound call is

about five to thirteen times longer than the average voice call,[16] the *average* fixed cost component for the 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 Internet-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 $3\times0.5 = 1.5$¢ and a 20-minute call would have a total variable cost of $20\times0.5 = 10$¢. 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 $3.5\div3 = 1.17$¢ per minute and the 20-minute call would cost $12\div20 = 0.6$¢ per minute. That is, as the call duration increases, the cost per minute would fall.

Q. WOULD A BIFURCATED RATE STRUCTURE FOR LOCAL SWITCHING SOLVE THIS PROBLEM, AS SUGGESTED BY MR. HUNSUCKER [AT 17]?

A. Yes, by matching the rate structure to the structure of costs. However, this would only solve a problem that arises from averaging costs for calls of different durations, *assuming* that the per-minute incremental cost is the same for both Internet-bound and local voice calls. Below, I explain why that per-minute incremental cost itself is likely to differ.

Q. PLEASE EXPLAIN HOW THE LOAD DISTRIBUTION OF TRAFFIC AFFECTS COSTS.

A. The cost drivers for transmitting or terminating/switching any type of traffic (e.g., Internet-bound traffic, local traffic, toll) include the number and duration of calls in the busy hour.

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

Incoming call attempts during the busy hour for the ALEC switch determine the capacity requirements for the switch components involved in call setup, namely, 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 set up a 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—differs from that for other types of calls. The peak hour for voice traffic normally occurs some time during the business day. Internet-bound traffic is likely to have a flatter load distribution due to the nature of demand. Whereas the business day is confined approximately to an eight 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 Internet-bound traffic, in the sense that the fraction of usage falling in the busy hour is smaller for Internet-bound traffic than for local voice traffic. This means that Internet-bound traffic requires less investment and costs per minute to provide capacity to meet peak demand than does local voice traffic.

Q. PLEASE EXPLAIN HOW THE USE OF NETWORK ELEMENTS AFFECTS TRANSPORT AND SWITCHING COSTS DIFFERENTLY FOR INTERNET-BOUND TRAFFIC THAN FOR LOCAL VOICE TRAFFIC.

A. Rates set for inter-carrier compensation of any type of traffic must recover only the costs that are traffic-sensitive, i.e., vary with additional usage. Non-traffic sensitive costs, i.e., costs that do not vary with additional usage, *should not be so recovered.* 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 to consider how network elements are used for different types of traffic because differences in such use can affect not only the level of costs but, more importantly, the manner in which the costs should be recovered. The same network element that may appear to be a shared facility in certain uses can turn out to be a dedicated facility in other

uses. In the former case, the cost of the facility would be recovered from all customers using that facility and, in the latter case, it would be recovered from the single cost-causing customer.

Q. PLEASE ELABORATE UPON THIS POINT.

A. 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 part of 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 a circuit path through the switch processor. A concentration ratio of 8:1, for example, means that eight line circuits share one trunk circuit and one circuit path through the switch processor.[17] 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 by the concentration ratio that is chosen. For local voice traffic, busy hour line CCS costs are traffic-sensitive in nature because they arise from a shared facility: namely, one circuit path through the switch processor that is shared by eight customer lines. Because of that sharing, the use of the facility during the peak hour 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 by various users, a recovery mechanism that apportions cost to those cost-causing users provides proper signals at the margin and increases economic efficiency.

Line CCS costs for Internet-bound traffic, however, need not be traffic-sensitive. For the purposes of such traffic, ALECs rely on ISDN Primary Rate Interfaces ("PRI") to serve ISPs and build switches at a concentration ratio of 1:1. For those carriers, line CCS costs

[17] 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 local voice traffic, it is not unusual to observe 8 or 9 loops for every trunk.

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 always be available for customers calling the Internet. 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. Although the same network elements are used for local voice traffic, inter-carrier compensation for Internet-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 Internet-bound calls.

Q. HOW DOES THIS DISCUSSION PERTAIN TO DR. SELWYN'S OWN TESTIMONY [AT 60-61] ON THE COSTS OF ILECS AND ALECS?

A. In comparing the costs of ILECs and ALECs, Dr. Selwyn advances the notion that the greater economies of scale and scope allegedly enjoyed by ILECs would seem to give those ILECs a cost advantage over the ALECs. This is clearly an empirical issue on which Dr. Selwyn offers no real evidence. However, Dr. Selwyn also acknowledges that ALECs may be able to offset any cost advantage ILECs enjoy through the economies of *specialization.* While Dr. Selwyn casts such specialization as a natural ALEC response to not having sufficient scale to compete with ILECs in terms of their respective average costs, I believe that any ALEC specialization has a much simpler explanation: the opportunity for arbitrage given the market distortion created by reciprocal compensation for Internet-bound traffic. I explain this point later in my testimony.

3. Cost Causation-Based Policy (*Issues 2, 3, 4, and 6*)

Q. HOW DO YOU RESPOND TO THE ASSERTION BY ALEC WITNESSES THAT AN ISP IS JUST AS MUCH AN END-USER AS, SAY, A PIZZA PARLOR, AND ANY TRAFFIC DIRECTED TO THE ISP SHOULD THEREFORE BE ENTITLED TO THE SAME TREATMENT AS CALLS MADE TO THE PIZZA PARLOR?

A. Following the D.C. Circuit Court of Appeals' vacation and remand of the FCC's *ISP Declaratory Ruling*, it has become commonplace for proponents of reciprocal compensation for Internet-bound traffic to draw an analogy between legitimate end-users like pizza parlors, taxicab companies, or on-line banks and carriers like ISPs. For example, Dr. Selwyn [at 22] quotes a passage from the DC Circuit Court's Remand Order that appears to uphold such an analogy, and Mr. Falvey [at 6 and 8] asserts that the "functionality provided does not differ based on whether or not the end-user of one LEC called by an end-user of another LEC is a pizza parlor or an ISP."

As explained above, from a cost causation standpoint, the functional equivalence of calls to pizza parlors and calls to ISPs (even if true) has absolutely no relevance for the larger policy question of who must compensate whom. The policy of reciprocal compensation is justified by cost causation as long as the calling is between two legitimate end-users within the same local calling area. It is another matter, however, when the called party is *not* an end-user in the true sense of the term.

The first priority of the cost causation principle is to locate the cost-causer or, in other words, the economic decision that gave rise to the cost. When an Internet user wishes to reach a web site or other destination on the Internet, he or she must first secure the services of the entity that is not only in a position to provide the pathway to the Internet but also actively markets those services through advertising and contractual terms and conditions concerning price, scope, quality, etc. The cost of the Internet-bound call—*wherever it may be generated*—would not arise were it not for the promise by the ISP to deliver Internet destinations to the Internet user and that user's voluntary acceptance of the ISP's terms and conditions for granting such access. In the absence of Internet access (i.e., the ISP's service), there would be no Internet-bound calls, and no cost would be caused for such calls. Therefore, the premise of cost causation *does* require us to look at how cost may arise in any instance and the contractual arrangement that governs the economic decision that gives rise to that cost.

