BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

In the Matter of the Remand of the Commission's Reciprocal Compensation Declaratory Ruling by the U.S. Court of Appeals for the D.C. Circuit	**)** **)** **)** **)** **)**	**CC Docket Nos. 96-98, 99-68**

DECLARATION OF WILLIAM E. TAYLOR

I. INTRODUCTION AND SUMMARY

1. I am Senior Vice President of National Economic Research Associates, Inc. (NERA), head of its telecommunications economics practice and head of its Cambridge office. I received a B.A. degree in economics, magna cum laude, from Harvard College in 1968, a master's degree in statistics from the University of California at Berkeley in 1970, and a Ph.D. in Economics from Berkeley in 1974, specializing in industrial organization and econometrics. I have taught and published research in the areas of microeconomics, theoretical and applied econometrics, and telecommunications policy at academic institutions (including the economics departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology) and at research organizations in the telecommunications industry (including Bell Laboratories and Bell Communications Research, Inc.). I have participated in telecommunications regulatory proceedings before state public service commissions, the Federal Communications Commission ("Commission"), the Department of Justice and the Canadian Radio-Television and Telecommunications Commission concerning competition, incentive

regulation, price cap regulation, productivity, access charges, telecommunications mergers, pricing for economic efficiency, and cost allocation methods for joint supply of video, voice and data services on broadband networks.

2. My articles have appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic Review*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, *The Review of Industrial Organization*, and *The Encyclopedia of Statistical Sciences*. I have served as a referee for these journals (and others) and the National Science Foundation, as an Associate Editor of the Journal of Econometrics, and as a commentator on the PBS Nightly News Hour.

3. I prepared this declaration at the request of Verizon in response to the Commission's *Public Notice* soliciting comments regarding the vacatur and remand of certain provisions of the Commission's *Reciprocal Compensation Ruling* regarding reciprocal compensation for Internet-bound traffic issued by the United States Court of Appeals for the D.C. Circuit.[1] I reach four broad conclusions.

4. First, there is a clear economic justification for the Commission's traditional end-to-end method for determining whether particular types of traffic are jurisdictionally interstate. The question is economically relevant because calls assigned to different jurisdictions may entail different prices or other terms and conditions of service. A customer must know before a call is placed from point A to point B exactly what rate and rate structure applies to the call; otherwise, inefficient consumption decisions will be made. Similarly, a carrier asked to switch and transport a call from point A to point B should be free to provision that call in the least costly way possible, unconstrained by possible jurisdictional consequences of different routings for the call. For example, a carrier should be able to choose between direct and tandem routing between end offices depending solely on the cost of the facilities; it should not have to take into

[1] Public Notice, FCC 00-227, released June 23, 2000 ("*Public Notice*"). *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
(continued...)

account the effects of potential changes in jurisdiction of the call, stemming from alternative methods of provisioning the call. Thus, determining whether a call is interstate based on its points of origination and termination—ignoring the path of the call between those points—forces a consistency among the ways different calls are priced and tariffed, the ways customers purchase them and the ways carriers construct their networks to supply them.

5. Second, reciprocal compensation is an economically inefficient mechanism for intercarrier compensation for Internet-bound traffic. From an economic perspective, cost causation implies that the role of the ISP is not that of an end-user (of a serving CLEC) but rather that of a carrier, supplying services to the end user. Therefore, like the IXC that pays carrier access charges to defray the cost of originating or terminating a long distance call, the ISP should pay analogous charges to defray costs incurred by other carriers on its behalf to switch an Internet-bound call. All jurisdictionally interstate calls would thus be treated the same with respect to intercarrier compensation. Even if a regulatory constraint (the ESP exemption) prevents the LECs from recovering all of their costs from the ISP, it is more efficient for the LECs that incur costs to carry the call to share in whatever revenue can be recovered from the ISP. In this case, the subsidy to Internet-bound calls embodied in the ESP exemption would be borne symmetrically by the LECs that together provision the call, so that efficiency losses and competitive distortions would be minimized. Persisting with reciprocal compensation (from the ISP customer's originating ILEC to the CLEC that ultimately switches the call to the ISP) would generate an inefficient subsidy for Internet use, distort the local exchange market, and generate unintended arbitrage opportunities for CLECs.

6. Third, if reciprocal compensation were required for Internet-bound traffic, it is essential that the reciprocal compensation rate reflect the different cost characteristics of Internet traffic. The major differences are:

(...continued)

of Proposed Rulemaking in CC Docket No. 99-68, released February 26, 1999, (*"Reciprocal Compensation Ruling"). Bell Atlantic v. FCC*, 206 F.3d 1 (D.C. Cir. 2000), March 24, 2000, (*"Remand Opinion").*

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

- Use of Dedicated Capacity: Because one-to-one concentration is frequently required by ISPs, capacity in some components of the switch will be dedicated to individual ISPs and supplied irrespective of use. These non-traffic-sensitive costs are most appropriately recovered from the ISP, and they are not recoverable through reciprocal compensation under the Commission's rules. All else equal, the traffic-sensitive switching costs for Internet-bound traffic will be lower than for ordinary voice traffic.

- Call Direction: Since ISPs originate no traffic, costs for switching features on the originating end of the call will not be incurred for transport and termination of Internet-bound traffic and should not be part of the cost basis for reciprocal compensation.

- Load Distribution: There is evidence that the load distribution of Internet-bound traffic is flatter than that of voice traffic, in the sense that a smaller proportion of Internet-bound traffic arrives at the switch during the busy hour than for voice traffic. On average, then, an incremental minute of Internet-bound traffic would cause a smaller increase in the capacity requirements of the switch than an incremental minute of voice traffic.

