

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FILE COPY

DIRECT TESTIMONY OF

DR. NINA W. CORNELL

ON BEHALF OF

MCI METRO ACCESS TRANSMISSION SERVICES, INC.

DOCKET NO. 950985-TP

MFS INTERCONNECTION PETITIONS RE SPRINT AND GTEFL

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FPSC-RECORDS/REPORTING

1 Q. PLEASE STATE YOUR NAME AND ADDRESS.

2

3 A. My name is Nina W. Cornell. My address is 1290 Wood River Road, Meeteetse,
4 Wyoming 82433.

5

6 Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL
7 BACKGROUND AND EXPERIENCE.

8

9 A. I am an economist in private practice, specializing in microeconomic analysis of
10 regulatory and antitrust issues. Until late 1988, I was with the firm of Cornell,
11 Pelcovits & Brenner Economists Inc., of which I was president.

12 Before entering private practice, I was Chief of the Office of Plans and
13 Policy, Federal Communications Commission (FCC). As Chief of the Office of
14 Plans and Policy, I served as chief economist to the Commission and participated in
15 virtually all FCC agenda meetings.

16 Prior to being associated with the FCC, I was the Senior Staff Economist for
17 regulatory, transportation, environmental, and health and safety issues for the Council
18 of Economic Advisers (CEA). In this position I reported directly to Charles L.
19 Schultze, Chairman of the Council.

20 Prior to being with the CEA, I was employed as an economist with the
21 Council on Wage and Price Stability, where I served on the Task Force on Reform
22 of Federal Energy Administration Regulations. Before joining the Federal
23 Government, I spent four years at the Brookings Institution as a Research Associate.
24 I am a graduate of Swarthmore College, and received my Ph.D. in Economics from
25 the University of Illinois in 1972.

1

2 Q. HAVE YOU PUBLISHED ANY PAPERS ON TELECOMMUNICATIONS?

3

4 A. Yes. I have published a number of papers on the regulation of telecommunications
5 as well as on other regulatory and natural resource issues. A list of my publications
6 is contained in my resume -- Exhibit ____ (NWC-1).

7

8 Q. HAVE YOU TESTIFIED BEFORE?

9

10 A. Yes. I have served as an expert witness in several court and a number of regulatory
11 proceedings, particularly proceedings involving telecommunications issues. I have
12 also testified before various committees of the US Congress. A list of my testimonies
13 is also contained in my resume.

14

15 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

16

17 A. My testimony addresses 1) what are the appropriate rate structure, interconnection
18 rates, or other arrangements for the exchange of local traffic between ALECs on the
19 one hand and Sprint-United and Sprint-Centel (Sprint) and GTE Florida Incorporated
20 (GTEFL) on the other hand; 2) what are the appropriate rate structure,
21 interconnection rates, or other arrangements for the exchange of toll traffic between
22 ALECs and Sprint/GTEFL; 3) what are the appropriate arrangements for physical
23 interconnection between ALECs and Sprint/GTEFL; and 4) what are the appropriate
24 arrangements for the delivery by Sprint/GTEFL of calls originated by and/or
25 terminated to ALECs from other carriers (IXCs, other ALECs, other LECs, wireless

1 carriers) that are not directly connected to the ALEC.

2 In particular, I recommend that the Commission order Sprint/GTEFL to treat
3 ALECs as co-carriers, and terminate local traffic that originates on the networks of
4 ALECs using Mutual Traffic Exchange. I also recommend that toll traffic be
5 exchanged with the payment of switched access charges. ALECs should be allowed
6 to file their own switched access tariffs, with a requirement only that the ALEC's
7 total price to originate or terminate a call not exceed the total price that would have
8 been charged by the incumbent LEC for the same call. I recommend that the
9 physical arrangements for the physical interconnection of the two networks allow the
10 ALEC to designate one point of interconnection in each local calling area, and that
11 the point of interconnection could be at either its switch, at a switch of
12 Sprint/GTEFL, or at a meet point someplace between the two networks. Finally, I
13 recommend that the Commission require Sprint/GTEFL to deliver calls originated by
14 and/or terminated to an ALEC from other carriers that are not directly connected to
15 the ALEC on exactly the same terms and conditions that Sprint/GTEFL performs that
16 same function for independent local exchange carriers.

17

18 1. What Are the Appropriate Rate Structure, Interconnection Rates, or
19 Other Arrangements for the Exchange of Local Traffic between
20 ALECs and Sprint/GTEFL?

21

22 Q. WHAT POLICY GOAL SHOULD COMPENSATION ARRANGEMENTS
23 ESTABLISHED FOR TERMINATING LOCAL TRAFFIC BETWEEN
24 COMPETING LOCAL EXCHANGE NETWORKS BE DESIGNED TO SERVE?

25

1 A. Whatever compensation arrangements are adopted should foster the ultimate
2 development of effective competition in local exchange markets.

3

4 Q. WHAT IS EFFECTIVE COMPETITION?

5

6 A. Effective competition exists when a firm cannot raise its prices significantly above
7 its costs without losing customers to other suppliers in sufficient quantity that it is
8 forced to bring its prices back in line with costs.

9

10 Q. IS ENTRY THE SAME AS EFFECTIVE COMPETITION?

11

12 A. No. Entry is a necessary first step towards the development of effective competition,
13 but it is not the same as effective competition. Effective competition requires that
14 there are enough alternatives available to and adopted by a sufficient number of
15 consumers that the choices consumers actually make in the market force all of the
16 firms in that market to bring their prices in line with costs and keep them there.

17

18 Q. WHAT ARE THE OBSTACLES THAT MIGHT PREVENT ENTRY FROM
19 BECOMING EFFECTIVE COMPETITION IN LOCAL EXCHANGE MARKETS
20 IN FLORIDA?

21

22 A. Local exchange markets are characterized by significant barriers to entry based on
23 the nature of current technology and the long period during which consumers have
24 faced only a monopoly supplier for local exchange service. In addition, the policy
25 determinations that need to be made could raise equal or even greater artificial

1 barriers to entry. Some of the conditions being proposed for entry, including some
2 that are being proposed here in Florida and around the country, could limit entry
3 sufficiently that effective competition could never develop, if any entry ever occurred
4 at all.

5

6 Q. WHAT DO YOU MEAN BY BARRIERS TO ENTRY?

7

8 A. Barriers to entry occur whenever a firm that is not already in the market faces
9 conditions that would make it have to expect to earn more than the normal return on
10 investment before it would be a wise business decision to put shareholders' funds at
11 risk in the market. The main types of barriers to entry arise when 1) a potential
12 entrant knows that some or all of its investments in that market, once made, cannot
13 easily be recovered should the entry be unsuccessful; or 2) the entrant knows it will
14 face costs upon entering that the incumbent firm does not face. In the first case, the
15 greater the level of investments that would be unrecoverable if entry were
16 unsuccessful, the higher the barrier to entry, in that the greater the expected return
17 on those investments would have to be to make the entry a reasonable business risk.
18 Similarly, the greater the costs the potential entrant would face that the incumbent
19 does not, the higher the barrier to entry and therefore the greater the expected return
20 on investment would have to be to make entry a reasonable business risk. Both of
21 these types of barriers to entry exist today in local exchange markets because of the
22 nature of the existing technology and consumers' habits. Both of these types of
23 barriers to entry could be increased artificially by inappropriate policy choices in this
24 docket.

25

1 Q. WHAT ARE THE NATURAL BARRIERS TO ENTRY INTO LOCAL
2 EXCHANGE MARKETS?

3

4 A. Local exchange telephone markets have several important characteristics that naturally
5 create barriers to entry. First, entry will take very large capital outlays, many of
6 which may well be unrecoverable if the firm fails in the market. Second, the
7 construction financed with those capital outlays will take quite some time to be able
8 to reach beyond a small area. Third, consumers are totally unused to the idea of
9 multiple firms supplying local exchange services, so very large marketing costs can
10 be anticipated. Marketing costs are costs that are unrecoverable if the firm is
11 unsuccessful and has to exit the market. Fourth, firms in telecommunications
12 markets, unlike almost any other markets, cannot operate completely independently
13 of each other, affected only by the interaction of what each offers to the public and
14 how the public responds to those offerings. Instead, all firms in the market must
15 interconnect and agree to terminate traffic for each other. There are also several
16 other areas in which cooperation is required for competition to be possible.

17 The first three facts cited above by themselves mean that there are barriers
18 to entry into local exchange markets that are greater than in many other markets.
19 The capital and marketing outlays that are unrecoverable if the firm must exit are
20 barriers to entry caused by the fact that these costs would be sunk once incurred.
21 Thus, before a firm actually enters a market, it must believe that the expected
22 revenues from entry are greater than would be the case if there were no large sunk
23 costs from entry.

24 Given just the first three characteristics of local exchange telecommunications
25 markets, most entrants are likely to begin small and grow slowly. Entrants must be

1 able to take advantage of any synergies they have with other services they may
2 provide, in order to start earning revenues as soon as possible to justify the very
3 large capital outlays needed to expand their networks. In this process, entrants will
4 be eager to serve any and all customers that they can serve for more than the
5 marginal costs of adding the customer. Once a firm has installed network facilities,
6 particularly outside plant, any customer that pays more than the marginal cost of
7 adding it to the entrant's network will help to pay for the initial investment in that
8 network.

9 The entrants also need to be able to concentrate their marketing efforts where
10 they can get the most exposure for the amount spent, in order to overcome the
11 entrenched position of the former monopoly firm. This again is best done where the
12 entrants can take advantage of any synergies they have with other services they
13 provide.

14
15 Q. WHAT ARE THE SPECIFIC PRINCIPLES THAT SHOULD GOVERN
16 COMPENSATION ARRANGEMENTS FOR TERMINATING LOCAL TRAFFIC
17 IN ORDER TO PREVENT THOSE ARRANGEMENTS FROM RAISING
18 ARTIFICIAL BARRIERS TO ENTRY IN LOCAL EXCHANGE MARKETS IN
19 FLORIDA?

20
21 A. There are at least three principles that should govern compensation arrangements for
22 terminating local traffic. First, competing local exchange carriers must be treated as
23 co-carriers, not customers, in recognition of the fact that the need for interconnection
24 becomes mutual as soon as an entrant signs up its first customer. Once an entrant
25 gains that first customer, each has a mutual need for services from the other if each

1 is to offer its customers the ability to reach all other telephone subscribers in the local
2 exchange. Thus, compensation arrangements for terminating local exchange traffic
3 must be reciprocal. If the compensation arrangements are not reciprocal, the firm
4 that must pay more faces a barrier to entry. This is different from the situation with
5 interexchange carriers, who are customers of the incumbent local exchange carriers.