As explained above, the same may be observed to be true for other contractual relationships as well: that between the ILEC's subscriber and the ILEC for local voice

calling or that between the ILEC subscriber and the inter-exchange carrier IXC for long distance calling. Of course, the ILEC subscriber would have to use the ILEC's network to reach a CLEC (for cross-network local calls), an IXC (for long distance calls), and an ISP (for Internet calls). That is exactly how all or part of the cost of making those calls would arise in the first place. But, employing the cost causation principle in the manner suggested to determine how or why cost arises does *not* amount to denying compensation where it is due. Indeed, cost causation helps us to sort through the following questions: (1) why did the cost arise (what economic decision caused the cost)? (2) where did the cost arise (what is the chain of economic activities that followed that decision)? and (3) how should the cost be recovered (how can the cost-causer and his/her agent be made to compensate all parties that incurred cost as a result of those economic activities)? Therefore, the identity of the various parties in the contractual relationship *is* fundamental for determining where compensation is due and from whom.

For these reasons, it is absurd to think that end-users set out to call ISPs in the same sense they would a friend or business, e.g., a pizza parlor.[18] The ISP is only a called party for an Internet-bound call in the same sense that an IXC is a called party for a long distance call. Also, only if we accept that every long distance call is really two calls—the first from the calling end-user to the IXC and the second from the IXC to the called party (and its serving LEC)—can we also regard an Internet-bound call as two calls—the first from the calling end-user to the ISP and the second from the ISP to the Internet destination.[19]

To the question why reciprocal compensation should apply when cross-network local calls are made by end-users to brokerage firms, flower shops, pizza parlors, etc., but not when those end-users place Internet-bound calls through ISPs, the obvious answer is that every such entity—legitimately a called party—is an end-user, but an ISP is not. Like the

[18] Hence, the term "ISP-bound traffic" often has the unfortunate connotation that calls are made to ISPs *as if* they are end-users.

[19] The two-call theory is clearly implied by Dr. Selwyn [at 26] when he draws an analogy between calls to an airline reservation desk and Internet-bound calls routed by ISPs.

ISP, the pizza parlor or the bank offers its services over the telephone (although, unlike the ISP, it also has non-network means for selling its services). However, there are also some important differences. First, the pizza parlor or the bank does not perform the carrier-like functions of an ISP to provide access to some other party (such as a web server or Internet destination). Rather, the pizza parlor and the bank provide internal access into their own operations, in much the same way that *any* end-user may be said to provide "access" to himself or herself when a call comes in.

Second, the relationship between the calling end-user (and ILEC subscriber) and the pizza parlor or bank is truly reciprocal, as it is supposed to be between two end-users. That is, the pizza parlor or bank can independently call the ILEC subscriber, i.e., on a separate call from that made by that subscriber to the pizza parlor or bank. An ISP, in contrast, serves merely as an Internet access-granting agent to the ILEC subscriber and has no commercial interest in returning separately any calls to that subscriber. In both of these respects, the role of the ISP is strikingly similar to that of an IXC. Unlike the pizza parlor or bank, an IXC too performs the functions of a carrier and has no commercial interest in returning separately any calls to the ILEC subscriber. These differences powerfully demonstrate that mere *resemblance* between cross-network local voice calls and Internet-bound calls (up to the ISP) is not enough for both to merit the same compensation mechanism. Without belaboring the point unnecessarily, cost causation *does* matter.

Q. IS COST CAUSATION-BASED COMPENSATION THE ONLY FORM OF INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS THAT THE COMMISSION SHOULD CONSIDER?

A. Yes. From the economic standpoint, any method of inter-carrier compensation for Internet-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 ALEC that transport and switch Internet-bound 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 ALEC) of revenues earned by the ALEC 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 ALEC 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 Internet-bound traffic between the ILEC and the ALEC at no charge to each other. In fact, it is quite possible that the FCC itself will maintain the ESP exemption from access and analogous charges but settle on bill-and-keep for the exchange of Internet-bound traffic.[20] In my opinion, because it is not based on cost causation, reciprocal compensation for Internet-bound traffic should really not be an option at all.

Q. WOULD ANY COST-CAUSATIVE FORM OF COMPENSATION DENY AN ALEC FAIR PAYMENT FOR USE OF ITS NETWORK BY AN INTERNET-BOUND CALL FROM AN ILEC (BELLSOUTH) SUBSCRIBER?

A. Absolutely not. Adopting a cost-causative form of inter-carrier compensation for *any* kind of traffic (local voice, Internet-bound, or long distance) in no way signifies the denial of fair and proper compensation where such compensation is due. It certainly does not follow that BellSouth intends to deny ALECs in Florida any compensation for their part in carrying Internet-bound calls. Rather, the point at issue here is whether *BellSouth* (or any ILEC) should compensate an ALEC for the cost the latter incurs in carrying Internet-bound calls to the ISPs it serves. As I explained above, while that ALEC is entitled to recover fully the cost it incurs for Internet-bound calls, such recovery (compensation) ought to come—in accordance with cost causation—from the ISP or ISPs it serves, not from BellSouth. To have it otherwise—particularly in current circumstances in which ALECs

[20] Two recent papers by FCC economists may presage the adoption of precisely that policy. These are Patrick DeGraba, "Bill and Keep at the Central Office as the Efficient Interconnection Regime," OPP Working Paper Series No. 33, and Jay M. Atkinson and Christopher C. Barnekov, "A Competitively Neutral Approach to Network Interconnection," OPP Working Paper Series No. 34, both issued in December 2000.

frequently 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.[21]

4. Reciprocal Compensation, Usage-Based Charges, and Bill-and-Keep (*Issues 4 and 6*)

Q. DR. SELWYN ARGUES [AT 18] THAT ASKING ISPS TO PAY TO RECEIVE INTERNET-BOUND CALLS AND TO RECOVER THEIR COSTS DIRECTLY FROM THEIR INTERNET ACCESS CUSTOMERS WILL NOT WORK BECAUSE LOCAL CALLING HAS TRADITIONALLY BEEN PROVIDED BY LOCAL EXCHANGE CARRIERS ON A "SENT PAID" BASIS. DO YOU ACCEPT HIS ARGUMENT?

A. No. Dr. Selwyn's historical accounting of sent-paid services in the U.S. may be comprehensive, but it is fundamentally irrelevant to the issue of whether Internet-bound calls are local or whether reciprocal compensation should be paid for those calls. There is a very sound cost-causative basis for the sent-paid arrangement for *local voice* calls. As I explained earlier, for those calls, the ILEC subscriber is also the ILEC's customer. Hence, by the principle of cost causation, the ILEC should recover the cost of the local call directly from that customer and compensate any other carrier involved in completing the call. In contrast, regardless of their alleged *technical* resemblance to local calls, Internet-bound calls are caused by the ISP's customer purchasing Internet access from the ISP. By cost causation, the economically proper form of cost recovery for such calls would be for the ISP to recover the cost of those calls fully from its customer and then to compensate both the ILEC (whose subscriber the ISP customer is) and the ALEC serving the ISP. Naturally, if this form of cost recovery is correctly implemented, Internet-bound calls would not be carried on a sent-paid basis but would resemble the manner in which IXC-

[21] Even though, in my opinion, the ALECs delivering Internet-bound calls to ISPs do not provide actual termination services, those ALECs routinely characterize their role in that respect as "termination."

bound calls are carried and billed. This would get around the problem raised by Dr. Selwyn [at 18] that as long as calls to ISPs are rated as local calls and those ISPs are charged for receiving incoming traffic, the effect would be for the ILEC to recover twice, from the originating end-users and the ISPs. More generally, the fallacy underlying Dr. Selwyn's argument here is that just because certain practices (sent-paid, reciprocal compensation, etc.) have traditionally been followed for local usage (voice) services, the same must automatically be true of Internet-bound calls. Strange as it may seem, this amounts to *inferring* that Internet-bound calls are local simply because they are *assumed* to be so. Unfortunately, this sort of illogic or circular logic appears to permeate Dr. Selwyn's testimony.