Thus, even where similar facilities are used to switch and transport Internet-bound and local voice traffic, the forward-looking economic costs for average local exchange traffic are likely to overstate the costs for Internet-bound traffic. The Verizon TELRIC studies for local call termination were modified to reflect these characteristics of Internet-bound calls. While the effects of these modifications differ across the Verizon states, on average, local call termination TELRICs fell by about 75 percent when the modifications were applied.

7. Fourth, if reciprocal compensation payments were set above the forward-looking economic costs of the CLEC that serves the ISP, economic efficiency would be reduced, competition would be harmed and incentives for wasteful arbitrage would be created. Such payments would lead to inefficient subsidization of Internet use by telephone subscribers and create a perverse incentive to delay investment in more efficient forms of Internet access. Incentives to compete in two different markets would be distorted: CLECs would have diminished incentives to serve residential or small business customers who generate dial-up Internet-bound traffic and excessive incentives to serve ISPs in order to receive (or not have to pay) excessive reciprocal

compensation. Finally, reciprocal compensation payments above cost would create perverse incentives to arbitrage the system at the expense of basic exchange customers—for example, generating sham Internet-bound traffic in order to receive reciprocal compensation.

II. ECONOMIC EFFICIENCY REQUIRES CLASSIFICATION BASED ON AN END-TO-END ANALYSIS.

8. In its *Reciprocal Compensation Ruling*, the Commission determined that Internet-bound calls were jurisdictionally mixed and largely interstate, rather than local calls subject to reciprocal compensation under Section 251(b)(5) of the Act. Citing precedents from circuit-switched voice traffic, the Commission's jurisdictional finding was based on its traditional "end-to-end" analysis, in which the jurisdiction of a call is determined by points of origination and termination and does not depend on the particular path or facilities used to complete the call. While the Appeals Court decision found no fault with the principle of end-to-end determination of jurisdiction, it did observe that

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

In this section, I show that an end-to-end analysis of the jurisdiction of a call makes economic sense, and in Section III, I show how the cost-causation principle provides an economic explanation as to why an Internet-bound call falls within the long-distance paradigm rather than the local. Together, these arguments imply that an Internet-bound call is generally interstate in jurisdiction (because the points of origination and final termination are typically in different states) and should be treated for LEC reciprocal compensation purposes in the same way that other interstate calls are treated (because cost causation requires that the cost of the Internet-bound call ultimately be faced by the ISP's customer). While the ESP exemption rules out cost recovery through interstate access charges, the interstate paradigm under which LECs which

jointly provide interstate carrier access divide revenues remains the most efficient mechanism for LECs to compensate each other for joint carriage of Internet-bound traffic.

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

10. Telecommunications customers purchase the ability to call specific telephone numbers. While they care about the points of origination and termination, they are fundamentally indifferent as to how the call is actually provisioned. Similarly, people pay to ship goods between particular points and—except for differences in transit time—don't care about the particular path the carrier actually chooses to take. At the same time, carriers find it convenient and cost effective to change the routing of a particular call, generally depending on network congestion and availability of facilities. For example, CLECs with small networks will often haul traffic back and forth across state lines in order to serve a wide geographic area with a single switch. Such call routing decisions should not be distorted by regulatory rules: economic efficiency would be reduced in the aggregate if carriers' routing decisions were affected by the jurisdictional classification of the call.

11. Against this backdrop, the Commission's traditional end-to-end analysis of the jurisdiction of a call provides clear efficiency gains compared with a jurisdictional analysis that takes into account the path the call actually traversed. Customers essentially care only about the end points of the call, and carriers find it cost-effective to route calls between end points differently depending on carrier-specific and call-specific circumstances. Thus, determining the jurisdiction

of a call based only on its points of origin and termination reduces the distortion that imposing different interstate and intrastate tariffs would otherwise cause.

12. For an economist, the important characteristics of a service can be organized into two groups around the concepts of demand and supply. On the demand side, an end-to-end analysis of a call reflects the characteristics of the service that are important to the end user and for which the end user is willing to pay: namely, the point of origination of the message at the customer's computer and the point of termination of the message at the distant web site. In particular, customers place calls to an ISP, not to reach the ISP in any sense, but rather to use the ISP to reach a remote web site.[2] The consumer has no interest in the path any particular packet takes from origination to termination; all that matters is access to the desired web site at the terminating end. Similarly, on the supply side, the ISP has no interest in the content of the call; rather, it's the function for which its network is built is to deliver the call to the requested web site address in the most efficient way possible. In order that the jurisdictional assignment of the call reflect the economic characteristics of the call that cause customers to purchase the service and suppliers to build networks to provide it, that assignment must be based on the jurisdictions of the end points of the call.

III. RECIPROCAL COMPENSATION IS AN ECONOMICALLY INEFFICIENT MECHANISM FOR INTERCARRIER COMPENSATION.

A. Inter-LEC compensation for Internet-bound traffic should be governed by the LEC-LEC-IXC paradigm, not the ILEC-CLEC paradigm.

13. In its *Reciprocal Compensation Ruling*, the Commission observed that there are currently two different paradigms for intercarrier compensation for calls jointly provisioned by LECs, one pertaining to interstate carrier access and a different one pertaining to local calls:

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

> When two carriers jointly provide interstate access … the carriers will share access revenues received from the interstate service provider. Conversely, when two carriers collaborate to complete a local call, the originating carrier is compensated by its end user and the terminating carrier is entitled to reciprocal compensation pursuant to section 251(b)(5) of the Act. Until now, however, it has been unclear whether or how the access charge regime or reciprocal compensation applies when two interconnecting carriers deliver traffic to an ISP (at ¶9).

