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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

April 12, 1999

EX PARTE

Ms. Magalie Roman Salas
Office of the Secretary
Federal Communications Commission
The Portals, 445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: SBC Communications Inc. and Ameritech Corporation (CC Dkt. No. 98-141) and GTE Corporation and Bell Atlantic Corporation (CC Dkt. No. 98-184)

Dear Ms. Salas:

Sprint Communications Company L.P., by its attorneys, submits the enclosed paper entitled "Response to Some Criticisms of Benchmarking Analysis." This paper was prepared by Joseph Farrell and Bridger Mitchell, and responds to several recent *ex parte* presentations as well as statements made during the Commission's February 5, 1999 "Round Table on the Economics of Mergers between Large ILECs."

The paper demonstrates the fallacy of the applicants' claims that parity rules somehow obviate the need for benchmarking and that the proposed mergers affect only RBOC-to-RBOC comparisons. The analysis further reveals that, today, over two-thirds of access lines are served by ILECs facing *four or five* comparably-sized comparators. After the proposed mergers, over three quarters of these lines would be served by ILECs facing *only one* comparably-sized comparator. Finally, the paper discusses recent examples where benchmarking has proven an important regulatory tool.

We are filing the original and one copy of this letter, in accordance with the Commission's rules. Please let me know if you have any questions. I can be reached at 202-429-4787.

Sincerely,

Michael G. Jones/ARC

Michael Jones

Enclosures

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Response to Some Criticisms of Benchmarking Analysis

Joseph Farrell and Bridger M. Mitchell

April 9, 1999

SBC and Ameritech and their experts have made a number of criticisms of our benchmarking analysis.[1] In this submission we point out some serious flaws in their criticisms, and very briefly further discuss some examples of benchmarking.

First, we address the claim that benchmarking can be eliminated by announcement of suitable parity rules. This claim is wrong because parity rules need judicious regulatory enforcement (and information is needed to enforce judiciously), and because ensuring a level playing field is only part of the problem: the level of the field must also be chosen. Moreover, parity rules have a serious lacuna as applied to the possibility of independent innovation by CLECs rather than ILECs.

Second, we address the claim that one must focus only on what SBC and Ameritech term "RBOC-to-RBOC" comparisons. We show that this concept makes little sense and that the claim would imply startling conclusions if applied to access charges (one of the contexts where those parties cite it) or to other examples.

Third, we review some further evidence on benchmarking examples.

Fourth, we address the role of relative size in comparators. We calculate that, under an illustrative comparability threshold loosely suggested by the parties' representations, the proposed mergers would have an even more dramatic effect on benchmarking than the simple count of large ILECs. Today, over two-thirds of our lines are served by ILECs facing *four or five* comparably-sized comparators. After the proposed mergers, over three quarters of our lines would be served by ILECs facing *only one* comparably-sized comparator.

Fifth, we respond to some additional criticisms expressed by Professor Arrow.

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[1] "Benchmarking and the Effects of ILEC Mergers," Joseph Farrell and Bridger M. Mitchell, October 14, 1998, henceforth Farrell and Mitchell Submission. Criticisms of this submission can be found in several submissions, including: Supplemental Memorandum Regarding Benchmarking Issues, submitted by SBC Communications, Inc. and Ameritech Corporation to Magali Roman Salas, Secretary, FCC, March 25, 1999, henceforth *Ex Parte*; Reply Affidavit Concerning the Proposed SBC-Ameritech Merger, Richard Schmalensee and William Taylor, November 12, 1998, henceforth Schmalensee and Taylor Reply; Declaration of Kenneth J. Arrow, December 22, 1998, henceforth Arrow Declaration; Joint Reply Affidavit of R. J. Gilbert and Robert G. Harris on behalf of SBC Communications, November 16, 1998, henceforth Gilbert and Harris Reply.

Sixth, we discuss some issues that arose in the Economics Round Table on February 5,[2] and clarify some points that might unfortunately be obscured by SBC/Ameritech's paraphrases.

I. Parity Error

Several submissions on behalf of the merger parties have subscribed to a confusion concerning the role of parity in efficient regulation. In brief, they claim that traditional regulation, including the use of benchmarking, can be and is being replaced by parity regulation. It is worth pointing out why this is wrong.