6 Second, it is very important that the compensation arrangements for
7 terminating local exchange traffic foster efficiency rather than inefficiency. The fact
8 that each carrier will need the other should not be used as a reason to create an
9 upward spiral in either local exchange costs or rates, or to try to impose
10 anticompetitive terms and conditions on entrants by incumbents. Firms that are just
11 as efficient as incumbent firms should not be discouraged from entering the market
12 because of the type of compensation arrangements for terminating local exchange
13 traffic that are adopted.

14 Third, the compensation arrangements for terminating local traffic should not
15 force entrants to select one technology over another or one network architecture over
16 another. One of the major benefits from opening local exchange markets to entry and
17 the development of effective local exchange competition is that the residents of the
18 state can benefit from competition between different technologies and involving
19 different architectures of service. If the compensation arrangements for terminating
20 traffic skew the technology or architecture choices of entrants, however, this benefit
21 from entry will be reduced or eliminated. This would not be in the public interest.

22

23 Q. WHAT DO YOU MEAN BY ARCHITECTURE IN YOUR LAST ANSWER?

24

25 A. By architecture, I mean such elements of service as the decision about how many

1 switches to place and where to place them in terms of the overall networks of the
2 entrants. The decisions made about these issues by the incumbent local exchange
3 carriers have been influenced by a large number of factors, including their own
4 historical practices. The current relationship of total customers to numbers of
5 switches may no longer be efficient. Entrants should not be forced by the
6 arrangements for terminating local exchange traffic to duplicate the choices made by
7 the incumbents.

8

9 Q. YOU CALL FOR EQUALLY EFFICIENT FIRMS TO BE ABLE TO ENTER THE
10 MARKET. ISN'T THE WHOLE PURPOSE OF ALLOWING COMPETITION TO
11 HAVE MORE EFFICIENT FIRMS ENTER THE MARKET?

12

13 A. Not entirely. Competitive entry benefits consumers when equally efficient firms
14 enter, because they force the incumbent to reflect fully its efficiency in prices and to
15 become more efficient than it currently is. Currently, whatever is the efficiency level
16 of the incumbent measured in terms of its total service long run incremental costs,
17 the prices it is charging are far higher. Entry, if the market is properly structured,
18 can drive those prices down. If, however, the requirement is that the firm must be
19 more efficient than the incumbent, there are fewer and fewer firms that can even
20 enter.

21

22 Q. YOU PREVIOUSLY SAID THAT COMPENSATION ARRANGEMENTS MUST
23 BE RECIPROCAL. WHAT DO YOU MEAN BY RECIPROCITY?

24

25 A. By reciprocity, I mean that the entrant can charge the same exact price as the

1 incumbent charges for performing the same task, namely terminating a local call.

2

3 Q. WHY WOULD A LACK OF RECIPROCITY CREATE A BARRIER TO ENTRY?

4

5 A. A lack of reciprocity, with the entrant receiving less than the incumbent, creates a
6 barrier to entry because it prevents a potential entrant that is just as efficient as the
7 incumbent from receiving the same payments as the incumbent. In this respect, it is
8 similar to a price squeeze.

9 To be able to sign up any customers at all, an entrant must price below the
10 incumbent or offer a better service for the same price. Certainly, an entrant cannot
11 offer the same service for a higher price. If the incumbent is allowed to charge a
12 higher interconnection price than the entrant, the entrant must be more efficient than
13 the incumbent in order to be able even to meet the price of the incumbent, let alone
14 price below the incumbent's price.

15 Suppose that the incumbent is allowed to set the rate for terminating traffic
16 for the entrant at the incumbent's cost plus 1¢, but the entrant is only allowed to
17 charge the cost to it of termination. Assume further that traffic is in balance, and
18 that every call originated by a customer of the entrant terminates on the incumbent's
19 network. If the entrant is just as efficient as the incumbent, all of its costs are the
20 same -- except for the cost of termination. Here, because of the lack of reciprocity,
21 the entrant faces a cost 1¢ higher than the cost to the incumbent. For the entrant to
22 be able to even charge the same price for a local call that the incumbent charges, it
23 must be able to provide local calls at a cost to it, before taking into account
24 interconnection charges, of 1¢ less than providing a local call costs the incumbent.
25 The entrant, however, is just as efficient as the incumbent. This means that

1 providing local calls costs it the same as it costs the incumbent. As a result, because
2 its costs of termination have been made 1¢ higher than the cost to the incumbent, the
3 entrant cannot enter and even match the price of the incumbent. The result is it is
4 prevented from entering.

5 If instead of all calls terminating on the opposite network, only some do, the
6 amount by which the entrant must be more efficient is somewhat less, but the effect
7 does not go away. The effect of not requiring reciprocity in interconnection rates is
8 to create a barrier to entry.

9

10 Q. WHAT COMPENSATION ARRANGEMENT FOR TERMINATING LOCAL
11 EXCHANGE TRAFFIC BEST SERVES THE THREE GOALS YOU OUTLINED
12 ABOVE?

13

14 A. The best compensation arrangement for terminating local exchange traffic that passes
15 between the networks of two competing local exchange providers is payment for the
16 terminating function in kind, through mutual traffic exchange, rather than in cash.

17

18 Q. WHY DO YOU RECOMMEND THE USE OF PAYMENT IN KIND, THROUGH
19 THE USE OF MUTUAL TRAFFIC EXCHANGE, RATHER THAN PAYMENT
20 IN CASH?

21

22 A. There are at least five reasons why I recommend the use of payment in kind, or
23 mutual traffic exchange, rather than payment in cash. First, mutual traffic exchange
24 is obviously reciprocal, thus respecting that all participants are co-carriers. Second,
25 mutual traffic exchange is by far the least cost means of compensating for terminating

1 traffic, and therefore is the method most likely to help drive local exchange rates as
2 low as possible. Third, mutual traffic exchange offers the least ability for
3 Sprint/GTEFL to use the compensation mechanism to try to impose both unnecessary
4 and anticompetitive costs upon the entrants, thereby making it the method least likely
5 to result in new unnecessary barriers to entry. Fourth, mutual traffic exchange is
6 neutral in terms of both the technology and architecture that entrants might choose
7 to adopt. In this regard, therefore, it is the method most likely to enhance dynamic
8 efficiency in telecommunications. Fifth, mutual traffic exchange is the only
9 compensation mechanism that may create some incentive for Sprint/GTEFL to want
10 to cooperate in developing true number portability, rather than helping Sprint/GTEFL
11 to benefit further from its absence.

12

13 Q. MUTUAL TRAFFIC EXCHANGE IS OBVIOUSLY RECIPROCAL. WHY DO
14 YOU SAY IT IS THE MOST EFFICIENT MEANS OF COMPENSATING FOR
15 TERMINATING LOCAL EXCHANGE TRAFFIC?

16

17 A. Mutual traffic exchange is the most efficient means of compensating for the
18 termination of local exchange traffic, for at least two reasons. First, because the
19 termination of traffic will be paid for "in kind" by each carrier, rather than with
20 money, each carrier has the incentive to minimize the cost of those terminations, an
21 incentive it does not have under any other form of compensation. Second, mutual
22 traffic exchange does not impose costs on the system that could only be justified at
23 most for a transition period.

24 It is very instructive to note that mutual traffic exchange is the dominant
25 practice that has long been in use between non-competing adjacent local exchange

1 carriers around the country -- and in Florida -- for terminating local (Extended Area
2 Service) traffic between adjacent territories. Where there is no gain from
3 anticompetitive or inefficient behavior, carriers seek the most efficient approach. The
4 dominance of mutual traffic exchange in these relationships suggests strongly the
5 efficiency of this approach.

6

7 Q. WHY DOES MUTUAL TRAFFIC EXCHANGE CREATE THE BEST
8 INCENTIVES AVAILABLE TO MINIMIZE THE COST OF TERMINATING
9 TRAFFIC?

10

11 A. Because of the inherent nature of payments in kind, rather than in cash, the payer
12 actually has the ability to affect the cost to itself of the "in kind" payment. This
13 means that each carrier will try to terminate traffic at least cost, thus promoting
14 efficiency. The result will be to seek out more efficient ways to terminate traffic,
15 and, if effective competition can develop, these cost savings will be passed on in
16 reduced local exchange service rates. The likelihood of reduced local exchange
17 service rates is enhanced under mutual traffic exchange relative to almost all other
18 forms of compensation because termination in kind means that the cost for
19 termination is no higher than its total service long run incremental cost, rather than
20 also including some "contribution."

21

22

23

24

25

If termination of traffic is paid for with money, as is proposed by
Sprint/GTEFL, one effect is to give the incumbent the incentive to make the cost
inefficiently high and pass that inflated cost on to its competitors. If termination of
traffic is paid for in kind, however, any such cost-raising activities fall on the traffic
terminator, not the traffic originator. Thus, if the incumbents tried to terminate

1 traffic in an inefficient manner, the costs would fall on them, not the entrants. The
2 result is to encourage the incumbents to terminate traffic in the most efficient manner
3 possible.

4

5 Q. WHY DOES MUTUAL TRAFFIC EXCHANGE NOT IMPOSE COSTS THAT
6 ARE JUSTIFIED AT MOST ONLY FOR A TRANSITION PERIOD?

7

8 A. Once all the conditions for effective competition have been established, it is virtually
9 certain that the amount of compensation that would be due to one network would be
10 exactly offset by the amount due to the other. Unless there are significant distortions
11 between networks, the traffic between networks tends to be in balance over time.
12 This means that it is inefficient for firms to develop measurement and billing
13 arrangements that can significantly increase the costs of doing business when the
14 amounts to be paid are going to cancel out over *relatively short periods of time*. In
15 earlier testimony in this docket, Mr. Poag states that the recording of usage for
16 purposes of applying a per minute of use charge requires special software which
17 Sprint has not deployed in its switches. In fact, Mr. Poag states that because of the
18 high cost of the software, Sprint does not currently plan to deploy the software in any
19 switches other than its access tandems. Presumably GTEFL will face similar high
20 costs for developing and deploying comparable software. Based on information that
21 *I have seen in other states, developing such a measurement and billing system could*
22 *more than double the total service long run incremental cost of the switching function*
23 *for terminating traffic from the cost without measurement and billing. This is a*
24 *significant -- and totally unnecessary -- cost burden to add to local exchange service,*
25 *when it can only be justified at best for a relatively brief period of time. It also*

1 imposes other costs on local exchange service, costs that fall more heavily on the
2 entrants than on Sprint/GTEFL. Mutual traffic exchange is much more efficient, as
3 it prevents the addition of these costs and reflects the likely outcome in a world
4 where all of the necessary conditions have been met for effective competition,
5 particularly true number portability.