The fact that two different compensation regimes have emerged in telecommunications markets raises the pertinent question: why are there two different paradigms, one for long distance traffic and a different one for local? In particular, what economic functions are performed differently in the different markets, and how should those functions be performed for Internet-bound traffic?

14. Consider first the long distance paradigm. Suppose I am an ILEC subscriber and I place a long distance call that is routed to my IXC through a CLEC.[3] In this example, the ILEC carries the call from my phone to its point of interconnection with the CLEC. The CLEC then carries the call to the IXC, and the IXC transports the call on its network to the terminating end. Revenue to cover these costs comes from three sources: I pay the ILEC a regulated flat monthly rate for residential local exchange service, and I pay my IXC a competitively-determined price for long distance services. The IXC pays the CLEC a regulated price for originating carrier access service, and the CLEC and ILEC generally split those access charges in proportion to investment or cost through some meet-point billing arrangement. In particular, the end user is <u>not</u> billed directly to cover the LECs' costs of carrying the call to the IXC's point of presence.

15. In this example, I place the call—which causes the costs in question—as a customer of the IXC, in the economic sense that my decision to place the call was determined by factors under the control of the IXC. It has set the price, marketed the service, sends me the bill and collects the money for the call. The IXC, in effect, acts as my agent in assembling the necessary local exchange components of the call, much as General Motors acts as my agent in assembling the various components of my Buick and compensating the various suppliers of the parts.

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[3] This arrangement occurs more frequently among ILECs (rather than between ILECs and CLECs) where small independent telephone companies interconnect with IXCs indirectly through a neighboring, larger ILEC.

16. Next, consider the local exchange paradigm. Here, I am an ILEC subscriber, and I place a local call to a customer served by a CLEC. Again, the ILEC carries the call from my phone to its point of interconnection with the CLEC, and the CLEC switches the call and terminates it to its local exchange subscriber. Here, there are two sources of revenue to cover the cost of the call: I pay the ILEC its flat-rated local exchange charge, and the ILEC pays the CLEC reciprocal compensation to cover the cost of the call. In this case, I placed the call—which causes the costs in question—as a customer of the ILEC, in the same economic sense as above. The local exchange service I was using was an ILEC service, designed, marketed, priced, billed, etc., by the ILEC, and it, in effect, has acted as my agent by taking my money, assembling the components of local exchange service necessary to complete my call and compensating the firms involved in the transaction.

17. The characteristic that distinguishes these two paradigms is the customer-supplier relationship. In the LEC-LEC-IXC regime, the end user responds to the price or service characteristics determined by the IXC, the IXC collects the money and compensates the interconnecting LECs through access charges and meet-point billing. In the ILEC-CLEC regime, the end user behaves as a customer of the ILEC, and the ILEC collects the money and compensates the interconnecting CLEC through reciprocal compensation. In both cases, the end user is the causer of the cost of the call, and for economic efficiency, must be faced with a price that fully reflects all of those costs. The two different paradigms evolved because end users and IXCs mutually benefit from having a direct commercial relationship in the same way that end users and LECs relate for local exchange traffic.

18. Finally, consider the case of Internet-bound traffic. Here, I am an ILEC subscriber who is also a customer of an ISP that is served by a CLEC. When my computer attempts to contact the Internet, the ILEC carries the call to its point of interconnection with the CLEC which carries the call to the ISP. The ISP then undertakes protocol conversion and sends my call out onto the Internet. As in the LEC-LEC-ISP regime, there are still only three revenue sources from which to recover the cost of the call. I pay the ILEC a flat-rate monthly charge for residential local exchange service, and I pay my ISP a competitively-determined rate for Internet access. My ISP pays its serving CLEC for network access, and the rate it charges is determined in a reasonably

competitive market, subject to one regulatory restriction: the ESP exemption mandates that ISPs purchase network access out of the LEC's local exchange tariff.[4]

19. In placing this Internet-bound call, I am clearly acting as the customer of the ISP, in precisely the same sense that I behaved as an IXC customer when I placed a long distance call. The service provided by my ISP enables me 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 annual Internet access service that, in most cases, calls for that ISP customer to make a toll-free call in order to reach the ISP's modems. Besides price, ISPs compete on the extent of geographic coverage, specifically, the number of local calling areas they can offer to ISP customers as possible points of connection ("POCs"), as well as on various components of service quality including provision of specialized information services.[5] The ISP markets directly to the originating ILEC's subscriber, attempting to maximize its number of customers and the amount of traffic incoming to it by publishing and advertising as many local calling numbers (at its POCs) as possible and doing everything within its power to help the potential customer avoid having to incur per-minute or toll charges to have Internet access. If necessary, ISPs may use foreign exchange ("FX") lines to haul Internet traffic from considerable distances while still offering service to the ISP customer for the price of a local call.[6] Some ISPs offer 800 service for their customers to access their network. Some ISPs maintain Internet gateways for their customers and earn

[4] The ESP exemption may mean that ISPs do not pay the full cost of the dial-up calls that originate on the LEC's network. Even in that case, however, the interstate paradigm for intercarrier compensation (when two LECs jointly carry the call) is still more efficient than reciprocal compensation in the ILEC-CLEC paradigm.

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

[6] 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.

revenue from advertisers that depend more or less directly on the number of customers and the number of times its customers access advertised sites. The ISP bills its customers for their access and usage, and stands to lose money if it cannot collect from them. From an economic perspective, then, the party that causes the cost associated with 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 LEC-LEC-IXC regime and has characteristics opposite to CLEC-bound traffic in the ILEC-CLEC local interconnection regime.