Q. BUT, WHAT ABOUT DR. SELWYN'S CLAIM [AT 21] THAT "THE FCC HAS EXPRESSLY EXEMPTED [INTERNET-BOUND] CALLING FROM INTERSTATE SWITCHED ACCESS CHARGES, REQUIRING THAT CALLS TO ISPS BE TREATED AND RATED AS LOCAL CALLS AND THAT ACCESS LINE SERVICES FURNISHED TO ISPS BE PROVIDED AS LOCAL BUSINESS EXCHANGE SERVICE LINES OUT OF THE LOCAL EXCHANGE TARIFF?"

A. This is another example of the illogic in Dr. Selwyn's testimony. He makes this claim in an attempt to portray an Internet-bound call as a local call for purposes of compensation. However, the mere fact that ISPs are allowed to purchase local exchange services from ILECs and ALECs that serve them does not necessarily lead to the conclusion Dr. Selwyn seeks. The FCC's grant of the access charge exemption to ISPs was an attempt to protect the growth of a budding Internet "industry."[22] That grant of exemption was neither a repudiation of the FCC's oft-stated conclusion that Internet-bound calls are mostly

[22] The FCC has traditionally explained that exemption thus:

> 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.

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

interstate in nature, nor was it an overt acknowledgement that such calls should be treated like local voice calls for purposes of cost recovery and compensation. As the Louisiana Public Service Commission recently recognized, the FCC regards ISPs as "end-users" *only for the purposes of the access charge exemption.*[23] That does not in any way alter the fundamental fact that ISPs are not end-users *per se*; Internet calls do not terminate at the ISPs in the manner voice calls terminate at true end-user customer locations. Rather, ISPs perform several carrier functions which result in Internet calls reaching their destinations through the packet-switched network.

Q. WOULD YOU COMMENT ON DR. SELWYN'S CHARGE [AT 46] THAT IF THE COMMISSION WERE TO TREAT INTERNET-BOUND TRAFFIC ROUTED TRHOUGH ALEC-SERVED ISPS AS NON-LOCAL AND EXEMPT IT FROM RECIPROCAL COMPENSATION, BUT RETAIN LOCAL RATING OF SUCH TRAFFIC ROUTED THROUGH ILEC-SERVED ISPS, THEN AN "ENORMOUS AND UNWARRANTED MARKET ADVANTAGE" WOULD BE GRANTED TO THE ILECS AND THEIR ISP AFFILIATES?

A. This is not a substantive issue at all. The "local rating" of Internet-bound calls that Dr. Selwyn is so concerned about stems directly from the FCC's ESP exemption, the sole purpose of which is to allow ISPs to avoid paying switched access charges. This does *not* mean that the FCC accepts such calls as being local in every other respect (in particular, the all-important customer-supplier relationship implied by cost causation). There is no reason to believe either that the FCC selectively views certain Internet-bound calls (those

[23] In becoming the fourth state regulatory agency to deny the payment of reciprocal compensation for Internet-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 Order*"), October 13, 1999, at 13.

routed through ALEC-served ISPs) as non-local but regards others (those routed through ILEC-served ISPs) as local. Whether ISPs are served by ALECs or the ILECs themselves, they are all currently allowed to purchase business local exchange lines out of local exchange tariffs.

More importantly, if a cost-causative form of compensation were to be adopted for Internet-bound traffic, then the local/non-local distinction (or whether an ISP is ALEC-served or ILEC-served) would not matter. In all instances, the local exchange carriers involved would recover their costs of originating and delivering Internet-bound traffic from the ISPs or ISP-affiliates which, in turn, would recover those costs directly from their Internet access customers. Naturally, in this scheme of things, Internet calling would not be sent-paid.

Q. DR. SELWYN ASKS [AT 21] WHY THE ACCESS CHARGE MODEL IS "NOT APPLICABLE TO OR APPROPRIATE FOR CALLS DELIVERED BY ILECS TO ISPS," AND THEN ANSWERS HIS QUESTION, IN PART, BY POINTING TO THE FCC'S ESP EXEMPTION FROM ACCESS CHARGES. DO YOU AGREE?

A. No. In responding to his own question, Dr. Selwyn relies solely on his interpretation of legal rulings and regulatory decisions, not on the economic merits of a regime of usage-based charges called for by the cost causation principle. Moreover, I strongly disagree that usage-based charges analogous to carrier access charges are "not appropriate" for Internet-bound calls. While the current FCC exemption may make such charges "not applicable" for now, there is nothing in the FCC's original or subsequent justifications for the ESP exemption to indicate that they are also "not appropriate" on economic grounds. Dr. Selwyn may argue from his reading of the law and various court decisions why access-like charges are not applicable, but he certainly has not argued persuasively why they are not economically appropriate.

Q. BUT, ISN'T THE LIKELY DEMISE OF FLAT-RATE INTERNET ACCESS SERVICE DUE TO ANY ADOPTION OF USAGE-BASED CHARGES (AS ARGUED BY DR. SELWYN, AT 23) SUFFICIENT ECONOMIC REASON FOR

NOT LEVYING USAGE-BASED CHARGES ON ISPS?

A. No. As Dr. Selwyn correctly notes, ISPs today mostly offer flat-rate Internet access service which allows customers unlimited access to the Internet at a fixed monthly charge. Dr. Selwyn suggests, however, that this status quo is inherently desirable, i.e., requiring ISPs to pay usage-based charges instead to receive Internet-bound calls would somehow "fundamentally alter the manner in which the Internet is used." If Dr. Selwyn sees this as a negative or adverse development, then I would disagree. Economic efficiency requires that resources be placed in their most productive uses, where they receive full and proper compensation. This underlies the long tradition, in most markets, of moving prices as close to underlying incremental costs as possible. When prices are out of line with costs, either over-consumption or under-consumption of resources can occur, neither of which is an efficient outcome. Flat-rate Internet access with unlimited usage essentially encourages inefficient over-consumption by making the marginal price zero in circumstances in which the marginal cost is not necessarily zero, even if small. As long as there is a significant likelihood of flat-rate pricing raising consumption to the point that existing facilities for carrying Internet-bound calls are exhausted (or, at least, congested) and need to be relieved, the marginal cost of consumption is not zero. Arguably, flat-rate Internet access in such circumstances is *not* the most desirable or efficient economic outcome, although some, like Dr. Selwyn, may believe otherwise.[24] Regulators presently involved in steering hitherto closed and regulated telecommunications markets in the direction of competitive markets have a special responsibility to adopt policies that promote the public interest in as economically efficient a manner as possible.