6

7 Q. WHY DO YOU SAY THAT MUTUAL TRAFFIC EXCHANGE OFFERS THE
8 LEAST ABILITY FOR SPRINT/GTEFL TO USE THE COMPENSATION
9 MECHANISM TO TRY TO IMPOSE UNNECESSARY BARRIERS TO ENTRY?

10

11 A. Under mutual traffic exchange, Sprint/GTEFL cannot impose costs on their rivals
12 through how they provide or bill for compensation. Under any proposal in which
13 local traffic must be measured, however, Sprint or GTEFL could deploy a
14 measurement mechanism which is unnecessarily costly, and seek to pass that cost
15 along to its rivals.

16

17 Moreover, based on the experiences to date with the billing for carrier access
18 charges, the fact of billing will pose additional unnecessary costs in the form of
19 auditing and verification costs. Carrier access bills have been sufficiently in error
20 that it has been cost effective for interexchange carriers to hire people full time to
21 audit and try to get corrections made in these bills. These auditing costs have not
22 been one-time costs, but continue to be incurred today. The costs to the
23 interexchange carriers are less than the savings from what they otherwise would have
24 been required to pay, but these expenditures bring with them no social benefits
25 whatsoever. In other words, these costs are a total dead weight loss to society.

25

Local exchange users will gain no benefits from duplicating this experience

1 in the local exchange arena. Doing so, moreover, would deny consumers the ability
2 to have local exchange rates fall as far as they might otherwise fall. These auditing
3 costs would become another irreducible part of the cost floor for local exchange
4 service. Because the rates for basic local exchange service are central to the
5 provision of universal service, it would be bad public policy to insist on arrangements
6 that raise costs, rather than lowering them.

7

8 Q. EARLIER, IN LISTING THE ADVANTAGES OF MUTUAL TRAFFIC
9 EXCHANGE, YOU SAID THAT MUTUAL TRAFFIC EXCHANGE IS NEUTRAL
10 IN TERMS OF BOTH TECHNOLOGY AND ARCHITECTURE. WHY?

11

12 A. Mutual traffic exchange is totally neutral in terms of both technology and network
13 architecture because the amount paid to each participant does not depend upon the
14 choices of technology or architecture. Each carrier can select the technology and
15 network architecture that it wants, without having to factor in possible penalties that
16 could arise under other arrangements for terminating local traffic. This is very
17 important for the dynamic efficiency of telecommunications. The greatest benefits
18 to consumers from entry over time will come from the efficient search for and
19 deployment of new and better technologies for sending and receiving information.

20

21 Q. WHY MAY MUTUAL TRAFFIC EXCHANGE CREATE AT LEAST SOME
22 INCENTIVE FOR THE INCUMBENT LOCAL EXCHANGE CARRIERS TO
23 COOPERATE IN THE DEVELOPMENT OF TRUE NUMBER PORTABILITY?

24

25 A. Mutual traffic exchange is the only arrangement that has been discussed that may

1 create some incentives -- even if slight -- for the incumbent carriers to cooperate in
2 the development of true number portability, because the lack of true number
3 portability may make the costs to the incumbents higher than if true number
4 portability were present. To the extent that traffic might not be in balance at the
5 outset, it is likely to be because a significant number of customers do not want to
6 change their telephone numbers. Some customers, particularly business customers
7 who are more likely to have more than one line, might respond by splitting their
8 subscriptions, retaining some lines from the incumbent and along with them their old
9 telephone numbers, while using the entrant for outgoing traffic. Under mutual traffic
10 exchange, this would make the incumbent's terminating costs higher than if the
11 customer moved all of its lines to the entrant.

12 Creating incentives for the incumbent local exchange carriers to cooperate
13 with the development of true number portability is important, because they benefit
14 from the lack of true number portability. Thus, they have every incentive to try to
15 resist its development and deployment, and to try to insist that only entrants should
16 pay any costs to achieve it. This is not good for the public.

17

18 Q. DO YOU BELIEVE TRAFFIC WILL BE IN BALANCE?

19

20 A. Yes. Networks tend normally to have roughly equal amounts of incoming and
21 outgoing traffic. Unless very strong incentives exist to try to select customers on the
22 basis of their incoming or outgoing traffic patterns, the way entrants will build their
23 networks should produce the same outcome. Entrants will put facilities in certain
24 locations, and then try to get as many customers as possible in that general location
25 to subscribe to service using those facilities. Once an entrant has facilities in one

1 neighborhood, the entrant will want to serve as many customers who are there as can
2 be induced to switch to the entrant, regardless of their particular usage patterns,
3 because a number of the costs of the facilities do not vary with the number of
4 customers served. This will be true, moreover, whether the entrant is using fiber or
5 radio systems. Even radio-based systems have equipment that is geographically
6 specific and that can be used in common by a number of subscribers, so long as they
7 live in the relevant geographical area. An entrant, with no customers from whom it
8 can cross subsidize its services, would be willing to serve any customer who pays
9 more than the direct costs it imposes, unless again there is both a strong incentive and
10 the ability to do otherwise.

11 Such an incentive would exist only if serving customers with one pattern of
12 usage was made prohibitively expensive. This could occur if the rate to entrants for
13 terminating traffic on the network of the incumbent were made higher than the rate
14 the entrants could charge the incumbent, or if the compensation for terminating traffic
15 on the network of the incumbent is very high relative to the price for local calling.
16 If there were any entry at all under either of these conditions, the entrant would have
17 a strong incentive to serve customers who had little outgoing local exchange traffic,
18 but who had a large amount of incoming traffic. Such customers would leave the
19 entrants paying for many fewer calls to the incumbent while receiving payment for
20 many more calls from the incumbent.

21 If such an incentive were created, the entrants would also have to know the
22 ratios of customers' incoming and outgoing traffic. This is not necessarily known or
23 easy to know by either the customer or the entrant. Most customers do not get
24 reports of incoming (non-800) traffic. Thus, entrants may not have the ability to
25 make a distinction among customers based on whether they have mostly incoming or

1 outgoing traffic.

2 In the absence of both an incentive and the ability to distinguish between
3 customers based on their relative proportions of incoming and outgoing traffic, it
4 seems much more likely that traffic will be in balance between networks. The
5 aggregation of the traffic patterns of a number of customers would suggest this
6 outcome.

7

8 Q. WOULDNT THE UNEQUAL SIZES OF THE RELATIVE NETWORKS
9 SUGGEST TRAFFIC WOULD NOT BE IN BALANCE?

10

11 A. No. The relative size of networks does not determine how much traffic will flow in
12 each direction. The easiest way to see that this is the case is to imagine a small
13 carrier with only a few customers, but those customers spend their entire waking
14 hours calling customers of the big network. Because of the number of customers of
15 the small network, if all of them were to do nothing but call customers of the big
16 network, they still would not generate a large number of calls. Meanwhile, it only
17 takes a few calls each from customers of the big network calling customers of the
18 small network to equal the number of calls that could go from the customers of the
19 small network to the customers of the big network.

20 For example, if a new entrant were to gain a 2 percent market share in
21 Tampa, then on average its customers would be likely to make 2 percent of their
22 local Tampa calls to other customers of the new entrant, and 98 percent of their local
23 Tampa calls to customers of GTEFL. At the same time, on average GTEFL's
24 customers would make 98 percent of their local Tampa calls to other GTEFL
25 customers and 2 percent of their local Tampa calls to customers of the new entrant.

1 But 98 percent of the calls originating on the network of a provider with 2 percent
2 of the market is the same number of calls as 2 percent of the calls originating on the
3 network of a provider with 98 percent of the market, leaving the total number of calls
4 terminated by each provider on the other provider's network in balance.

5

6 Q. YOU RECOMMEND THE USE OF MUTUAL TRAFFIC EXCHANGE TO
7 COMPENSATE FOR TERMINATING TRAFFIC ORIGINATED ON ANOTHER
8 LOCAL EXCHANGE NETWORK. IS MUTUAL TRAFFIC EXCHANGE
9 REQUIRING SPRINT/GTEFL TO TERMINATE THEIR RIVALS' LOCAL
10 EXCHANGE TRAFFIC "FOR FREE?"

11

12 A. No. It is important to remember that rival local exchange carriers are not customers,
13 but co-carriers. That means, whenever the rival has acquired a single customer,
14 traffic will flow both ways. Mutual traffic exchange simply involves each carrier
15 "paying" for the other to terminate local calls originated by its subscribers by
16 mutually terminating local calls originated by the customers of the other carrier. That
17 is why I referred to it as payment "in kind" rather than "in cash."

18

19 Q. DO SPRINT AND GTEFL AGREE THAT INTERCONNECTION
20 COMPENSATION SHOULD BE BASED ON MUTUAL TRAFFIC EXCHANGE?

21

22 A. No. Sprint and GTEFL have proposed to charge local exchange entrants switched
23 access charges other than the Carrier Common Line Charge and the Residual
24 Interconnection Charge. Sprint has also proposed a flat-rated port charge option.
25 The use of any part of switched access charges is inappropriate.

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Q. WHY WOULD SWITCHED ACCESS CHARGES BE INAPPROPRIATE FOR COMPENSATION FOR TERMINATING LOCAL EXCHANGE TRAFFIC?

A. The use of switched access charges for compensation for terminating local exchange traffic would totally bar entry, because the current regulation of Sprint and GTEFL would prevent them from imputing these rates into their own local exchange rates. If Sprint and GTEFL were able to reset their local exchange rates in order to pass an imputation test, it would make entry at least possible, although it would create a significant and unnecessary upward spiral in local exchange rates. In short, use of switched access charges for compensation for terminating local exchange traffic under Sprint/GTEFL's current regulatory restrictions would deny the public all of the benefits that could come from local exchange competition. Use of switched access charges for compensation for terminating local exchange traffic if Sprint/GTEFL's current regulatory restrictions were relaxed to allow imputation would deny the public one of the two major potential benefits from competition, namely reduced costs and prices.

Even if Sprint and GTEFL were willing to pay the entrant's switched access charges, however, if they also insist that the entrant must mirror the switched access rate structure of Sprint/GTEFL, reciprocity in that part of the interconnection charge could occur only if the entrant mirrored the architecture, at least, of the incumbent, rather than picking the architecture that would otherwise be efficient, as discussed below. This would deny the public the other major potential benefit from entry, namely the promotion of more rapid deployment of new and better technologies.