20. When two LECs jointly provide interstate carrier access service, the LEC that carries the traffic to the IXC bills the IXC for interstate carrier access and shares the revenue with the other LEC, generally under some form of meet-point billing. For Internet-bound traffic, the ESP exemption rules out carrier access charges, so the interstate long distance paradigm cannot be carried over identically to Internet-bound traffic. However, even if a regulatory constraint such as the ESP exemption prevents the LECs from recovering all of their costs from the ISP, it is still more efficient for the LECs to share in whatever revenue can be recovered from the ISP. In this case, the subsidy to Internet-bound calls embodied in the ESP exemption would be borne symmetrically by the LECs that together provision the call, so that efficiency losses and, particularly, competitive distortions would be minimized.[7] Thus, all jurisdictionally interstate calls (long distance and Internet) would be treated the same with respect to intercarrier compensation between LECs which jointly provide access even though the ESP exemption rules out the literal application of interstate access charges for Internet-bound traffic.

21. What reduction in economic efficiency would occur if the ILEC-CLEC paradigm were extended to Internet-bound traffic? Of course, if costs are measured incorrectly so that the reciprocal compensation rate exceeds the CLEC's economic costs, the local exchange market will be severely distorted, and the goal of efficient local competition for local exchange

[7] Under reciprocal compensation, the CLEC that carries the call to the ISP would recover all of its costs from the LEC whose subscriber originated the call and the originating LEC would recover neither its actual cost of originating the call nor its reciprocal compensation payment.

customers will be thwarted.[8] Incorrect pricing aside, adoption of the ILEC-CLEC paradigm for Internet-bound traffic would cause the ILEC (whose subscriber originates the Internet-bound call) to incur a cost caused by the customer of an ISP with which the ILEC has no commercial relationship. While it is possible for the ILEC to recover its costs (of originating the call and paying reciprocal compensation to the CLEC) directly from the ISP's customer, such a recovery mechanism poses several problems. First, if local exchange prices were increased on average to account for these costs, ordinary telephone subscribers would be contributing through basic exchange rates to an implicit subsidy to Internet users. Moreover, that subsidy would grow at the unprecedented rate at which Internet access is growing; local exchange prices would have to be changed frequently to track changes in reciprocal compensation payments and the costs of originating Internet traffic. Second, if Internet-bound calls were charged a different rate in the local exchange tariff to cover these costs, ISPs would no longer have control over the total price their customers pay to use their services. In addition, whatever public policy benefits were anticipated from the ESP exemption would disappear because, from the customer's perspective, paying a usage charge to the ILEC for Internet access would be no different than paying the same charge to the ISP which, in turn, would pay access charges to the ILEC.

22. In the final analysis, the LEC-LEC-IXC paradigm for intercarrier compensation evolved for good reasons and serves a legitimate economic function. Customers value the ability to buy a product or service in its totality from a single supplier rather than putting the parts together themselves. IXCs spend vast amounts of money to create customer relationships that—from the customer's perspective—do not appear to depend on other carriers: AT&T markets its long distance services, not the combined services of ILEC access and AT&T long distance. The same logic applies to the market for dial-up Internet access.

23. In a recent decision, the Colorado Commission relied explicitly on the economic analysis outlined above in its finding that reciprocal compensation would not be required for Internet-bound traffic:

[8] These effects are discussed below in Section V.

> The Commission finds that U S WEST's analogy is the more reasonable….The ILEC-IXC analogy suggests that the ISP should compensate both U S WEST and Sprint for the costs they incur in transmitting this call. Even if that analogy were not employed, applying the principle of cost causation would lead to the same conclusion, namely that the ISP should pay access charges to both U S WEST and Sprint for the cost caused by the customer….
>
> While ISP calls appear to be interstate in nature, our conclusion is not necessarily based upon that determination. Even if this traffic were considered to be local in 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.[9]

IV. IF RECIPROCAL COMPENSATION IS REQUIRED, THE FORWARD-LOOKING COSTS OF AN EFFICIENT SUPPLIER OF INTERNET-BOUND TRAFFIC ARE LOWER THAN THE COSTS OF AVERAGE VOICE TRAFFIC.

24. The costs for transporting and switching traffic are not determined by what network elements are used—they are determined by <u>how</u> the network elements are used. Therefore, while the facilities used to transport and switch an Internet-bound call are similar to those used to transport and switch other types of calls, there are characteristics of Internet-bound traffic that make the forward-looking economic cost (as well as the FCC's TELRIC) of transport and switching different for Internet-bound calls. The major differences are:

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

- Call Duration: set-up costs are spread over more minutes in a longer-duration call, so the per-minute cost of a long duration (28 minute) Internet-bound call is smaller than for a short duration (3 minute) local exchange call.[10]

- Dedicated Capacity: ISPs often insist on one-to-one trunk concentration to ensure their customers never hit a network busy signal. Under those circumstances, capacity of some components in the switch is effectively dedicated to a single customer and is thus supplied irrespective of the usage of that customer. While the total cost of supplying such a high-quality service is higher than usual, the traffic-sensitive component of the service has lower cost. And, according to the Telecommunications Act, the cost at issue is the "additional cost" of transport and termination of the traffic.

- Call Direction: Since ISPs originate no traffic, costs for switching features on the originating end of the call will not be incurred for transport and termination of Internet-bound traffic and should not be part of the cost basis for reciprocal compensation.

- Load Distribution: There is evidence that the load distribution of Internet-bound traffic is flatter than that of voice traffic, in the sense that a smaller proportion of Internet-bound traffic arrives at the switch during the busy hour than for voice traffic. On average, then, an incremental minute of Internet-bound traffic would cause a smaller increase in the capacity requirements of the switch than an incremental minute of voice traffic.