Usage-based charges on ISPs would more reliably align prices with underlying costs,

[24] The only time flat-rate pricing of Internet access would be efficient is when the facilities used to transport, switch, and route Internet-bound calls become sufficiently plentiful so that exhaustion or congestion, even in the busy hour peak, does not happen. Such a circumstance may well come about as Internet-bound and data traffic are both transported entirely through packet-switched networks. In the meanwhile, the advent of direct connections to ISPs through high-speed digital subscriber lines represents a move in that direction. Ironically, if reciprocal compensation is adopted for Internet-bound calls, the more direct connections to ISPs become the norm, i.e., the less Internet-bound calls go through the circuit-switched network, the less reciprocal

(continued...)

and ensure that what the consumer pays for the marginal unit accurately reflects the cost he or she imposes on the service provider. Such charges would also likely result in per-use pricing of Internet access and usage. This, however, is not necessarily an adverse outcome for the Internet (although some, like Dr. Selwyn, may not see it that way). In the presence of exhaustible or congestible resources, per-use pricing encourages more efficient use of those resources, minimizes the generation of unwarranted subsidies, and ensures stable and sustainable growth of the market in the long run. While some might view unrestrained growth of Internet usage—spurred on by inefficient flat-rate pricing—as good for the public interest, such growth is not sustainable in the long run and may suppress other incipient technologies and services that could be beneficial to consumers. In short, any policy encouraging that type of Internet usage growth could ultimately prove to be myopic and inimical to the public interest.

Q. EVEN IF THE FCC'S ESP EXEMPTION WERE NOT IN EFFECT, ISN'T IT TRUE (AS DR. SELWYN ARGUES, AT 20) THAT APPLYING CONTRIBUTION-LADEN ACCESS CHARGES TO INTERNET-BOUND TRAFFIC WOULD GREATLY RAISE THE COST TO INTERNET USERS OF REACHING THEIR CHOSEN ISPS?

A. No, this too is not a substantive issue. I completely endorse the principle that any usage-based charges on ISPs—should they become the mode of cost recovery for ILECs and ALECs—be cost-based and, if necessary, even set *at* incremental cost. The contribution presently included in carrier access charges serve a larger social purpose (by providing for a subsidy to residential local exchange service), and would, as such, be an unsuitable set of charges for Internet-bound traffic. However, in my testimony, I have called for charges that are *analogous* to carrier access charges, i.e., that they be usage-based. This is not the same as saying that those usage-based charges be at the same level or have the same

(...continued)

compensation revenue would ALECs be able to earn.

structure as carrier access charges.

As to whether usage-based charges on ISPs would make the Internet more expensive, Dr. Selwyn's prediction that they would do so is simplistic. Under per-use pricing of Internet access (that could likely result from usage-based charges on ISPs), some Internet users would experience an increase, and others a decrease, in their monthly Internet use costs. That monthly cost would depend on the Internet user's actual number of minutes or hours of use which, in turn, would depend at least partly on the marginal price he or she faces. At a zero marginal price (such as with flat-rate pricing of Internet access), even the Internet user with the least need for service would likely over-consume. That over-consumption would, in the present scheme of things, be subsidized by non-Internet users.

Q. DO ISPs PAY USAGE-BASED CHARGES (ANALOGOUS TO CARRIER ACCESS CHARGES) TODAY?

A. No. Even though the FCC has declared that Internet-bound traffic is, at best, jurisdictionally mixed and is, in most instances, interstate, no rulemaking has yet occurred to establish such charges for ISPs, and it remains uncertain as to when rules to this effect will be established. In the meantime, ISPs remain beneficiaries of the long-standing access charge exemption; however, that exemption only applies to payment of access charges to *ILECs*. Thus, *ALECs* could, if they so chose, still assess access-like charges on ISPs that use their network.

Q. YOU SUGGEST ABOVE THAT IN THE ABSENCE OF USAGE-BASED CHARGES OR EQUITABLE SHARING OF REVENUES FROM ISPS, A POLICY OF BILL-AND-KEEP MAY BE BETTER THAN RECIPROCAL COMPENSATION. HAVEN'T (AS DR. SELWYN CHARGES, AT 32) ILECS LIKE BELLSOUTH RESISTED BILL-AND-KEEP BEFORE?

A. It is true that BellSouth and other ILECs once resisted bill-and-keep (or reciprocal compensation at a zero rate) for local voice traffic, particularly for the early stages of local exchange competition when the flow of local traffic between ILECs and ALECs tends to be unbalanced. The reasons for that resistance remain as sound today as it was then.

However, to the best of my knowledge, BellSouth and other ILECs *never* resisted bill-and-keep specifically for Internet-bound traffic. Indeed, the complex issues posed by this form of traffic never arose in the immediate aftermath of the Telecommunications Act of 1996, when the FCC was engaged in rulemaking based on the provisions of that Act. The entire structure of cost causation and efficient inter-carrier compensation is different for Internet-bound traffic, despite some superficial resemblances to local voice traffic. As I have explained in this testimony, the analogy of that traffic to long distance traffic implies a very different form of efficient inter-carrier compensation. Bill-and-keep may not be the first-best form of compensation for this purpose, but it is superior to reciprocal compensation.

Q. DR. SELWYN ALSO ACCUSES [AT 32] BELLSOUTH AND OTHER ILECS OF NOW SUPPOSEDLY REVERSING COURSE ON THEIR ALLEGED RESISTANCE TO BILL-AND-KEEP BECAUSE THE ILECS HAVE FOUND THAT ALECS HAVE RETALIATED BY OPTING TO TERMINATE, RATHER THAN ORIGINATE, LOCAL CALLS. DO YOU AGREE?

A. No. Dr. Selwyn's point is that the ILECs originally resisted bill-and-keep because, as net recipients of local traffic, they expected to earn significant reciprocal compensation revenues from the ALECs, but now the apparent success of those ALECs at turning the tables on the ILECs (by specializing in call termination services) has left the ILECs attempting furiously to revive bill-and-keep. Accordingly, Dr. Selwyn pronounces judgment in the following terms [at 32]:

> In competitive markets, competitors live or die by their own business judgments and decisions, and it is not the role of regulators to backstop these market choices by after-the-fact protective measures. [emphasis removed]

This assertion is false. First, as explained above, the ILECs' present support for bill-and-keep for Internet-bound traffic should not be confused with their earlier resistance to bill-and-keep for local voice traffic. Second, Dr. Selwyn over-reaches greatly in describing the local exchange market as "competitive." Even if more entry were to occur in this market than happening presently, as long as ILECs like BellSouth remain subject to regulation and

price-constraining policies, the local exchange cannot behave like an unfettered competitive market. In competitive markets, symmetric reciprocal compensation rates pegged to ILECs' costs would not exist. Finally, in asking for alternatives to reciprocal compensation, BellSouth and the ILECs are seeking the appropriate and efficient form of inter-carrier compensation for Internet-bound traffic, not for "regulatory backstops" or "after-the-fact protective measures."

Q. WHY DO YOU OBJECT TO THE INSISTENCE BY ALEC WITNESSES [FALVEY, AT 11; SELWYN, AT 34 AND 66] THAT RECIPROCAL COMPENSATION SHOULD APPLY TO INTERNET-BOUND TRAFFIC AT RATES THAT (1) ARE SET AT THE ILEC'S INCREMENTAL COST TO TERMINATE THE LOCAL VOICE CALL AND (2) SYMMETRIC BETWEEN THE ILEC AND THE CLEC?