1 Q. IN YOUR INITIAL DISCUSSION OF THE PRINCIPLES THAT SHOULD BE
2 SERVED BY THE METHOD OF COMPENSATING FOR TERMINATING
3 LOCAL EXCHANGE TRAFFIC BETWEEN COMPETING LOCAL EXCHANGE
4 CARRIERS, YOU NOTED THAT IT WAS IMPORTANT THAT THE METHOD
5 OF COMPENSATION NOT BE USED TO CREATE AN UPWARD SPIRAL OF
6 LOCAL EXCHANGE COSTS OR RATES. YOU ALSO SAID THE USE OF
7 SWITCHED ACCESS CHARGES FOR COMPENSATION WOULD EITHER BAR
8 ENTRY OR CREATE SUCH AN UPWARD SPIRAL, ASSUMING A CHANGE
9 IN HOW SPRINT/GTEFL IS REGULATED. HOW?
10

11 A. The use of switched access rates create an intolerable price squeeze. The only way
12 for the Commission to allow these rates to go into effect and not kill any possibility
13 whatsoever for competition would be to require Sprint/GTEFL to impute the same
14 rates into all of their local exchange rates. Imputing switched access rates into local
15 exchange rates, however, would mean raising basic local exchange rates for reasons
16 other than an increase in the economic cost of providing local exchange service.

17 A far better approach would be to adopt mutual traffic exchange. Mutual
18 traffic exchange does not create a conflict between Sprint/GTEFL's current regulation
19 and the possibility of gaining any benefits of entry. This is in addition to all of the
20 other benefits I have listed above that arise from the use of mutual traffic exchange.
21

22 Q. WHAT DO YOU MEAN BY A PRICE SQUEEZE?
23

24 A. By the term "price squeeze" I am referring to a particular relationship between two
25 prices (or two sets of prices). This relationship can arise whenever a monopoly

1 supplier of inputs to other firms also competes to sell the end user service. If that
2 monopoly supplier sets the price or prices of the bottleneck monopoly inputs at a
3 level such that its end user price does not recover both the price(s) for the monopoly
4 input(s) and the rest of the costs of producing the end user service(s), a price squeeze
5 exists. Under a price squeeze, a dependent competitor that is just as efficient as the
6 monopolist cannot cover all of its costs at the price for the end user product charged
7 by the monopolist. There is absolutely no way that an unregulated, competitive firm
8 can lose a penny on every sale and make it up in volume. Thus, when a firm sees
9 that it is going to be subject to a price squeeze, what it sees is a barrier to entry.

10

11 Q. IF SWITCHED ACCESS CHARGES ARE USED FOR COMPENSATION, WHY
12 WOULD RECIPROCITY ONLY BE POSSIBLE, IF AT ALL, IF THE ENTRANT
13 MIRRORED THE ARCHITECTURE OF THE INCUMBENT?

14

15 A. Switched access charges are composed of a series of rate elements charged for the
16 use of different piece parts of the incumbent's network to terminate a call. Except
17 for the rate elements designed to pay "contribution," if the piece part is not used,
18 then the rate element is not charged. The proposals to use switched access charges
19 for compensation mostly include the same requirement. Thus, the entrant would only
20 be allowed to charge for the same categories of costs that the incumbent claims are
21 the costs of providing service.

22

23 Suppose an entrant placed only a single switch, using much more "loop" plant
24 than the incumbent. The total cost to it to terminate a local call for the incumbent
25 may or may not be less than the incumbent's costs, but those costs may be in
different categories from those used by the incumbent. If the only costs the entrant

1 can recover in its local interconnection tariff are switching and transport costs,
2 however, it will be handicapped relative to the incumbent, and may be prevented
3 from recovering all of its costs regardless of whether they are less than or equal to
4 the incumbent's costs. Particularly in the early years of its existence, an entrant will
5 mostly be terminating calls from customers of the incumbent rather than from its own
6 customers. Because of the inability to recover its costs using its preferred
7 architecture, it will face an incentive to try to mirror the architecture of the
8 incumbent, even if it were not the most efficient architecture. This would be very
9 bad for the public, because it would reduce the dynamic efficiency benefits from
10 entry.

11

12 Q. WOULD A COMPENSATION PROPOSAL SIMILAR IN STRUCTURE TO
13 SWITCHED ACCESS CHARGES BUT WITH THE ACTUAL RATES SET JUST
14 AT COST BE THE SAME AS MUTUAL TRAFFIC EXCHANGE IN TERMS OF
15 ITS BENEFITS?

16

17 A. No. Although setting the rates at cost instead of above cost would clearly be
18 preferable, such a compensation arrangement still would lead to significantly higher
19 costs for local exchange service than a system of mutual traffic exchange, for the
20 reasons discussed above. It would also still create uneconomic incentives for the
21 entrants to adopt an architecture or technology that is less efficient, solely in order
22 not to be penalized by the compensation mechanism, as discussed above.

23

24 Q. IN ADDITION TO DETERRING ENTRY, ARE THERE ANY OTHER
25 PROBLEMS CREATED IF COMPENSATION IS NOT RECIPROCAL?

1

2 A. Yes. There is a second problem caused if compensation is not reciprocal, and that
3 is that even if a more efficient firm enters the market, that firm is required to transfer
4 its efficiencies to the incumbent, rather than being able to use its greater efficiency
5 to gain market share. This also reduces the likelihood of a potential entrant actually
6 entering the market.

7 This problem can be seen by an example. Suppose there are two firms in the
8 market, and each terminates on the other network half of the local calls that originate
9 on its network. Suppose it costs the incumbent 3¢ per call to terminate local calls,
10 but it only costs the entrant 2¢. Suppose further that it also costs the incumbent 3¢
11 per call for origination, but it only costs the entrant 2¢ per call. If the entrant has
12 to charge the incumbent only 2¢ per call terminating into the entrant's network, the
13 incumbent could offer its own customers calling at 5 and 1/2¢ per call, which is less
14 than the 6¢ per call that it currently costs the incumbent to originate and terminate
15 using only its own network. The entrant, meanwhile, will have to charge 4 and 1/2¢
16 per call in order to recover the interconnection charges that it has to pay the
17 incumbent. If, however, the entrant were allowed to charge the incumbent 3¢ per
18 call for termination, equal to the charge of the incumbent, it could charge 4¢ per call
19 to its own customers, passing on to them the full benefits of its greater efficiency.
20 The incumbent would have to charge the full 6¢ per call until it became as efficient
21 as the entrant. In this example, the market would send the right information to
22 consumers about which firm is more efficient, and the right signals to the incumbent
23 to become more efficient.

24

25 Q. SOME LOCAL EXCHANGE COMPANIES HAVE STATED THAT "BILL AND

1 KEEP" DOES NOT MEET THE STATUTORY REQUIREMENT THAT THE
2 INTERCONNECTION CHARGE COVER ITS COSTS. IN YOUR OPINION,
3 DOES MUTUAL TRAFFIC EXCHANGE MEET THIS STATUTORY
4 REQUIREMENT?

5

6 A. Yes. The price ultimately charged by Sprint/GTEFL for local interconnection will
7 set the *appropriate market price* that Sprint/GTEFL would be required to pay for
8 terminating traffic on the network of a new entrant. If traffic is in balance, as would
9 be expected once there is a true database solution to local service-provider number
10 portability, then under Mutual Traffic Exchange, Sprint and GTEFL will each receive
11 a service for which they would have had to pay that same amount of money.

12

13 Q. IF THE COMMISSION BELIEVES THAT COMPENSATION SHOULD BE IN
14 CASH, RATHER THAN IN KIND, WHAT RATE LEVEL WOULD BE
15 APPROPRIATE FOR COMPENSATION FOR TERMINATING LOCAL CALLS?

16

17 A. The rate should be set at the direct economic costs of supplying the termination by
18 the incumbent, and no higher. Only if this is the rule for the rates for compensation
19 for terminating local calls can the price for local exchange services have any chance
20 of falling to the social cost of providing them.

21

22 Q. YOU USED THE TERM "SOCIAL COST" IN YOUR LAST ANSWER. WHAT
23 IS SOCIAL COST AND HOW DOES IT RELATE TO ECONOMIC COSTS?

24

25 A. The social cost of providing a good or service is equal to the cost of the resources

1 that society must give up to produce that good or service. The economic cost of
2 providing a good or service is equal to the least cost firms in the given market would
3 face when operating efficiently. Both concepts of cost include a competitive level of
4 profit, but not any higher level of profit. If all goods and services are sold at their
5 social cost, then the economic costs of services will be equal to their social costs.

6 If, however, some intermediate goods or services -- that is, goods or services
7 used as inputs in the production of other goods or services -- are priced above their
8 social costs, the economic costs of the goods or services that use them will be higher
9 than their social costs. This is in fact the case today for interexchange services.
10 Because switched access is priced far above its social cost, the economic cost of
11 interexchange services is also far above the social cost of interexchange services. The
12 same thing could happen to local exchange services if the rates for interconnection
13 and other essential monopoly input functions needed to supply local exchange services
14 are allowed to be set in excess of their social cost.

15
16 Q. WHY WOULD RATES FOR COMPENSATING FOR TERMINATING LOCAL
17 EXCHANGE TRAFFIC HIGHER THAN THE DIRECT COST OF THE
18 TERMINATIONS RESULT IN PRICES FOR RETAIL SERVICES BEING
19 UNABLE TO FALL TO THE SOCIAL COSTS OF SUPPLYING THEM?

20
21 A. If the Commission wants effective competition to be able to drive retail service prices
22 down to the social cost of providing them, it needs to set interconnection service
23 prices at the direct cost of supplying them, and look only to retail services for
24 collection of all of the costs of the incumbent local exchange carriers other than the
25 direct cost of providing interconnection services. Telecommunications is unlike

1 almost any other market in the fact that carriers cannot be in business without
2 interconnecting to competitors. Carriers, however, do not go into business for the
3 purpose of supplying interconnection, but for the purpose of serving end users.
4 Therefore, carriers should look to end users for the recovery of all of the indirect
5 costs of the firm.

6 It is very important to understand that whatever prices are set for
7 interconnection services become part of the economic costs of the companies that
8 must pay them. Connecting carriers cannot compete down the prices for
9 interconnection services, and will be denied service if they do not pay the asking
10 price. Thus, these prices are real costs to the connecting carriers, and are part of the
11 economic costs of providing retail services, even if those prices are above the social
12 costs to provide interconnection services. If interconnection service prices are any
13 higher than the direct cost of supplying them, effective competition may develop in
14 terms of driving prices down to the economic costs of supplying retail services, but
15 those costs will be higher than the social costs of supplying those retail services.