A. Call Duration.

25. 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, 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

[10] Public domain estimates of holding times for Internet-bound traffic average between 25 and 35 minutes: for example, the Nielson Net Ratings reported holding times in CyberAtlas at 29 and 30 minutes for May and June 2000. The holding times for local calls in the Verizon TELRIC studies average between 3 to 4 minutes. Susan Biagi, "A Tale of Two Networks," *Telephony*, August 3, 1998, reports holding times of 32 minutes.

of calls were the same, the per-minute cost of the average Internet-bound call would still be considerably less than that for the average voice call. A simple numerical example illustrates this fact.

26. 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.

27. Alternatively, if the cost per minute is calculated using a 3-minute holding time, that holding time is effectively averaged over the 3-minute duration of the call. If that cost per-minute were charged to carriers and the holding time averaged 3 minutes, the carrier would just recover both its variable and (fixed) call setup costs. However, if that 1.17¢ per minute were charged on a call of 28 minutes duration, the carrier would effectively recover its variable cost plus about 9 times its call setup cost.

B. Dedicated Capacity.

28. Intercarrier compensation rates should recover the incremental (additional) costs of delivering the specific type of traffic. When determining intercarrier compensation rates for any type of traffic, only those costs that are traffic sensitive—i.e., vary with additional usage—should be recovered in rates. Non-traffic sensitive costs—i.e., costs that do not vary with additional usage—should not be recovered in intercarrier compensation rates. This follows as a matter of general economic principle and as a requirement of (i) the Commission's rules which require that compensation rates be based on forward-looking economic costs and (ii) 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.

29. An examination of the typical line to trunk concentration ratio for different types of traffic shows why it is incorrect to conclude that the costs for different types of traffic are the same merely because identical network elements are used. An important factor in switch investment costs is the busy hour line CCS (hundred call seconds) costs. Busy hour line CCS is a measure of the type of concentration required on the line side of the switch and is determined by the number of line circuits sharing a trunk circuit—and sharing a circuit path through the switch. A concentration ratio of eight to one, for example, means that eight line circuits share one trunk circuit and one circuit path through the switch.[11] 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 traditional voice traffic, busy hour line CCS costs—i.e., costs due to the type of concentration ratio required to achieve an acceptable quality standard—are traffic sensitive in nature because they arise from a shared facility—namely, the sharing of one circuit path among eight customer lines. Since the circuit is shared among various lines, the use of the facility during the peak hour imposes congestion costs on other users in the form of rationing or call blocking as a result of the line being in use. Since line CCS costs arise from a resource that is shared among various users, a recovery mechanism that apportions costs to those entities that are the cost causer (thereby providing proper signals at the margin) increases economic efficiency.

30. Line CCS costs for Internet-bound traffic, however, are not traffic sensitive. CLECs which focus on Internet traffic rely on ISDN Primary Rate Interfaces (PRI) to serve ISPs and build switches at a concentration ratio of one to one. For those carriers, line CCS costs are fixed with respect to usage. Each line serving an ISP has associated with it dedicated capacity through the

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

switch and increased usage from other lines does not impact the use of the line serving the ISP. No matter what the demand is from other lines, the path serving the ISP will be available for customers calling the ISP. Since the circuit is dedicated to the ISP line, the use of the facility does not impose congestion costs on other users, and no rationing or call blocking is imposed on the network as a result of the ISP line being in use. For this reason, even though the same network elements are being used, intercarrier 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 the ISP calls.

C. Call Direction.

31. The costs in question for Internet-bound traffic are for transport and termination where the ILEC hands off the Internet-bound call to the CLEC. Switching costs for features and functions on the originating end (*e.g.*, call forwarding) thus do not apply to the current exercise. However, sometimes the TELRICs for originating and terminating local exchange traffic are averaged together to determine a single reciprocal compensation rate, and such a rate would not be appropriate for Internet-bound traffic unless the costs of originating features were removed.

D. Traffic Load

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

33. It is likely that the load distribution of Internet-bound traffic—number and duration of calls in the busy hour as a percent of total traffic—is different than for other types of calls. Generally, the peak for voice traffic normally occurs sometime during the business day. Internet traffic is likely to have a flatter load distribution and a different peak hour due to the nature of its

demand. Whereas the business day is approximately confined to an 8 hour period with little evening or weekend activity, consumers frequently use the Internet during the evening and weekends. These usage patterns mean that when Internet traffic is combined with ordinary voice traffic, the resulting load distribution is flatter, in the sense that the fraction of usage falling in the busy hour is smaller for Internet-bound and voice traffic combined than for ordinary voice traffic alone. This means that on average Internet-bound traffic requires less investment and costs per minute to provide capacity to meet peak demand than does ordinary voice traffic.

E. Verizon's Cost Study

34. By the above logic, Verizon's cost per minute to terminate a POTS call should be higher than its cost to terminate an Internet-bound call because of the shorter holding time and the approximate 6:1 line concentration used by Verizon for POTS. Conversely, a CLEC's per-minute cost to route a call to an ISP for termination on the Internet is relatively lower because of the longer holding times and the 1:1 line concentration required by ISP. In addition, Verizon's costs for local call termination at a tandem include costs for Tandem Switching and Tandem Trunk units which are not incurred on CLEC ISP calls.[12] As a result of these factors, carriers whose business strategy focuses on delivering ISP-bound traffic incur a substantially lower average cost per minute to handle calls delivered to customers on their networks.

35. As part of the implementation of the Telecommunications Act of 1996, Verizon filed cost studies in all of its states using the FCC's TELRIC methodology to support rates for unbundled network elements, including termination of local calls at its end offices.[13] As shown in Table 1,

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[12] Tandem switches are the intermediate switches used in Verizon's network to relay calls between different end-offices; tandem trunks carry calls between those switches. CLECs typically have only one switch to serve an entire state, so that CLECs do not tandem-switch calls anywhere within a state. Internet-bound calls handed off from Verizon to a CLEC do not require any tandem function by the CLEC, and thus tandem switching costs are not part of a CLEC's cost of carrying of Internet-bound traffic.