A. I object to that recommendation by the ALEC witnesses on three grounds. First, reciprocal compensation for Internet-bound traffic is not a cost causative form of inter-carrier compensation (for reasons I have explained).

Second, the ILEC's incremental cost to terminate a local voice call may differ significantly from (indeed, be significantly higher than) an ALEC's cost to switch or deliver an Internet-bound call to an ISP. This difference is likely to be more striking if the ALEC in question is designed solely to receive (and deliver to ISPs) incoming Internet-bound calls from the ILEC's subscribers.

Third, a symmetric reciprocal compensation rate set at the level of the ILEC's incremental cost to terminate a *local voice* call may, for an ALEC that has a much lower incremental cost to deliver Internet-bound calls to ISPs, provide a windfall profit margin. Other things being equal, this would further stimulate the ALEC to specialize in call termination services (as Dr. Selwyn believes), to the detriment of the overall public policy goal of fostering competition for the full spectrum of local exchange services.

I explore these issues at length in the remainder of my testimony.

5. State Decisions (*Issues 2, 4, and 6*)

Q. THE FCC THUS FAR HAS NOT ACTED TO ESTABLISH PERMANENT INTER-CARRIER COMPENSATION RULES FOR INTERNET-BOUND TRAFFIC. THE ALEC WITNESSES CITE EXAMPLES OF STATES THAT HAVE FAVORED RECIPROCAL COMPENSATION FOR THIS PURPOSE. HAVE ALL STATES ACTED THAT WAY?

A. No. For a period of time until the FCC's *ISP Declaratory Ruling* was issued in early 1999, a number of states pursued their own rulemaking on the issue. Those states chose to adopt the ILEC-ALEC local interconnection view of the world and required that the originating ILEC pay reciprocal compensation to "terminating" ALECs for Internet-bound calls just as they would for local voice calls. After the FCC's *ISP Declaratory Ruling* 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 Internet-bound traffic to be antithetical to real competition in telecommunications.[25] Subsequently, regulators in New Jersey, in reversing an arbitrator's recommendation in October 1998, also ordered that reciprocal compensation not be paid for Internet-bound traffic.[26] More recently, regulators in South Carolina,[27] Louisiana,[28]

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[25] 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 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 competitive local exchange carriers serving ISPs in Massachusetts currently do not themselves receive any compensation for Internet-bound traffic.

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

[27] 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.

[28] *Louisiana ISP Order*.

Colorado,[29] Arizona,[30] and Iowa[31] have directed that such compensation not be paid. Significantly, Colorado, Arizona, and Iowa regulators have adopted bill-and-keep as the preferred policy option for Internet-bound traffic in their states. A number of other states have, since the FCC's *ISP Declaratory Ruling*, instituted or retained reciprocal compensation—primarily on the argument that Internet-bound traffic is "local." However, contrary to the states that have ruled against reciprocal compensation, these states have made their rulings almost exclusively on their perceptions of the jurisdictional status of Internet-bound traffic. The all-important economic foundations of an efficient compensation policy, particularly cost causation, were almost always excluded from their deliberations.

Q. WHAT REASONS DID MASSACHUSETTS REGULATORS GIVE FOR THEIR REVERSAL ON THE COMPENSATION POLICY FOR INTERNET-BOUND TRAFFIC?

A. 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 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

[29] Colorado Public Utilities Commission, *In the Matter of the Petition of Sprint Communications Company, L.P. for Arbitration Pursuant to U.S. Code § 252(B) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with U S WEST Communications, Inc.*, Docket No. 00B-011T, Initial Commission Decision ("*Colorado ISP Order*"), adopted May 3, 2000, especially at pages 13-18. Also see Colorado Public Utilities Commission, Decision Denying Application for Rehearing, Reargument, or Reconsideration, Docket No. 00B-011T, adopted June 7, 2000.

[30] Arizona Corporation Commission, *In the Matter of the Petition of Sprint Communications Company, L.P. for Arbitration of Interconnection Terms, Conditions and Related Arrangements with U S WEST Communications, Inc.*, Docket Nos. T-02432B-00-0026 and T-01051B-00-0026, Decision No. 62650, adopted June 13, 2000.

[31] Iowa Utilities Board, *In re Arbitration of Sprint Communications Company L.P., and U S WEST Communications, Inc., n/k/a Qwest Corporation*, Docket No. ARB-00-1, Arbitration Order ("*Iowa ISP Order*"), December 21, 2000.

> 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, to some degree, 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.[32]

Q. WHY IS THIS PARTICULAR PASSAGE FROM THE MASSACHUSETTS DECISION SIGNIFICANT?

A. This passage is significant for three reasons. First, to the best of my knowledge, the DTE was the first regulatory authority to present a cogent *economic* analysis of carrier incentives and their eventual outcomes under a regime of reciprocal compensation for Internet-bound traffic.

Second, while some of the ALEC witnesses [Hunsucker, at 10; Falvey, at 4] mention the states that have apparently ordered reciprocal compensation for Internet-bound traffic, none presents the alternative viewpoint on the issue, such as that expressed by Massachusetts regulators. Unfortunately, the ALEC witnesses pass up the opportunity to engage the Massachusetts and other similar decisions—with which they would, no doubt, disagree—on a true *economic* level.

Third, in its recent decision ruling against reciprocal compensation for Internet-bound traffic, the Iowa Utilities Board cited the very passage from the Massachusetts decision reproduced above.[33] It is particularly noteworthy that the Iowa Utilities Board issued this

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

[33] *Iowa ISP Order.*

ruling *without* rendering an opinion about whether such traffic is jurisdictionally local or interstate, i.e., based solely on the economic merits of the issue, as is evident from the following passage.

> Reciprocal compensation for ISP-bound traffic would introduce a series of unwanted distortions into the market: cross-subsidization of CLECs, ISPs, and Internet users by the ILECs (sic) customers who do not use the Internet, excessive use of the Internet, excessive entry into the market by CLECs specializing in ISP traffic mainly for the purpose of receiving compensation from the ILECs, and disincentives for CLECs to offer either residential service or advanced services.[34]

Significantly, Colorado regulators also based their decision to deny reciprocal compensation for Internet-bound traffic on similar economic reasoning, particularly with reference to the cost causation principle.

Q. WHAT WAS THE COLORADO COMMISSION'S REASONS FOR DENYING RECIPROCAL COMPENSATION FOR INTERNET-BOUND CALLS, AND IN WHAT CONTEXT DID THAT COMMISSION REACH THAT DECISION?

A. Arbitrating an interconnection agreement between Qwest (then known as U S WEST Communications) and Sprint, the Colorado Commission reasoned thus:[35]

> The ILEC-IXC interconnection 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 ISP customer. The ISP would recover these charges from that customer. This option, however, is precluded by the FCC's access charge exemption for ISPs. Therefore, both U S WEST and Sprint are in the position of having to recover the costs of carrying this Internet-bound traffic through some means other than access charges.
>
> Sprint recommends that cost recovery be done through the process of reciprocal compensation. In the scenario being considered here, since the end-user originating the Internet-bound call is a local exchange customer of U S WEST,

[34] *Id.*, at 4.

[35] *Colorado ISP Order*, at 15-17. Footnotes omitted, emphasis added.