16 If there is to be any competition at all for the retail services that the
17 incumbent local exchange companies provide at the same time that they provide these
18 necessary interconnection services for their rivals, the prices the incumbents charge
19 their rivals for the interconnection services must be part of the retail price floor
20 facing the incumbent carriers as well. Otherwise, the incumbent local exchange
21 carriers can charge their rivals more for interconnection services than they recover
22 for those same services, which would allow the incumbents to underprice equally
23 efficient rivals in the retail market. This is anticompetitive, and prevents the
24 development of competition for the retail services affected. Thus, if any competition
25 is to be possible, the incumbent local exchange carriers must recover at least the

1 same prices for interconnection services as they charge their rivals. As a result,
2 whatever those prices are become part of the economic costs of the retail services.

3 The interconnecting carriers do not only have costs for interconnection. They
4 also have direct costs for other inputs into their retail services. Further, they also
5 have indirect costs that they must recover through markups over direct cost in their
6 retail service rates. These are costs of doing business that do not vary with the
7 output of the retail service, such as overhead costs. If the interconnection rates that
8 the interconnecting carriers must pay include some of the recovery of the indirect
9 costs of the incumbent local exchange carriers, two bad effects occur. First, the
10 basic level of prices in the retail market is higher than it would be otherwise, as new
11 entrants will have to price to recover their own indirect costs, and to help recover the
12 indirect costs of the incumbent. Second, the amount of recovery of the incumbent's
13 indirect costs in interconnection rates will be shielded completely from competitive
14 pressure, since those indirect costs will be imposed on the competitors, and cannot
15 be competed out.

16 If interconnection prices are set at cost, but no higher, all firms will have to
17 look to their retail customers for recovery of all of their indirect costs, as well as for
18 recovery of their direct costs of providing the retail services. A firm that is
19 inefficient at supplying the functions that do not vary with the volume of service will
20 discover that it has to set its retail prices higher than its more efficient competitors.
21 This will cause it to lose market share, and so force it to become more efficient at
22 performing those functions. This is to the benefit of consumers.

23 If, however, interconnection prices include a markup over cost, this same
24 market pressure cannot develop for the amount of the markup contained in
25 interconnection rates. Basically, it is very important to remember that

1 interconnection rates cannot be competed down. Under those circumstances, the
2 costs recovered in those prices cannot face a market test for efficiency.

3 If the Commission wants competition to bring retail prices down to the social
4 cost of providing them (or as close to that level as is possible), it will have to set the
5 prices for the necessary interconnection services to recover just the economic cost of
6 providing them and no more. This means pricing these services to recover the total
7 service long run incremental cost (TSLRIC) of supplying them, but not including any
8 markup over that cost level in interconnection prices.

9

10 Q. DO THE SPRINT/GTEFL PROPOSALS TO OFFER LOCAL
11 INTERCONNECTION AT SWITCHED ACCESS RATES, EXCLUDING THE
12 CCL AND THE RIC, RESULT IN A PRICE THAT IS ABOVE THE TSLRIC
13 COST OF PROVIDING THE INTERCONNECTION?

14

15 A. Although I have not reviewed Sprint's and GTEFL's cost data, the price for switched
16 access almost certainly includes a contribution above direct economic costs. In the
17 recent hearing involving BellSouth's local interconnection arrangements, for example,
18 BellSouth's switched access charge, excluding the CCL and RIC, was 1.052 cents per
19 minute, while the cost of those functions was much less, and could be expressed in
20 tenths of a cent per minute.

21

22 Q. IS SPRINT'S PROPOSAL FOR A FLAT-RATED INTERCONNECTION CHARGE
23 ON A PER PORT BASIS AN APPROPRIATE ALTERNATIVE TO MUTUAL
24 TRAFFIC EXCHANGE?

25

1 A. No. Mr. Poag's testimony in response to the Continental and Times-Warner petitions
2 makes clear that the per port charge is above cost. Moreover, it suffers from the
3 same defects as a charge per minute of use in that it imposes unnecessary transactions
4 costs of billing, auditing, and the like. Even if these defects were cured, it still
5 should not be offered as the exclusive option.

6

7 Q. MR. POAG'S DISCUSSION OF SPRINT'S FLAT-RATED PORT PROPOSAL
8 MAKES CLEAR THAT SPRINT PROPOSES TO CHARGE MORE FOR
9 TANDEM INTERCONNECTION THAN FOR END OFFICE
10 INTERCONNECTION, BUT THAT IT INTENDS TO COMPENSATE
11 ENTRANTS ONLY FOR END OFFICE INTERCONNECTION. IS THIS
12 APPROPRIATE?

13

14 A. No. Mr. Poag's discussion of the tandem functions at page 16, line 14, to page 17,
15 line 6 of his testimony in response to the Continental and Times-Warner petitions
16 makes clear that the tandem is an essential facility that can only be provided by
17 Sprint. Sprint will not rehome all of its central offices on a switch provided by an
18 entrant for all functions served by a tandem, and there are large economies of scope
19 in the tandem function. Given these two facts, only Sprint can provide the tandem
20 function. Requiring entrants to pay more for tandem interconnections than for end
21 office interconnections is simply an abuse of Sprint's monopoly over tandem
22 functions. Entrants cannot duplicate this function, and so cannot avoid paying more
23 for interconnections than does Sprint.

24

25 Q. MR. POAG CLAIMS THE DIFFERENTIAL IS NECESSARY TO REFLECT

1 DIFFERENCES IN COST, AND THAT ENTRANTS CAN BUILD TO EACH
2 END OFFICE TO AVOID THE EXTRA TANDEM CHARGES. DO YOU
3 AGREE?

4
5 A. This would only be the case for entrants that wanted to use Mr. Poag's flat-rate
6 ports, not the per minute of use charge. Sprint is only going to install the special,
7 high-cost software in the access tandem, apparently forcing all entrants to choose
8 between using only tandem interconnections and being able to pay a charge per
9 minute of use, or having to pay for a port to avoid paying for tandem functions.
10 Sprint should not be allowed to force these choices on entrants. Instead, if the
11 Commission rejects the best solution of Mutual Traffic Exchange, it should require
12 the rate paid, whether per port or per minute, to be the same whether the
13 interconnection is at the tandem or the end office, and that it be reciprocal.

14
15 Q. MR. POAG DEFENDS SPRINT'S PROPOSAL TO CHARGE MORE FOR
16 INTERCONNECTION USING A TANDEM BY CLAIMING THAT THE COSTS
17 TO SPRINT OF USING A TANDEM "OFFSET" THE CHARGES TO
18 ENTRANTS. IS HE CORRECT?

19
20 A. No. First of all, not all of Sprint's local traffic uses a tandem. Second, the charge
21 to entrants is higher than Sprint's cost, which is all that Sprint incurs for its own
22 traffic.

23
24 2. What Are the Appropriate Rate Structure, Interconnection Rates, or
25 Other Arrangements for the Exchange of Toll Traffic Between ALEC

1 Q. WHAT DO YOU MEAN BY ALLOWING INTERCONNECTION AT ANY
2 FEASIBLE POINT OF INTERCONNECTION?

3

4 A. Based on the arrangements already in use today, interconnection clearly can occur at
5 a number of points. Interexchange carriers interconnect with local exchange carriers
6 either at their own Points of Presence, or, thanks to recent Federal regulatory
7 changes, at the switch of a local exchange provider. The incumbent local exchange
8 providers often interconnect with each other at a "meet point," which is just a
9 division of ownership of a trunk connecting two switches owned by different
10 companies. The "meet point" is usually the boundary between two adjacent
11 exchanges.

12 All of these are feasible points of interconnection between Sprint/GTEFL and
13 competitive local exchange entrants. The point of interconnection for a trunk
14 connecting the networks could be at either end -- at the switch of either the entrant
15 or Sprint/GTEFL -- or it could be in the middle, defining a "meet point" between the
16 two networks. The entrant should get to select which of these it wishes, as its choice
17 will be dictated solely by the desire to minimize costs. That choice should allow the
18 entrant to select only one point of interconnection per local calling area.

19

20 Q. WHY WOULD THE ENTRANT, BUT NOT SPRINT/GTEFL, WANT TO
21 MINIMIZE COSTS?

22

23 A. In order to attract customers, an entrant must offer either lower prices or improved
24 services over what customers can get from Sprint/GTEFL. In order to do either of
25 these, the entrant needs to keep its costs as low as possible. Moreover, an entrant

1 will be likely initially to have a higher percentage of its traffic going to
2 Sprint/GTEFL's network than the percentage of its total local traffic Sprint/GTEFL
3 has that will terminate on the network of the entrant, although the actual quantities
4 should be in balance. Thus, interconnection costs will be a higher percentage of its
5 costs of providing local calling. This increases the incentive of the entrant to keep
6 those costs as low as possible.

7 Sprint/GTEFL, on the other hand, can use interconnection costs as one of a
8 number of opportunities to try to handicap the entrant, by making the entrant's costs
9 higher than Sprint/GTEFL's, thus blocking or impeding entry. One way to do this
10 is to insist upon unnecessarily costly methods of interconnection. Thus, allowing the
11 entrant to select which of the points of interconnection it wants to use is the method
12 most likely to minimize these costs.

13
14 Q. SHOULD SPRINT/GTEFL BE ALLOWED TO REQUIRE COLOCATION IF THE
15 ENTRANT WANTS TO PROVIDE SOME OF THE TRUNKS USED FOR
16 INTERCONNECTION?

17
18 A. No. The Commission should require Sprint/GTEFL to allow entrants to specify a
19 "meet point" as an additional option. Only if the entrant is allowed to specify that
20 it wants a meet point can it have the actual trunks that provide interconnection
21 supplied only at direct economic cost. If it has this right, it may be able to negotiate
22 with Sprint/GTEFL for other configurations that also result in the payment only of
23 direct economic cost. If it does not have this right, it has no bargaining power, and
24 Sprint/GTEFL can force it to pay more for interconnections than Sprint/GTEFL pays,
25 adding to the anticompetitive nature of the proposed interconnection arrangements.

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Q. WHAT DO YOU MEAN BY THE USE OF THE MOST EFFICIENT TRUNKS?

A. Trunks can be either one-way trunks or two-way trunks. The former carry traffic in only one direction, the latter in both. Often, two-way trunks are more efficient, as they allow more traffic to be carried on a given number of circuits. Each entrant should be allowed to select the form of trunking that is most efficient for it, including being able to put both local exchange and intraLATA traffic on the same trunks, in order to minimize costs.

4. What Are the Appropriate Arrangements for the Delivery of Calls Originated by and/or Terminated to ALEC an From Other Carriers That Are Not Directly Connected to the ALEC?

Q. WHAT ARE THE APPROPRIATE ARRANGEMENTS FOR THE DELIVERY OF CALLS ORIGINATED BY AND/OR TERMINATED TO AN ALEC FROM OTHER CARRIERS THAT ARE NOT DIRECTLY CONNECTED TO THE ALEC?