[13] We measure the cost characteristics of Internet-bound traffic using Verizon's TELRIC studies partly for convenience and partly because they are the basis for the local interconnection rates currently in effect. While TELRIC's use of a hypothetically efficient network has been rightly criticized for incumbents, which already have networks in place, its use for new CLEC networks is more justifiable because they are just now deploying their networks.

state-approved transport and termination rates averaged $0.001747 across six representative Bell Atlantic states. To illustrate the quantitative effect of the different characteristics of Internet-bound traffic outlined above, two modifications to these studies were made. First, the average holding time was increased to 28 minutes, a figure that is at the low end of holding time estimates for Internet calls. By itself, this change reduced the cost of terminating local calls at the end office to $0.001250, a reduction of about 28 percent. Second, the Line CCS costs were removed from the TELRIC studies, which further reduced the average cost of end office termination to $0.000447. The combined effect of adjusting holding times and Line CCS costs to reflect characteristics of Internet-bound traffic results in costs which average $0.0013 per minute (or 74 percent) lower than for ordinary voice traffic.

V. RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC HARMS ECONOMIC EFFICIENCY AND DISTORTS LOCAL EXCHANGE COMPETITION

36. The harm to economic efficiency in an ILEC-CLEC local interconnection regime with payment of reciprocal compensation for Internet-bound traffic occurs for several reasons, including the inefficient subsidization of Internet users by non-users, the distortion of incentives to invest in modern facilities, the distortion of competition in the local exchange market for dial-up customers and for serving ISPs and the creation of perverse incentives to arbitrage the system at the expense of basic exchange ratepayers.

A. Inefficient Subsidization

37. The principle of cost causation requires that the ISP customer pay at least the cost his call imposes on the circuit-switched network.[14] Suppose intercarrier compensation for Internet-bound traffic is treated as in the ILEC-CLEC interconnection regime. This regime assumes at the outset that the customer initiating the call has paid the originating ILEC for the end-to-end carriage of the call, typically, the per-call equivalent of the local call charge. Out of what it receives, the ILEC then pays reciprocal compensation to the CLEC that carries the Internet call

[14] 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.

to the ISP. This compensation is a per-minute call "termination" charge which, ideally, should reflect the incremental cost that the ILEC avoids by not having to deliver the call itself. In this scenario, problems can emerge from two sources.

38. First, if the local call charge is itself not compensatory, i.e., below the incremental cost of carrying a local voice call from end to end, then it cannot be sufficient to allow recovery of both the ILEC's incremental cost to originate the call and the CLEC's incremental cost to deliver the call. In 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 non-compensatory or inefficient. If the ILEC still manages to break even for all of its services in these circumstances, that could only mean that Internet use (for which the cost exceeds revenue) must be being subsidized by non-Internet and, most likely, non-local exchange services. This scenario is likely to play out whenever, in order to promote universal service, the local residential call charge in a state is set below the incremental cost of that call.

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

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

specialize only in the delivery of Internet-bound traffic. I discuss the resulting distortion of the local exchange market below.

41. One often overlooked practical effect of the continued requirement to pay reciprocal compensation despite such traffic imbalance[15] is the ultimate pressure on the ILEC's prices for retail services, including residential local exchange service. Under current practice, the ILEC is allowed to collect a flat monthly amount from each of its residential customers for local exchange service. In principle, this amount is supposed to compensate the ILEC, on average, for the actual cost of providing that service to each customer. In the U.S., however, it is commonplace to encourage greater subscribership by setting the monthly (flat-rated) price of local exchange service to residential customers affordably low and frequently below the incremental cost to serve each customer. The revenue deficit which results from this is usually made up with implicit (i.e., price-based) subsidies from other services offered—often competitively—by the ILEC. To the extent that the ILEC is not exempted from this practice, any addition to that incremental cost can only exacerbate the revenue deficit from local exchange service and compel it to seek recovery by raising further its prices for retail services, including residential local exchange service.

42. The fact is that residential local exchange service prices were never set with the additional and, generally, large Internet traffic-related costs in view. Even if reciprocal compensation rates were properly set so that the ILEC only paid the CLEC the cost it actually incurred to deliver traffic to ISPs, the ILEC could never escape the growing spiral of network facilities-related costs it would have to incur in order to serve the ever-increasing volumes of one-way Internet-bound calls made possible by the perverse incentives presented to ISP-serving CLECs by reciprocal compensation revenues. Faced with having to recover costs seriously in excess of revenues available from residential local exchange service, the ILEC would have little choice but to petition its state regulatory authorities for increases in the price of residential local exchange service. Raising other retail service prices to effect such recovery may also be an

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

option, but one fraught with two serious problems. First, as those other services become increasingly competitive in the market, raising their prices, rather than lowering them, will prove untenable and counter-productive for the ILEC. Second, raising those other service prices will only continue, rather than mitigate, the current practice of relying on extensive implicit subsidies in the pricing of telecommunications services.

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

B. Market Distortions

44. Under the ILEC-CLEC interconnection regime, the compensation paid to CLECs for Internet-bound traffic evidently exceeds their cost of delivering such traffic and also exceeds whatever costs the ILEC might save when CLECs deliver that traffic on its behalf. As a result, reciprocal compensation would distort local competition in two ways. First, since end-users that generate Internet-bound traffic would not pay the full incremental cost of carrying it, LECs would have an incentive to avoid competing to serve such customers. As most switched Internet-bound traffic comes from residential users, the incentives to compete to serve residential users would be artificially diminished. Reciprocal compensation would remove any incentive a CLEC might have to serve residential and small business customers: not just because

it would be more lucrative to invest in serving ISPs but also because acquiring subscribers who are potential dial-up Internet users would reduce the flow of reciprocal compensation. Under reciprocal compensation, CLECs are effectively paid not to invest in their own local exchange facilities or to provide basic exchange services to residential or small business customers.