U S WEST would have to compensate Sprint for the latter's costs incurred in transmitting the call to the ISP. *The Commission rejects the use of reciprocal compensation with a positive rate in this instance.*

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 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.

Q. DID THE COLORADO COMMISSION SPECIFICALLY ACCEPT THE ANALOGY BETWEEN AN ISP CUSTOMER AND AN IXC CUSTOMER FOR THE PURPOSES OF DETERMINING WHAT HOW COST IS CAUSED FOR AN INTERNET-BOUND CALL?

A. Yes. The Colorado Commission stated:[36]

The Commission finds that U S WEST's analogy [between ISP-bound and IXC-bound calls] is the more reasonable. Given that most Internet calls end at locations out of state, it appears that such calls are primarily interstate in nature. We view the originator of the Internet-bound call as acting primarily as a customer of the ISP, not as a customer of U S WEST. Both U S WEST and Sprint are providing access-like functions to transmit the call to the Internet, similar to what their role would be in providing access to an IXC to transmit an interstate call.

[36] *Id.*, at 14-15.

6. Inefficiencies and Adverse Economic Impacts of Reciprocal Compensation for Internet-Bound Traffic (*Issues 4, 5, and 6*)

Q. DO ANY OF THE ALEC WITNESSES ADDRESS THE REAL ECONOMIC HARMS THAT CAN RESULT FROM A POLICY OF RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC?

A. No. Despite the clear statements of concern by regulators from various states who have made the effort to explore the full economic ramifications of such a policy, the ALEC witnesses in this proceeding ignore the real harms that that policy can bring. Instead, they provide superficial or spurious economic justifications for that policy. For example, Mr. Hunsucker [at 9] claims that treating Internet-bound traffic as local and making it subject to reciprocal compensation would "avoid imposing separate or additional regulatory hurdles on CLECs that might make entry more difficult, expensive and time-consuming." Holding Internet-bound traffic routed through ISPs apart from all local voice traffic, Mr. Hunsucker claims, would create incentives "for one party or the other to seek compensation rates that are unduly high or unduly low, depending on which carrier tends to have the largest base of ISP customers." Mr. Hunsucker's analysis does not even begin to scratch the surface. He does not explore how economic incentives are shaped and influenced by the type of compensation policy. He does not ask what form of entry is likely to be encouraged by reciprocal compensation for Internet-bound traffic, or what the resulting balance of traffic could be between the ILEC and the ALEC. Finally, he does not explain why a common reciprocal compensation policy (implying the same compensation *rate* for both local and Internet-bound traffic) would be economically efficient and maximize social welfare.

In a similar vein, Dr. Selwyn [at 8] touts a policy of reciprocal compensation for Internet-bound traffic, based on the same single, symmetric rate for transport and termination—pegged solely to the *ILEC's* cost—that currently applies to cross-network local traffic. Beyond citing one of the FCC's original reasons for such a compensation rate for the exchange of local voice traffic, he does not explain why that reasoning would still

apply for the exchange of Internet-bound traffic.[37] In fact, he virtually acknowledges that transplanting a policy created for local voice traffic to Internet-bound traffic creates incentives for ALECs to (1) compete only for call termination services, i.e., specialize in serving ISPs (or, at least, maximize the ratio of incoming to outgoing calls) and (2) deploy cost-lowering technologies that expand the margins between costs and the allowed ILEC-cost-based compensation rate and generate greater profits for themselves. Beyond claiming that such outcomes "promote competition," Dr. Selwyn avoids any discussion about exactly what form of competition and industry structure are likely to emerge in those circumstances, or why that industry structure would be efficient and in the public interest. Having admitted in his testimony that symmetric reciprocal compensation rates may induce ALECs to specialize in call termination services, Dr. Selwyn also appears to contradict himself by claiming [at 31] that "there is no logical connection between the traffic flow and compensation due in one direction, and the traffic flow and compensation that might occur in the reverse direction."

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

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

1. Inefficient subsidization of Internet users by non-users.
2. Distortion of the local exchange market.
3. Creation of perverse incentives to arbitrage the system at the expense of basic exchange ratepayers.

[37] The FCC's three principal reasons for that policy were: (1) provide incentives to all carriers, especially ALECs, to lower their costs, (2) prevent ILECs from exploiting their greater bargaining strength vis-à-vis ALECs, and (3) administrative simplicity of a single, symmetric rate based on a regulated carrier's cost. See 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, ¶¶1085-1088.

Q. PLEASE EXPLAIN HOW TREATING INTERNET-BOUND TRAFFIC AS LOCAL FOR PURPOSES OF INTER-CARRIER COMPENSATION COULD CAUSE INEFFICIENT SUBSIDIZATION OF INTERNET USERS BY NON-USERS.

A. The principle of cost causation requires that the *ISP customer* pay at least the cost his call imposes on the circuit-switched network.[38] Suppose inter-carrier compensation for Internet-bound traffic is based on the assumption that such traffic is local. 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 would then pay reciprocal compensation to the ALEC that "terminates" 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 handle the call itself. In this scenario, problems can emerge from two sources.

First, if the local call charge is itself inefficient, e.g., it is below the incremental cost of carrying an end-to-end local voice call, then it cannot be sufficient to allow recovery of both the ILEC's incremental cost to originate the call and the ALEC's incremental cost to handle the call. In other words, once reciprocal compensation has been paid, the ILEC would fail to recover its cost of carrying the Internet-bound call when the local call charge itself is inefficient. If the ILEC breaks even for *all* of its services in these circumstances, that would mean that Internet use (for which the cost exceeds revenue) is being subsidized by non-Internet and, most likely, non-local exchange services.

Second, if the cost to handle an Internet-bound call is *less* than the cost to handle the average local voice call (on which most reciprocal compensation arrangements are based), then the ALEC would recover 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 (the sum of its own originating cost and the ALEC's inflated "termination" charge) and a net revenue deficit from carrying the Internet-bound call. Again, the Internet user would not

[38] 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.

be paying the cost he or she imposes on the originating ILEC (equivalent to receiving a subsidy).

This form of subsidization of Internet use within the circuit-switched network can inefficiently stimulate demand for Internet services and further aggravate the ILEC's tenuous position under the view that Internet-bound traffic is local. Additional negative consequences could be (1) greater congestion at local switches engineered for voice traffic generally and, as a result, poorer quality of voice traffic, and (2) opportunistic specialization by ALECs in only handling (or, as the ALECs would characterize it, "terminating") Internet-bound traffic. I discuss the resulting distortion of the local exchange market below.

Q. HOW WOULD TREATING INTERNET-BOUND TRAFFIC AS ANALOGOUS TO LONG DISTANCE TRAFFIC (WITH THE PAYMENT OF ACCESS-LIKE USAGE-BASED CHARGES) REMEDY THIS PROBLEM?

A. When Internet-bound traffic is treated as analogous to long distance traffic, the ISP customer that initiates the call causes all of the costs that are incurred, and, except for the explicit subsidy to ISP access represented by the access charge exemption, remains responsible for paying costs of originating, transporting, and switching his traffic to the ISP. Because of the access charge exemption, ILECs and ALECs that jointly supply access services to ISPs are not fully compensated for those services but each contributes to the ISP access subsidy no more than their proportion of costs. This arrangement is competitively neutral because all ILECs and ALECs involved contribute to the subsidy rather than just the ILECs that originate Internet-bound traffic. In this regime, an ISP has no particular incentive to become an ALEC itself, nor is the competition among ILECs and ALECs to serve ISPs distorted by incentives to seek compensation for "terminating" calls.