A. The answer depends on what kind of traffic is involved. If the traffic is local traffic, Sprint/GTEFL should charge only the direct economic costs (TSLRIC) of the transit function. Further, Sprint and GTEFL should be required to handle toll transit traffic exactly as they do for independent local exchange carriers.

Sprint/GTEFL should be required to do this because they hold a monopoly over the transit function. Because of their status as former monopoly companies, all

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carriers are connected to Sprint/GTEFL. Sprint/GTEFL should not be allowed to refuse to serve as the transit carrier, given that this would be the most efficient way to get the traffic to its destination. Nor should they be allowed to use their position to force entrants to pay a discriminatory price for this service.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

BIOGRAPHY

Nina W. Cornell
1290 Wood River Road
Meeteetse, Wyoming 82433
Tel. (307) 868-2624, or (307) 868-2408; fax (307) 868-2273

EXPERIENCE

- 10/88-Present Private consultant. Microeconomic consulting, primarily in fields of telecommunications and antitrust.
- 2/82 - 10/88 President: Cornell, Pelcovits & Brenner Economists Inc. Microeconomic consulting, primarily in fields of telecommunications, broadcasting, environmental, and antitrust economics. Assignments have included serving as an expert witness before State and Canadian regulatory agencies on many emerging issues in telecommunications such as: the appropriate structure of access charges to interexchange companies; the public interest benefits of competition and of resale; the need to separate the unregulated from the regulated activities of telephone companies; appropriate telephone costing methodology, market rules, and industry structure; the proper costing of Centrex service; the setting of appropriate prices for the sale of embedded terminal equipment; and the appropriate application of cost and demand studies to the design of telephone tariffs; assisting in the cross examination of opposing witnesses and preparation of information requests; sponsoring cellular tariffs in cellular applications to the FCC; and testifying before Congressional committees on the economics of home taping, copyright, and the First Sale Doctrine.
- 3/81 - 2/82 Vice President: Owen, Cornell, Greenhalgh & Myslinski Economists Inc. Microeconomic consulting in telecommunications, broadcasting, environmental, and antitrust economics. Assignments included serving as expert witness in court cases, including U.S. v. AT&T, and before the Public Service Commission of the State of Florida on the public interest benefits of competition in long haul services and of resale, and on standards for access charges for competitors; assisting in preparation of depositions and cross examination of opposing witnesses; preparing an analysis of the economic impact of the broadcasting regulations on the video industry; preparing a cost-benefit analysis of proposed water pollution control regulations for the steel industry and defending it before EPA.
- 5/78 - 2/81 Chief: Office of Plans and Policy, Federal Communications Commission. Responsible for proposing policy and directing medium and long-range planning for the Commission. During this period, developed an in-house economics capability and functioned as chief economist for the Commission, sat at all Commission meetings, and advised the Commissioners on economic policy issues and alternatives. Directed a staff of 28-35 of mixed disciplines, mainly economics and engineering. Projects of the Office covered such topics as appropriate regulation for common carriers, including involvement in developing a new cost manual, further extensions of resale to switched intercity services, appropriate instances to require separate subsidiaries, and proper regulatory treatment of non-dominant common carriers; direct broadcast satellites; public coast stations; and radio; appropriate policies to achieve an improved UHF TV service; children's television; and how to improve spectrum management.

- 2/77 - 5/78 Senior Staff Economist: Council of Economic Advisors. Covered all areas of regulation except energy for the Council. Some major areas of activity were development of the regulatory analysis requirement in Executive Order 12044; the Regulatory Analysis Review Group; development of policy on various EPA activities such as prevention of significant deterioration of air quality; beverage container deposit legislation; revisions to the Clean Air, and the Clean Water Acts; minerals policy; and carcinogen regulation; also amendments of the laws governing civil aviation, trucking and communications.
- 6/76 - 2/77 Senior Economist: Council on Wage and Price Stability. Worked on energy issues. Major activity was as lead economist on the Presidential Task Force on Reform of Federal Energy Administration Regulation.
- 8/72 - 4/76 Research Associate: The Brookings Institution. First two years were in Foreign Policy Studies working as the economist on an interdisciplinary study on international institutions for managing oceans, outerspace, and weather modification. Last two years were in Economic Studies working with Charles L. Schultze on energy policy and working on safety and health regulation.
- 9/65 - 6/67 Teaching Assistant: Department of Economics, University of Illinois at Urbana-Champaign.

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- *Inquiry Into Telecommunications Carriers' Costing and Accounting Procedures: Phase III - Costing of Existing Services, 9/30/82.*

Public Utilities Board for the Province of Alberta, Canada:

- *In the Matter of "The Alberta Government Telephones Act," Being Chapter A-23 of the Revised Statutes of Alberta, 1980, as Amended; And in the Matter of "The Public Utilities Board Act," Being Chapter P-37 of the Revised Statutes of Alberta, 1980, as Amended; and in the Matter of an Application by Alberta Government Telephones to the Public Utilities Board for an Order Approving the Deletion of Certain Basic Terminal Equipment (Voice) Services. (On Proper Conditions to Apply to Local Telephone Company Services in order to have a Competitive Equipment Market), 2/10/83.*

Alaska Public Utilities Commission

- *In the Matter of Consideration of Regulations Governing the Market Structure for Intrastate Interexchange Telecommunications Service, Docket No. R-90-1, 6/5/90.*

Arizona Corporation Commission:

- *In the Matter of the Application of the Mountain States Telephone and Telegraph Company, a Colorado Corporation, for a Hearing to Determine the Earnings of the Company, the Fair Value of the Company for Ratemaking Purposes, to Fix a Just and Reasonable Rate of Return Thereon, and to Approve Rate Schedules Designed to Develop Such Return, Docket No. E-1051-84-100, and In the Matter of the Mountain States Telephone & Telegraph Company Filing New Tariff Pages for Approval by the Commission, Which Introduce Access Services, Docket No. E-1051-83-293, 8/23/85.*
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- *In the Matter of an Investigation of Intrastate Separations, Settlements and Intrastate Toll Rates of Return, Docket No. 83-042-U, 5/28/85.*

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- *Order Instituting Rulemaking on the Commission's Own Motion Into Competition for Local Exchange Service; Order Instituting Investigation on the Commission's Own Motion Into Competition for Local Exchange Service; R.95-04-043, et al., 10/27/95.*
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- Order Instituting Investigation to determine whether competition should be allowed in the provision of telecommunications transmission services within the state. And related matters. OII 83-06-01, Applications No. 82-12-21, No. 83-10-20, No. 83-05-16, No. 83-05-26, No. 83-05-40, No. 83-06-54, No. 83-07-21, No. 83-08-26, No.83-09-37, Case No. 83-05-05, 9/26-27/83 and 10/21/83.
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Public Utilities Commission, State of Colorado:

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- In Re: Investigation and Suspension of Proposed Changes in Tariffs Filed by the Mountain States Telephone and Telegraph Company, d/b/a U S West Communications, Inc., in Advice Letter No. 2173, Docket No. 90S-544T, 7/23/91, 7/25/91.
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- DPUC Investigation into the Unbundling of The Southern New England Telephone Company's Local Telecommunications Network, Docket No. 94-10-02, 5/8/95 and 5/19/95.
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Public Service Commission, State of Florida:

- In re: Petition for Review of Rates and Charges Paid by PATS Providers to LECs, Docket No. 860723-TP, 8/2/90.
- In re: Review of Southern Bell Telephone and Telegraph Company's Capital Recovery Position, Docket No. 890256-TL, 3/29/90.
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- Docket No. 3522-U, 8/15/85.
- Application of MCI to Provide Intrastate Toll Service, Docket No. 3446-U, 2/29/84 (Direct testimony only).

State of Illinois, Illinois Commerce Commission:

- In the Matter of Illinois Bell Telephone Company Petition to Regulate Rates and Charges of Non-Competitive Services Under an Alternative Form of Regulation, Docket No. 92-0448, 8/3/93.
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Indiana Utility Regulatory Commission:

- In the Matter of the Complaint of the Indiana Payphone Association, Incorporated, an Indiana Not-For-Profit Incorporated Association, Complainant, v. Indiana Bell Telephone Company, Inc., Respondent, Cause No. 39474, 5/31/94, 6/2/94.
- Petition of MCI Telecommunications Corporation for a Certificate of Territorial Authority to Provide Intercity Telecommunications Services Within Indiana, Cause No. 37240, 10/3/83 and 11/21/83.

Iowa Utilities Board

- In re: IntraLATA Presubscription, Discounted Access Charges, and Imputed Access Charges, Docket No. INU-90-1, 8/13/90.
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Public Service Commission of the Commonwealth of Kentucky

- In the Matter of An Inquiry into IntraLATA Toll Competition, an Appropriate Compensation Scheme for Completion of IntraLATA Calls by Interexchange Carriers, and WATS Jurisdictionality, Administrative Case No. 323, 12/13/89, 10/29/90.

Louisiana Public Service Commission

- In the Matter of Investigation of the Revenue Requirements, Rate Structures, Charges, Services, Rate of Return and Construction Program of South Central Bell Telephone Company of its Louisiana Intrastate Operations, the Appropriate Level of Access Charges, and All Matters Relevant to the Rates and Service Rendered by the Company, Docket No. U-17949-B (Generic Phase), 12/10/90 and 5/8/91.
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- In the Matter of the Application of MFS Intelenet of Maryland, Case No. 8584, Phase II, 8/10/95.
- In the Matter of the Investigation by the Commission on Its Own Motion into Legal and Policy Matters Relevant to the Regulation of Firms, Including Current Telecommunications Providers and Cable Television Firms, Which May Provide Local Exchange and Access Services in Maryland in the Future, Case No. 8587, 8/8/94.
- In the Matter of the Application of MFS Intelenet of Maryland, Case No. 8584, 2/3/94.
- In the Matter of the Investigation by the Commission on its own Motion into the Rates and Charges of AT&T Communications of Maryland, Inc., Case No. 7941, 6/4/86, 7/10/86.
- In the Matter of the Application of MCI City Telecommunications Corporation for Authority to Provide Intercity Telecommunications Service within the State of Maryland, Case No. 7719, 8/29/83 and 11/29/83.