45. Second, the ISPs themselves are better off if their customers obtain their local telephone service not from the CLECs that deliver ISP-only traffic but from the ILEC or other CLECs that do not serve ISPs. Suppose, for example, the ILEC serves 95 percent of the residential local exchange traffic in a market. If an ISP obtained access service from the ILEC, only 5 percent of its traffic would generate reciprocal compensation payments. If it signed up with a CLEC, 95 percent of its traffic would generate such payments. When the reciprocal compensation price exceeds the CLEC's cost to handle the traffic, this imbalance gives the ISP a strong financial incentive to seek access service from CLECs as opposed to ILECs. The reason is simple. As CLECs compete to serve ISPs, the reciprocal compensation contribution received by the CLEC will result in lower prices for the service the CLECs provide. ISPs can take advantage of these lower prices by purchasing services from CLECs; however, since ILECs only receive a small fraction of the reciprocal compensation payments CLECs receive, they are placed at a competitive disadvantage in attempting to serve ISPs. This creates a further distortion in the local exchange market, contrary to the vision of competition embodied in the 1996 Act.

46. It is therefore not surprising that the DTE in Massachusetts felt compelled to opine:

> We note also that *termination* of the obligation for reciprocal compensation payments for ISP-bound traffic (because that traffic is no longer deemed local) removes the incentive for CLECs to use their regulatory status "solely (or predominately)" to funnel traffic to ISPs.[16]

[16] Massachusetts Department of Telecommunications and Energy ("DTE"), *Complaint of MCI WorldCom, Inc., Against New England Telephone and Telegraph Company d/b/a Bell Atlantic-Massachusetts for Breach of Interconnection Terms Entered Into Under Sections 251 and 252 of the Telecommunications Act of 1996*, Docket No. 97-116-C, Order ("*Massachusetts ISP Compensation Order*"), May 1999.

C. Network Evolution Towards More Efficient Forms of Access

47. Ordinary dial-up access to the Internet is comparatively slow, limited in general to 56 Kbs. While access at such speeds is adequate for some purposes (e.g., e-mail), it entirely rules out other activities (e.g., exchanging video or audio information). Moreover, treating such long duration calls to particular high-volume numbers as ordinary voice calls uses network capacity inefficiently. For both reasons, carriers are beginning to offer dedicated Internet access: LECs (including many CLECs) are offering Digital Subscriber Line services in competition with high-speed service available through cable modems.

48. Such technical progress serves customers well, and the market for Internet access services should be permitted to evolve freely as consumer preferences and network costs evolve. The choice of technology (or mix of technologies) that emerges over time ought not to be affected by regulatory decisions regarding intercarrier compensation. However, reciprocal compensation payments for Internet-bound traffic in excess of the CLEC's cost of supplying the service generates a perverse incentive on the part of CLECs to encourage or subsidize dial-up Internet access in order to receive reciprocal compensation payments. In unregulated markets, consumers would choose between dial-up and dedicated access based on their needs and the prices offered by suppliers. If one form of access generates a subsidy while the other does not, the resulting mix of technologies chosen will not accurately reflect consumers' preferences and will retard the evolution of the network towards more efficient, higher-bandwidth means of access.

D. Arbitrage

49. Arbitrage is frequently a response to a market distortion. As the DTE in Massachusetts and the FCC have clearly recognized, unintended arbitrage opportunities can easily emerge when competition in the local exchange market is distorted by basing intercarrier compensation for Internet-bound traffic on the ILEC-CLEC local interconnection regime. According to the Massachusetts DTE:

> 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 derived from regulations that were designed to promote real competition. A loophole, in a word. … But regulatory policy … ought not to create such loopholes or, once having recognized their effects, ought not leave them open.
>
> Real competition is more than just shifting dollars from one person's pocket to another's. And it is even more than the mere act of some customers' choosing between contending carriers. Real competition is not an outcome in itself—it is a means to an end. The "end" in this case is *economic efficiency* … Failure by an economic regulatory agency to insist on true competition and economic efficiency in the use of society's resources is tantamount to countenancing and, encouraging waste of those resources. Clearly, continuing to *require* payment of reciprocal compensation … is not an opportunity to promote the general welfare. It is an opportunity only to promote the welfare of certain CLECs, ISPs, and their customers, at the expense of Bell Atlantic's telephone customers and shareholders. [17]

50. When the compensation available to the CLEC for delivering Internet-bound traffic exceeds its actual cost of delivering that traffic, the CLEC will have a strong incentive to deliver as much ISP traffic as possible. The desire to maximize profits can bring forth some very inventive schemes that take advantage of this discrepancy but which distort market outcomes and reduce the efficiency of the telecommunications network. For example, the CLEC's profits would increase whenever an ILEC's subscriber—or his computer—could be induced to call the ISP and remain on the line 24 hours a day.[18] Sensing this pure arbitrage profit opportunity, CLECs would also have a strong incentive to specialize in delivering Internet-bound traffic, to the exclusion of offering any other type of local exchange service. Indeed, offering local exchange service to residential or small business subscribers who are potential dial-up Internet users

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

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

should be avoided because such customers would cause reciprocal compensation costs to increase.