Q. PLEASE EXPLAIN HOW TREATING INTERNET-BOUND TRAFFIC AS LOCAL COULD CAUSE THE LOCAL EXCHANGE MARKET TO BE DISTORTED.

A. When Internet-bound traffic is treated as local for purposes of inter-carrier compensation, the compensation paid to the ALEC evidently exceeds the cost it incurs to handle the

traffic and also exceeds whatever cost the ILEC might save when the ALEC delivers the traffic to the ISP in its place. That the prices do not reflect costs should not be surprising. In Florida, interconnection prices are based on the ILEC's forward-looking TELRIC costs of terminating traffic averaged over a wide range of end-users. In fact, the cost of terminating traffic to particular end-users varies a great deal, depending upon their location and the characteristics of the traffic. When traffic is balanced[39] between the ILEC and the ALEC, the accuracy of the TELRIC study is less material; an ILEC that overpays to terminate traffic on the ALEC's network is compensated when the ALEC overpays to terminate traffic on the ILEC's network. Thus, when traffic is balanced, no individual ILEC or ALEC is helped or handicapped in competing for retail customers in the local exchange market by the requirement that interconnection prices be based on TELRICs averaged over all customers.

However, when traffic between the ILEC and the ALEC is grossly unbalanced, e.g., when the ALEC originates little or no traffic (a fact that Dr. Selwyn repeatedly acknowledges as likely given the FCC rule requiring a symmetric compensation rate), the accuracy of the TELRIC study for the traffic served by that ALEC is critical. If the cost to BellSouth (the ILEC) to deliver Internet-bound traffic to the ISP is the same as to a specialized ALEC collocated with the ISP, then paying reciprocal compensation at an averaged rate would cause BellSouth's total cost of local service to increase. This cost increase would not be offset by a similar increase in revenue from terminating the ALEC's traffic (because the ALEC does not originate any traffic). Thus, local exchange competition would be distorted by applying the averaged TELRIC (for local voice traffic) to Internet-bound traffic; ALECs that primarily serve ISPs (and originate little or no traffic) would receive revenues in excess of cost while ILECs (or even other ALECs) that serve all types of customers would experience an increase in costs without a commensurate increase in revenues.

[39] Traffic is said to be "balanced" when originating and terminating volumes are similar.

Q. DO THE ALEC WITNESSES ACKNOWLEDGE THAT THIS MAY OCCUR?

A. Yes. Dr. Selwyn readily acknowledges that these developments in the local exchange market—which I consider troubling and distortive—are possible when Internet-bound traffic is subjected to reciprocal compensation at a symmetric rate but the cost experienced by the ALEC to handle such traffic is lower than the cost experienced by the ILEC.

Consider first Dr. Selwyn's statements [at 37-38]:

> [I]n a competitive local telecom market, carriers can compete for call termination business and, if one carrier is able to furnish the call termination service more efficiently than the ILEC, the goals of competition are served when customers are induced to switch from the ILEC to a CLEC for this service.

And,

> In fact, if the symmetric reciprocal compensation rate is set at the ILEC's cost, then only those CLECs that are able to provide call termination services more efficiently than the ILEC will elect to engage is (sic) this particular market segment. On the other hand, inasmuch as the *Telecommunications Act* and resulting FCC regulations required that the reciprocal compensation rate be set at the ILEC's cost, CLECs acted reasonably in assuming that the rate confronting them in their respective interconnection agreements did in fact represent the ILEC's cost. If the CLEC found that it was able to furnish high-volume call termination services at a lower cost, then it acted legitimately in making the necessary investment in switching and related equipment and in developing a business plan premised on the reciprocal compensation price that was dictated to it by the ILEC. The volume of traffic that may or may not flow in the reverse direction—i.e., from the CLEC to the ILEC, is irrelevant.

Taken together, a reasonable inference from the two statements is that when the rules of the game are set up to provide an ALEC reciprocal compensation for delivering Internet-bound calls to ISPs at a symmetric rate pegged to the *ILEC's* cost to terminate a local *voice* call, ALEC specialization in serving ISPs (what Dr. Selwyn terms "high-volume call termination services") is only to be expected. On that, I agree with Dr. Selwyn; indeed, with incentives set up that way, it is perfectly rational for unregulated ALECs, who are free to enter and operate in the local market as they will, to respond in that matter. However, I strongly disagree with Dr. Selwyn that this is good local competition or even good *for* local competition. As I explain below, what Dr. Selwyn describes in glowing terms is nothing but arbitrage that occurs in response to a market distortion, here the symmetric reciprocal

compensation rule based on the ILEC's cost to terminate a local voice call despite cost differences among ILECs and ALECs. While arbitrage may be *privately* good, i.e., good for the ALECs specializing in call termination, it is definitely not in the public interest. The Telecommunications Act of 1996 made a particular point of creating the conditions for vigorous and efficient local exchange competition, i.e., for the full gamut of local exchange services including both call origination and termination. It certainly never envisioned the rise of a local exchange market in which only the ILEC (and possibly a handful of other carriers) provide the full spectrum of local exchange services, while the majority of new competitive carriers only enter the market as rent-seekers, i.e., in pursuit of arbitrage profits.

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

A. Arbitrage is frequently a response to a market distortion. As the DTE in Massachusetts clearly recognized, unintended arbitrage opportunities can easily emerge when competition in the local exchange market is distorted by basing inter-carrier compensation for Internet-bound traffic on the ILEC-ALEC local interconnection regime. When the compensation available to the ALEC for handling Internet-bound traffic exceeds its actual cost of handling that traffic, the ALEC will have a strong incentive to receive as much Internet-bound traffic as possible. Profit maximization can elicit some very inventive schemes that take advantage of this discrepancy but, in the process, distort market outcomes and reduce the efficiency of the telecommunications network.[40] For example, the ALEC's profits would increase whenever a BellSouth subscriber—or the subscriber's computer—could be induced to call the ISP and remain on the line 24 hours a day. Sensing this pure arbitrage

[40] These problems have also been recognized in the recent OPP Working Paper by Patrick DeGraba [at 24]. See *supra*, fn. 21.

profit opportunity, ALECs would also have a strong incentive—indeed, have as their *raison d'être*—to specialize only in "terminating" Internet-bound traffic (as Dr. Selwyn acknowledges), to the exclusion of offering any other type of local exchange service. In fact, a good example of this in Florida surfaced in a recent proceeding when Mr. William J. Rooney, representing Global NAPs (an ALEC for whom Dr. Selwyn was an expert witness), freely admitted to his company being set up to operate that way.[41] These "ISP-specializing" ALECs can—and do—form a three-way axis whose sole purpose is to generate revenues from reciprocal compensation: the ALECs themselves, the ISPs to which the ALECs deliver Internet-bound traffic and possibly send a share of the reciprocal compensation revenues—the spoils of this arrangement—to insure their loyalty and cooperation, and the ISP customers on the originating ILEC's network that generate the Internet-bound traffic. Also, the ISPs themselves are better off if their customers obtain their non-Internet local telephone service from the ILEC or other ALECs that do not serve ISPs, rather than from the ALECs that deliver Internet-bound traffic to them. This is likely to create a further distortion in the local exchange market, contrary to the vision of competition embodied in the Telecommunications Act of 1996.