Commonwealth of Massachusetts, Department of Public Utilities:

- Investigation by the Department of Public Utilities on its Own Motion into IntraLATA and Local Exchange Competition in Massachusetts, D.P.U. No. 94-185, 7/7/95, 10/2/95.
- Petition for an Advisory Ruling as to the Competitive Nature of Public Pay Telephone Service, D.P.U. 88-45, November or December, 1988.
- Investigation by the Department of the cost studies filed by New England Telephone and Telegraph Company on April 18, 1986, pursuant to the Department's Orders in D.P.U. 1731, D.P.U. 86-33, 5/22-23/88.
- Investigation by the Department on its own motion as to the propriety of the rates and charges set forth in the following rates schedules: DPU Mass. No. 10, Part C - Sec. 7, Original of table of contents, page 1, Original of pages 1 thru 6, filed with the Department on December 15, 1987 to become effective January 14, 1988 by the New England Telephone and Telegraph Company, D.P.U. 88-13, 5/21-22/88.
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- Petition of the Attorney General for a Generic Adjudicatory Proceeding Concerning Intrastate Competition by Common Carriers in the Transmission of Intelligence by Elec-

tricity, Specifically as with Respect to IntraLATA Competition, and Related Issues, Filed with the Department on December 20, 1983, D.P.U. 1731, 7/19-20/84.

- Investigation by the Department on its Own Motion as to the Propriety of the Rates and Charges Set Forth in a Tariff for Carrier Access Charges filed by the New England Telephone and Telegraph Company with the Department on October 21, 1983, to Become Effective November 20, 1983, D.P.U. 1661, 2/22/84.

Public Service Commission of the State of Michigan:

- An Inquiry, on the Commission's Own Motion Into the Status of Competition in the Provision of Telecommunications Services, Case No. U-8716, 6/10/87.
- In the Matter of the Applications of MCI Telecommunications Corporation for special temporary authority or alternatively, for a finding of no jurisdiction over its proposed service, Case No. U-7853, and In the Matter of the Application of GTE Sprint Communications Corporation for a Certificate of Public Convenience and Necessity to Offer Intercity Telecommunications Services to the Public in the State of Michigan, Case No. U-7873, 5/8/84.

Minnesota Public Utilities Commission:

- In the matter of a consolidated proceeding to investigate the provision of intrastate inter-city telecommunications services within the State of Minnesota, Docket No.P-422, P-442, P-444, P-421, P-433/NA-84-212, 2/5-6/85.

Missouri Public Service Commission:

- In the matter of proposals to establish an alternate regulation plan for Southwestern Bell Telephone Company, Case No. TO-93-192, 8/93 (no cross examination).
- In the matter of Southwestern Bell Telephone Company's Application for Classification of its Non-Basic Services, Case No. TO-89-56, 11/2/90.
- The Staff of the Missouri Public Service Commission, Complainant, v. Southwestern Bell Telephone Company, A Missouri Corporation, Respondent, Case No. TC-89-14, et al., 1/31/89 and 4/11/89.
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- In the Matter of the Application of MCI Telecommunications Corporation for a Certificate of Public Convenience and Necessity to offer telecommunications service in Missouri, Case No. TA-84-82, and In the Matter of the Application of GTE Sprint Communications Corporation for a Certificate of Public Convenience and Necessity to Offer Intercity Telecommunications Services to the Public in the State of Missouri, Case No. TA-84-114, 8/8-9/84.

Montana Public Service Commission

- Presentation on Building Blocks, January 22, 1993.

Nebraska Public Service Commission:

- In the Matter of the Application of GTE Sprint Communications Corporation For a Certificate of Public Convenience and Necessity to Offer Intercity Telecommunications Services to the Public in the State of Nebraska, Docket C-497, 3/7/85.

- In the Matter of the Application of Northwestern Bell Telephone Company, Omaha, Nebraska, for Approval of Tariff Sheets of its General Exchange Tariff, Application No. C-353, 5/5/83.
- In the Matter of the Effect of Competition in Inter-exchange Telephone Service, Application No. C-506, 9/6/84.

Public Service Commission of Nevada:

- The Application of Centel Network Communications, Inc., for a Certificate of Public Convenience and Necessity, to Operate as an Intrastate and InterLATA Resale Carrier, Docket No. 88-1156, 4/20-21/89.

New Hampshire Public Utilities Commission

- Re: DE 90-002 - Generic Competition Docket, 9/24/92.

New Jersey Department of Energy, Board of Public Utilities:

- In the Matter of the Application of New Jersey Bell Telephone Company of Approval of its Plan for an Alternative Form of Regulation, Docket No. T092030358, 10/5/92.
- In the Matter of Investigation of Intrastate Tele-communications Competition, BPU Docket 8312-1126, Direct and Rebuttal Testimony, 1/31/84.

New Mexico State Corporation Commission

- In The Matter Of The Rates And Charges Of U S WEST Communications, Inc., Docket No. 92-227-TC, 3/11/93.

New York State Public Service Commission:

- Proceeding on Motion of the Commission to Investigate Performance-Based Incentive Regulatory Plans for New York Telephone Company, Case No. 92-C-0665, 12/12/94.
- Petition of Rochester Telephone Corporation for Approval of Proposed Restructuring Plan, Case 93-C-0103 and Petition of Rochester Telephone Corporation for Approval of New Multi-Year Rate Stability Agreement, Case 93-C-0033, by affidavit, 8/94.
- Proceeding on Motion of the Commission to Investigate Performance-Based Incentive Regulatory Plans for New York Telephone Company, Case No. 92-C-0665, 10/7/93.
- Proceeding on Motion of the Commission to Review Regulatory Policies for Segments of the Telecommunications Industry Subject to Competition, Case No. 29469, 9/28-29/87.

North Carolina Utilities Commission:

- In the Matter of Investigation to Consider Whether Intrastate Offerings of Long Distance Telephone Service Should be Allowed in North Carolina and What Rules and Regulations Should be Applicable to Such Competition if Authorized, P-100, Sub 72, 10/24/84.
- In the Matter of: Resale of Intrastate Telecommunications Services, Docket No. P-100, Sub 61, 11/16/82.

Public Utilities Commission of Ohio:

- In the Matter of the Commission's Investigation Relative To Establishment of Intrastate Access Charges, Case No. 83-464-TP-COI, 10/17/83.

Oklahoma Corporation Commission:

- In re: Inquiry of the Oklahoma Corporation Commission Concerning the Regulation of Intrastate InterLATA Carriers, Cause No. 29217, 11/16/84.
- In re: Application of MCI Telecommunications Corporation, Cause No. 28713, 3/26/84.

Public Utility Commission of Oregon:

- In the Matter of the Investigation into the Cost of Providing Services, Docket UM 351, Phase II: Unbundling and Pricing Issues, 10/20/95.
- In the Matter of the Application of MCI Access Transmission Services, Inc. for a Certificate of Authority to Provide Local Exchange Telecommunications in Oregon, Docket No. CP 15, 7/12/95.
- In the Matter of the Revised Rate Schedules Filed by U S West Communications, Inc. for toll service. Advice No. 1291, Docket No. UT 94, 8/30/90.
- In the Matter of the Investigation into the Revenue Requirements and Rate Spread of Pacific Northwest Bell Telephone Company, dba U S West Communications, Docket No. UT 85, 6/8/89.
- In the Matter of the Petition of Pacific Northwest Bell Telephone Company d/b/a U S West Communications, Inc., to Price List Telecommunications Services Other Than Essential Local Exchange Services, Docket No. UT 80, 6/8/89.
- In the Matter of an Investigation Into Presubscription, Exchange Carrier Toll Rates, and Antitrust Implications of the "IntraLATA Access Charges Agreement" Proposed by Pacific Northwest Bell Telephone Company and the Oregon Independent Telephone Association, Docket No. UT-47, 3/18/87.

Pennsylvania Public Utilities Commission:

- Application of MFS Intelenet of Pennsylvania, Inc., For Approval to Operate As a Local Exchange Telecommunications Company, Docket No. A-310203F002, 2/9/95.
- In the Matter of the Bell Telephone Company of Pennsylvania's Petition for An Alternative Form of Regulation Under Chapter 30, Docket No. P-00930715, 2/7/94.
- Generic Access Charge Investigation, Docket No. P-830452, 11/3/83, 3/21-22/84.

South Carolina Public Service Commission:

- In re: Application of MCI Telecommunications Corporation for a Certificate of Public Convenience and Necessity, Docket No. 84-181-C, 7/23-24/84.

Public Utilities Commission of the State of South Dakota:

- In the Matter of the Inquiry into the Competitive Status of Private Line and Special Access Services in South Dakota, F-3741; In the Matter of the Inquiry into the Competitive Status of Cellular Radio Services, Premise Cable and Inside Wire, Centron and Centron-Like Services, and Billings and Collections Services in South Dakota, F-3742; In the Matter of the Inquiry into the Competitive Status of MTS, WATS, and New Products and Services in South Dakota, F-3743; In the Matter of the Inquiry into the Competitive Status of Optional Services in South Dakota, F-3744, 1/16 & 1/19/89.

Public Service Commission, State of Tennessee:

- South Central Bell Telephone Company v. Southeastern Telecommunications, Inc. and Intercall, Inc. TPSC Docket No. U-82-7167 (on resale), 7/3/82 and 7/7/82.

Public Utilities Commission of Texas:

- Complaint of Intellicall, Inc Against Private Coin Phone Rates and Practices of Southwestern Bell Telephone Company; Complaint of Advanced Telecom Systems, Inc., Against Private Coin Phone Rates and Practices of Southwestern Bell Telephone Company; Complaint of Intellicall, et al. Against Private Coin Phone Rates and Practices of Southwestern Bell Telephone Company; Application of Southwestern Bell Telephone Company to Revise its Private Coin Service Tariff, Docket Nos. 7122, 7123, 7124, 7152, 6/29-30/87 (Deposition - case subsequently settled.)
- In re: Petition of the PUC of Texas for an Inquiry Concerning the Effects of the Modified Final Judgment and the Access Charge Order upon Southwestern Bell Telephone Company and the Independent Telephone Companies of Texas, Docket No. 5113, 11/8/83.
- In the Matter of the Petition of Southwestern Bell Telephone Company for Authority to Change its Rates, Docket No. 4545, 11/3/82.

Utah Public Service Commission:

- In the Matter of Restructuring the Utah Intrastate Universal Service Fund Which Was Established in Docket No. 89-999-01, Docket No. 93-999-05, November 8, 1994.
- In the Matter of the Request of U S WEST Communications Inc. for an Increase in its Rates and Charges, Docket No. 94-049-05, 2/1/93.
- In the Matter of the Application of U S West Communications for Approval of an Incentive Regulation Plan, Docket No. 90-049-03, and In the Matter of the Investigation into the Reasonableness of the Rates and Charges of U S West Communications, Docket No. 90-049-06, 3/7/91.
- In the Matter of Mountain States Telephone and Telegraph Company, Case No. 88-049-07, 5/24/89.