51. If the intercarrier compensation rate exceeds the LEC's incremental cost of transmitting Internet-bound traffic, CLECs would have an incentive to create sham traffic solely for the purpose of collecting windfall intercarrier compensation. That incentive distorts the marketing of its services towards customers who generate incoming traffic, but it also creates an incentive to carry as many minutes as possible to existing ISP customers. The CLEC might even offer to pay the ISP to connect to its network, in order to collect overpriced intercarrier compensation from the ILEC, which has no choice but to deliver its customers' calls to the CLEC—and pay the overpriced compensation. Similarly, CLECs are encouraged to subsidize the ISPs' end user customers, encouraging them to maintain connections 24 hours a day, seven days a week. A recent case in North Carolina that involved BellSouth and US LEC confirms the perverse economic incentives that can be created if the intercarrier compensation rates exceed the CLEC's costs.[19] The North Carolina Commission found:

> US LEC deliberately created a usage imbalance between itself and BellSouth by terminating a greater amount of traffic originating on BellSouth's network than it would be terminating to BellSouth. In furtherance of its plan to create a traffic imbalance and thus large reciprocal compensation revenues for itself, US LEC, among other things, induced MCNC and Metacomm to originate connections on BellSouth's network and terminate them to US LEC telephone numbers by agreeing to pay them 40% of all reciprocal compensation BellSouth paid US LEC for minutes of use for which they were responsible.[20]

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

[19] *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.

[20] *Ibid.*, at 7.

> connections simultaneously. Pursuant to US LEC's instructions, Metacomm and MCNC programmed their routers to disconnect and immediately reconnect each connection every 23 hours and 59 minutes, so that US LEC's switches could create the records US LEC which [sic] needed to bill BellSouth for reciprocal compensation.[21]

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

52. All CLECs face these distorted incentives irrespective of the mix of traffic they actually serve. Whether a CLEC seeks out ISP customers exclusively or passes through a portion of the reciprocal compensation payments it receives to attract ISP customers is irrelevant, because competition among CLECs to serve ISPs will ensure that reciprocal compensation payments in excess of cost will be passed through to ISPs in the form of lower market prices for the network access they buy from CLECs.

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

> Using incumbent LEC's costs for termination of traffic as a proxy for paging providers' costs, when the LECs' costs are likely higher than paging providers' costs, might create uneconomic incentives for paging providers to generate traffic simply in order to receive termination compensation.[22]

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.

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[21] *Ibid.*, at 7. It should be noted that MCNC withdrew its participation in the reciprocal compensation arrangement after its management learned that the "unusual configuration and mix of equipment" making up the network was intended to generate revenue from connections without regard to actual traffic or content traversing the connections, *Ibid.*, at 7.

54. More recently, the FCC has acknowledged that:

> efficient rates for inter-carrier compensation for ISP-bound traffic are not likely to be based entirely on minute-of-use pricing structures. In particular, pure minute-of-use pricing structures are not likely to reflect accurately how costs are incurred for delivering ISP-bound traffic.[23]

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

> The revenues generated by reciprocal compensation for … incoming traffic are most likely in excess of the cost of sending such traffic to ISPs. … Not surprisingly, ISPs view themselves as beneficiaries of this "competition" and argue fervently in favor of maintaining reciprocal compensation for ISP-bound traffic. However, the benefits gained, through this regulatory distortion, by CLECs, ISPs, and their customers do not make society as a whole better off, because they come artificially at the expense of others.[24]

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

> [W]e find that the traditional originating-carrier-as-cost-causer assumption, which applies to two-way interconnection, does not apply to one-way providers. A paging service exists for one reason only, namely to enable paging customers to be contacted by specific individuals to whom the number has been given. It is,

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(...continued)

[22] *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, ¶1093.

[23] *Reciprocal Compensation Ruling*, ¶29.

[24] *Massachusetts ISP Compensation Order*. Emphasis added.

> therefore, the provider of paging services . . . who is the cost-causer. As such, compensation should be due to [the ILEC], not the other way around.[25]

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

VI. CONCLUSIONS

56. In light of these acknowledgements, it is reasonable to expect that a more efficient system of intercarrier compensation may yet be more widely adopted for all forms of one-way traffic. The LEC-LEC-IXC interconnection regime offers one such alternative. More importantly, under that alternative: perverse incentives and unintended arbitrage opportunities are removed, cost causation guides cost recovery (including the payment of access-like charges by ISPs to ILECs and CLECs that handle their traffic), more efficient use is made of network resources, inefficient entry for the sake of earning opportunistic arbitrage profits is prevented, and true competition (undistorted by the gain from specializing in terminating one-way traffic) can be realized in the local exchange market.

57. From an economic standpoint, any method of intercarrier compensation for Internet-bound calls must be based on cost causation in order to promote efficiency, encourage efficient competition to serve residential customers and ISPs and to avoid arbitrage. Because it is not

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

based on cost causation, reciprocal compensation for Internet-bound traffic should not be an option at all. Rather the Commission should extend the paradigm it uses for interstate long distance traffic to the case of interstate Internet-bound traffic.

Table 1

	DE	MD	NJ	PA	VA	DC	Average
Approved Transport and Termination Rate							
Termination at Tandem	0.001957	0.003300	0.003738	0.002814	0.001590	0.005860	0.003067
Termination at End Office	0.001082	0.002250	0.001846	0.001723	0.000927	0.002912	0.001747
Cost Adjusted for Holding Time							
Termination at Tandem	0.001128	0.001916	0.001537	0.001562	0.000581	0.002301	0.001469
Termination at End Office	0.000923	0.001722	0.001255	0.001359	0.000466	0.001885	0.001250
Cost Adjusted for Holding Time and with Line CCS Removed							
Termination at Tandem	0.000711	0.000866	0.000677	0.000705	0.000281	0.001009	0.000666
Termination at End Office	0.000505	0.000673	0.000395	0.000503	0.000166	0.000593	0.000447

I declare under penalty of perjury that the foregoing is true and correct.

/S/ William E. Taylor

Executed on July 20, 2000