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

> 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 ALECs to use their regulatory status "solely (or predominately)" to funnel traffic to ISPs.[42]

Q. BUT, DOESN'T ARBITRAGE SERVE A USEFUL PURPOSE BY EVENTUALLY ELIMINATING DISTORTIONS IN A COMPETITIVE MARKET?

A. In general, arbitrage serves that purpose, provided that the distortion that creates the arbitrage opportunity is temporary and reversible. That is not the case here. The distortion

[41] Florida Public Service Commission, *In re Complaint of Global NAPS, Inc., Against BellSouth Telecommunications, Inc. for Enforcement of Section VI(B) of its Interconnection Agreement with BellSouth Telecommunications, Inc., and Request for Relief*, Docket No. 991267-TP.

[42] *Massachusetts ISP Order.*

at issue here is an artifact of a regulatory rule—symmetric reciprocal compensation for Internet-bound traffic at a rate pegged to the ILEC's cost to terminate local voice traffic—and is unlikely to be arbitraged away. Quite the contrary, the arbitrage opportunity will persist and the worst fears of Massachusetts and other regulators will continue to be realized as long as that regulatory rule is in place. Only an alternative form of inter-carrier compensation, e.g., usage-based charges or bill-and-keep will prevent the distortion—and the arbitrage opportunity—from arising in the first place.

Q. HAVE REGULATORS TAKEN EXPLICIT NOTE OF THE FACT THAT THESE ARBITRAGE OPPORTUNITIES ARISE BECAUSE PRICES (OR, COMPENSATION RATES) ARE OUT OF LINE WITH TERMINATION COSTS?

A. 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 termination costs as a proxy for those of the ALEC:

> 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.[43]

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.

Echoing this 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,

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

because they come artificially at the expense of others.[44]

Q. BOTH DR. SELWYN [AT 34] AND MR. FALVEY [AT 11] RECOMMEND A SYMMETRIC RECIPROCAL COMPENSATION RATE AT THE LEVEL OF THE ILEC'S TERMINATION COST FOR PROVIDING THE "RIGHT" INCENTIVES TO ALL CARRIERS. IS THERE EVIDENCE OF OPPORTUNISTIC ARBITRAGE THAT CAN ARISE FROM SETTING SUCH A RATE?

A. Yes, there is evidence that the potential bounty from the FCC's reciprocal compensation rule has inspired some rather inventive, if illegal or unethical schemes. The best example is that of an ALEC called US LEC of North Carolina which manufactured sham traffic solely for the purpose of collecting windfall inter-carrier compensation. In fact, the North Carolina Utilities Commission found:[45]

> 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 minutes of use for which they were responsible.[46]

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

[44] *Massachusetts ISP Order*. Emphasis added.

[45] *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.

[46] *Id.*, at 7.

reciprocal compensation.[47]

In another instance, both the Massachusetts DTE (*Massachusetts ISP Order*, Section IV and fn. 39) and the FCC (*ISP Declaratory Ruling*, ¶24, fn. 78) expressed serious concern after ISG-Telecom Consultants International, a Florida-based company formed in the aftermath of the Telecommunications Act of 1996 ("1996 Act"), posted promises on its web site to turn ISPs into ALECs and IXCs with their own ISP operations. As a rationale for doing so, ISG-Telecom believed 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 reciprocal compensation for Internet-bound traffic, not an inherently efficient network arrangement, lay at the heart of this mission statement. Dr. Selwyn's prediction that many ALECs will take advantage of the symmetric reciprocal compensation rule (if applied to Internet-bound traffic) by specializing in call termination services rings distressingly true.

Q. COULD THIS ALSO BE TRUE OF AN ALEC WHICH, UNLIKE ISP-SPECIALIZING ALECs, IS A LARGE FACILITIES-BASED PROVIDER OF LOCAL EXCHANGE SERVICES?

A. Yes. All ALECs face these distorted incentives irrespective of the mix of traffic they actually serve. Whether an ALEC passes through a portion of the reciprocal compensation payments it receives to attract ISP customers is irrelevant, because competition among ALECs 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 (local exchange lines) they buy from those ALECs.

Q. HOW DO YOU RESPOND TO DR. SELWYN'S ARGUMENT [AT 64] THAT THE

[47] *Id.*, at 7. 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, *Id.*, at 7.

FCC NEVER CONTEMPLATED ASKING AN ALEC TO FILE COST STUDIES (IN CONNECTION WITH SETTING A RECIPROCAL COMPENSATION RATE) IN THE EVENT THAT THE ALEC'S COSTS ARE LOWER THAN THE ILEC'S?

A. As the passage reproduced in the previous answer from the *Local Competition Order* clearly demonstrates, the FCC is aware that in circumstances when the alternative carrier's (say, a paging provider's) cost is so much lower than the ILEC's that uneconomic incentives for arbitrage are created, separate cost studies are clearly necessary. There is now evidence from around the country that the ISP-specializing ALEC's incremental cost to carry Internet-bound traffic to the ISP is significantly lower than the ILEC's unit cost to terminate the average local voice call.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT WET-1

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Dr. Taylor received a B.A. magna cum laude in Economics from Harvard College, an M.A. in Statistics and a Ph.D. in Economics from the University of California at Berkeley. He has taught economics, statistics, and econometrics at Cornell and the Massachusetts Institute of Technology and was a post doctoral Research Fellow at the Center for Operations Research and Econometrics at the University of Louvain, Belgium.

At NERA, Dr. Taylor is a Senior Vice President, heads the Cambridge office and is Director of the Telecommunications Practice. He has worked primarily in the field of telecommunications economics on problems of state and federal regulatory reform, competition policy, terms and conditions for competitive parity in local competition, quantitative analysis of state and federal price cap and incentive regulation proposals, and antitrust problems in telecommunications markets. He has testified on telecommunications economics before numerous state regulatory authorities, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, federal and state congressional committees and courts. Recently, he was chosen by the Mexican Federal Telecommunications Commission and Telmex to arbitrate the renewal of the Telmex price cap plan in Mexico. Other recent work includes studies of the competitive effects of major mergers among telecommunications firms and analyses of vertical integration and interconnection of telecommunications networks. He has appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer.

He has published extensively in the areas of telecommunications policy related to access and in theoretical and applied econometrics. His articles have appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic*

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EMPLOYMENT

NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC. (NERA)
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BELL COMMUNICATIONS RESEARCH, INC. (Bellcore)
1983-1988 Division Manager, Economic Analysis, formerly Central Services Organization, formerly American Telephone and Telegraph Company. While at Bellcore, Dr. Taylor performed theoretical and quantitative research focusing on problems raised by the implementation of access charges. His work included design and implementation of demand response forecasting for interstate access demand, quantification of potential bypass liability, design of optimal nonlinear price schedules for access charges and theoretical and quantitative analysis of price cap regulation of access charges.

BELL TELEPHONE LABORATORIES
1975-1983 Member, Technical Staff, Economics Research Center. Performed basic research on theoretical and applied econometrics, focusing on small sample theory, panel data and simultaneous equations systems.

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