Vermont Public Service Board:

- Investigation into NET's tariff filing re: Open Network Architecture, including the unbundling of NET's network expanded interconnection and intelligent networks, Docket No. 5713, 8/31/95.
- Petition of New England Telephone and Telegraph Company, Docket Nos. 5700 and 5702, 6/22/94, 7/21/94.
- Investigation of Proposed Second Vermont Telecommunications Agreement, Docket No. 5540, 2/14/92.
- Joint Petition of New England Telephone and Telegraph Company and the Vermont Department of Public Service Requesting Approval of the Vermont Telecommunications Agreement of October 14, 1987, Docket No. 5252, 5/2-3/88.

Virginia State Corporation Commission:

- Ex Parte, in re: Investigation to Consider the Impact of Modified Final Judgment in United States v. American Telephone & Telegraph Company, Civil Nos. 74-1698 and 82-0192, 552 F. Supp. 131 (D.D.C. 1972) and In the Matter of MTS and WATS Market Structure, FCC Docket No. 78-72 (Feb. 28, 1983) on the Provision of Toll Service in Virginia, Case No. PUC830020, 9/10-11/86.
- Petition of AT&T Communications of Virginia for Authority to Set Rates and Charges Pursuant to 1 of the Code of Virginia, Virginia Case No. PUC 840023, 7/30-31/84.
- Application of MCI Telecommunications of Virginia for a certificate of public convenience and necessity to provide inter-LATA, inter-exchange telecommunications service and to have rates established on competitive factors, Virginia Case No. PUC 840022, 7/27/84.

Washington Utilities and Transportation Commission:

- Washington Utilities and Transportation Commission vs. U S West Communications, Inc., Docket No. UT-941464, et al, 6/28/95.
- Northwest Payphone Association, et al. v. U S WEST Communications, Inc., Docket UT-920174, 2/2/93, 12/13/93.
- Washington Utilities and Transportation Commission, Complainant, vs. U. S. West Communications, Respondent, Docket Nos. UT-911488, UT-911490, and UT-920252, 9/28-29/92, 2/9/93.
- In the Matter of Pacific Northwest Bell D/B/A U S West Communications Petition for an Alternative Form of Regulation, Docket No. U-89-3245-P, 11-28-89.
- Washington Utilities and Transportation Commission vs. Pacific Northwest Bell Telephone Company, Docket No. U-87-1083-T, 3-7-88.
- In the Matter of the Petition of AT&T Communications of the Pacific Northwest, Inc. for Classification as a Competitive Telecommunications Company, Cause No. U-86-113, 4/6/87.
- Washington Utilities and Transportation Commission, Complainant, vs. Pacific Northwest Bell Telephone Company, Petitioner and Respondent, Consolidated Cause Nos. U-86-34, U-86-35, U-86-36, U-86-86, U-86-90, 12/14-17/86, 2/9/87.
- In the Matter of the Petition of MCI Telecommunications Corporation for Classification as a Competitive Telecommunications Company, Cause No. U-86-79, 9/2-3/86.
- Washington Utilities and Transportation Commission v. Pacific Northwest Bell Telephone Company et al., Cause No. U-85-23 et al., 4/29/86.

West Virginia Public Service Commission:

- Case Nos. 85-259-T-SC, et al., 1/27/86, 2/18/86.
- Case Nos. 85-282-T-GI and 85-022-T-P, 10/29/85.
- Case No. 83-259-T-SC, 11/1/83.

Public Service Commission, State of Wisconsin:

- Investigation of Intrastate Interexchange Access Charges and Related IntraLATA and InterLATA Compensation Matters, Docket No. 05-R-5, Part C, 2/2/87.
- Investigation of Application of MCI Telecommunications Corporation for Certificate of Public Convenience and Necessity to Offer Intrastate Toll Services (Petition for Interim InterLATA Authority), Docket No. 3258-NC-1, 10/29/84.
- In the Matter of: Proposed Tariff of Wisconsin Telephone Company for Centrex-CO Rate Stability, Docket No. 6720-TR-35, 3/15/83.

Public Service Commission, State of Wyoming

- In The Matter of the Joint Application of U S West Communications, Inc., and Range Telephone Cooperative, Inc., for Authority for U S West to Sell to Range Telephone the Following Telephone Exchanges, I.E. Gas Hills, Albin, Newcastle, Moorcroft, Thermopolis, Kaycee, Jeffrey City, Carpenter, Osage, Upton, Shoshoni, Pine Bluffs, Burns, Hulett, Worland, and Midwest, and for a Transfer of Requisite Certificate Authority, Docket Nos. 70000-TA-93-151 and 70001-TA-93-7, 9/28/93.
- In the Matter of a General Inquiry by the Public Service Commission into the Telecommunications Needs and Capabilities in Wyoming, General Order No. 67, 8/12/93.

- In the Matter of the Joint Application of U S West Communications, Inc. and Tri County Telephone Association, Inc., for Authority for U S West to Sell to Tri County the Following Telephone Exchanges, I.E., Lovell, Meeteetse, Greybull, Frannie and Basin, and for a Transfer of Requisite Certificate Authority, Docket No. 70000-TA-93-150 and Docket No. 70011-TA-93-8, 8/12/93; 9/30/93; 10/1/93.

TESTIMONY — US CONGRESS

Before the:

- House Judiciary Committee, Subcommittee on Courts, Civil Liberties, and the Administration of Justice, 10/27/83, [Economic Impacts of Repeal of the First Sale Doctrine for Audio-visual Works].
- Senate Committee on the Judiciary, Subcommittee on Patents, Copyrights and Trademarks, 10/25/83 [Home Taping of Audio and Video Works].
- Senate Committee on the Judiciary, Subcommittee on Patents, Copyrights and Trademarks, 4/29/83, [Economic Impacts of repealing the First Sale Doctrine for audio-visual Works].
- House Committee on the Judiciary, Subcommittee on Courts, Civil Liberties and the Administration of Justice, 9/22/82, Copyright Aspects of Home Audio Taping].
- Senate Committee on the Judiciary, 4/21/82, [Copyright Aspects of Home Videotaping].
- House Committee on the Judiciary, Subcommittee on Courts, Civil Liberties and the Administration of Justice, 4/13/82, [Copyright Aspects of Home Videotaping].
- Senate Committee on the Judiciary, 7/23/81, [Monopolization and competition in the Telecommunications Industry: Duties of the FCC under S.898].
- House Committee on Energy and Commerce, Subcommittee on Telecommunications, Consumer Protection, and Finance, 5/27/81, [Status of Competition and Deregulation in the Telecommunications Industry: Local Distribution].
- Senate Committee on Government Affairs, Subcommittee on Oversight of Government Management, 10/10/79, [FCC Compliance with Executive Order 12044].
- House Committee on Interstate and Foreign Commerce, Subcommittee on Communications, 6/6/79, [Communications Act of 1979].
- Senate Committee on Commerce, Science and Transportation, Subcommittee on Communications, 6/18/79, [Spectrum Management].

TESTIMONY — COURT CASES

- Clear Communications Limited v. Telecom Corporation of New Zealand Limited, et al., High Court of New Zealand, Wellington Registry, 6/24-26/92, 9/11/92.
- United States Football League, et al., v. National Football League, et al., United States District Court Southern District of New York, 84 Civ. 7484 (PKL), 6/17-19/86.
- International Telemeter Corporation v. Hamlin International Corporation, U.S. District Court - Western District of Washington, No. C76-487, 9/9-10/81.
- U.S. v. AT&T, U.S. District Court for the District of Columbia, Civil Action No. 74-1698, 6/19/81.

TESTIMONY — ARBITRATIONS

- In the Matter of An Arbitration Before the Right Honourable Sir Duncan McMullin Between Clear Communications Limited, Plaintiff, and Telecom Corporation of New

Zealand Limited, Telecom Auckland Limited, Telecom Central Limited, Telecom Wellington Limited and Telecom South Limited, Defendants, 6/24/93.

ADDITIONAL ASSIGNMENTS, NO FORMAL TESTIMONY

- Consultation with Austel on implementation of a Decision-Making Framework for reviewing new proposed tariffs for anticompetitive effects, 5/94-6/94.
- Docket UM 351 Before the Public Utility Commission of Oregon, In the Matter of the Investigation into the Cost of Providing Telecommunications Services, Participation in Workshops on costing (Phase I), 8/90-6/94; Participation in Workshops on pricing (Phase II), 7/93-10/94.
- Civil Action No. 87-59-WS, General Electric Company, Plaintiff, vs. Thomas J. Zuchowski, Defendant; Civil Action No. C-87-249-WS, General Electric Company, Plaintiff, vs. R Squared Scan Systems, Inc., Defendant; and Civil Action No. C-90-78-WS, General Electric Company, Plaintiff, vs. R Squared Scan Systems, Inc., Defendant; participation for R Squared Scan Systems, Inc., in preparation for testifying on liability of General Electric Company for antitrust abuse of copyrighted software for maintaining and repairing computer assisted tomography scanners (CAT scanners), 1987-1991.

FILINGS — State Commissions

"Economic Efficiency and Unbundling the Monopoly Bottleneck: Incompatible or Indispensable?" A Response to the Economic Arguments made by Timothy J. Tardiff, Richard D. Emmerson, and Peter W. Huber on February 8, 1994, on Behalf of Pacific Bell in Docket R.93-04-003 and Docket I.93-04-002 of the California Public Utilities Commission; March 31, 1994

FILINGS — FCC

"Accounting Separations: A Contradiction in Terms," with Michael D. Pelcovits, Appendix I to Reply Comments of Lee Enterprises, Incorporated, Before the FCC, January 21, 1986, in CC Docket No. 85-229 (Third Computer Inquiry), Attachment to the Written Testimony of Robert D. Ross, President, Call-It Co., Before the Subcommittee on Telecommunications, Consumer Protection & Finance, March 13 Hearing to Examine the Competitive Status of the Bell Operating Companies: Diversification and Its Impact upon Consumers.

FILINGS — COURT

Affidavits Before the United States District Court for the District of Columbia, Civil Action 82-0192, October, 1990; May, 1987.

EDUCATION

Ph. D. (Economics), University of Illinois at Urbana-Champaign, June 1972. Doctoral Dissertation: "The Role of the Nobility in Agricultural Change in Russia During the Reign of Catherine II".

M.A. (Economics), University of Illinois at Urbana-Champaign, June 1967.

A.B. (Economics), Swarthmore College, Swarthmore, Pennsylvania, June 1964.

AWARDS

1978-79 Harold and Margaret Sprout Award for the outstanding study on international ecological or environmental affairs.

PROFESSIONAL ASSOCIATION

American Economic Association

OTHER ACTIVITIES

1986-1988: Representative of the American Economic Association on the Executive Committee of the Consortium of Social Science Associations

1986-1988: Ex Officio Member, American Economic Association Committee on Economic Statistics

PERSONAL

BORN: February 17, 1942, in Boston, Massachusetts