A "parity rule" requires the ILEC to provide an input to competitors on terms no worse than it provides to itself or its own affiliate. As Schmalensee and Taylor, Arrow, and the recent SBC/Ameritech *ex parte* filing point out, such rules are often promulgated, and they may be important in developing competition in a vertically related market. But the idea that parity regulation fully substitutes for other forms of regulation is a parity (or parody?) error, for the following reasons:

1. Parity rules are often not enforced literally, instantly, and in a draconian fashion. Just think about what it would mean if they were. For instance, should the provisioning of loops to competitors be required to be *exactly* as quick and reliable as the ILEC's provisioning of loops to itself, on pain of ferocious penalties? Should this have been required within ten business days after the passage of the Act[3] (or after the order implementing the interconnection provisions)? To put it mildly, the ILECs themselves do not consistently argue as much. They argue the difficulty of the problem, the additional costs, and so on – all potentially legitimate points.

   So how can the Commission decide *how* literally, *how* rapidly, *how* vigorously to enforce a parity rule? It needs to balance costs and benefits, decide what is "reasonable," etc. To do this requires just the kind of information that is generally difficult to obtain and that benchmarking, among other regulatory tools, may help the Commission to obtain. In other words, *benchmarking may well be required in implementing a parity rule* – the latter does not obviate the former.

2. A parity rule attempts to protect against extension of a monopoly position from an input market into a broader market. In itself, it does nothing to protect against simple exploitation of the monopoly position in the input market.

   For example, take access charges. A parity rule says that GTE must supply access services to Sprint and MCI on the same terms as it supplies them to itself. This offers some protection (how much, is disputed) against GTE leveraging an access monopoly

[2] Round Table on the Economics of Mergers Between Large ILECs, Held on February 5, 1999, CC Docket 98-141, Transcript of Live Tape, February 8, 1999. Henceforth Round Table transcript.

[3] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56. Henceforth the Act.

into a long-distance monopoly. But does the access parity rule make it unnecessary otherwise to regulate GTE's access prices? Clearly not. The level of access charges, as well as the parity or imparity with which they are supplied to long-distance competitors, matters a lot. Even when fully implemented (see point 1), parity does nothing about that level. Parity tries to ensure a level playing field, but says nothing about whether it is a level plateau or a level swamp.[4]

In the presence of overwhelming market power in access (absent which, even a parity rule would be unnecessary), some other form of regulation is needed to control that level. How can that other regulation be efficiently managed? All the usual problems of regulation are liable to arise. Benchmarking may help. Parity thus has not substituted for benchmarking.

3. Finally, we note a defect of parity regulation, lest we inadvertently leave the impression that parity solves everything.[5] Parity rules do not help a competitor who wants to out-innovate the incumbent, if innovation requires a new form of access. The incumbent can slow-roll the innovator, declining to provide the new kind of input, until the incumbent has a similar or leapfrogging innovation available. (For example, consider the provision of properly conditioned loops to would-be CLEC providers of xDSL service, by an ILEC who has no DSL marketing plans.) Until then, the incumbent has no need for the new input, so parity provides no constraint. Alert regulators may conceivably prevent this kind of behavior, but surely not through parity rules.

For example, consider the Memorandum Opinion and Order in the Expanded Interconnection Proceeding[6] and the more recent Advanced Services Proceeding.[7] In the Expanded Interconnection Order, the Commission ruled that for virtually collocated equipment "LECs will be required to install, maintain, and repair this equipment, at a minimum, under the same time intervals and with the same failure rates that apply to comparable LEC equipment not dedicated to interconnectors."[8] The Commission

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[4] Another way to think of this is that the level playing field, if fully enforced (which is very difficult), even if it may perhaps be "fair" for competitors, tells us nothing about protection of consumers from exploitation of the bottleneck monopoly. Merely ensuring that there is parity "measured against mutually [to the firms] acceptable performance standards," (*Ex Parte*, p. 13) puts the firms in charge of consumer protection, and not in a way that makes them compete on that dimension.

[5] Points 1 and 2 above are not in themselves defects of parity regulation, merely recognitions that parity regulation inherently cannot fully substitute for other forms.

[6] In the Matter of Expanded Interconnection with Local Telephone Company Facilities, CC Docket No. 91-141, Memorandum Opinion and Order. Adopted: July 14, 1994; Released: July 25, 1994. Henceforth Expanded Interconnection Order.

[7] In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147, Memorandum Opinion and Order, and Notice of Proposed Rulemaking. Adopted: August 6, 1998. Released: August 7, 1998. Henceforth Advanced Services Order MO&O. First Report and Order and Further Notice of Proposed Rulemaking. Adopted: March 18, 1999. Released: March 31, 1999. Henceforth Advanced Services Order.

[8] Expanded Interconnection Order, para 44.

declined " ... to require the LECs to install, maintain, and repair interconnectors' virtual collocation equipment to meet the interconnectors' time intervals ... such a requirement would be difficult or impossible to enforce, because it could require LECs to maintain and repair their competitors' equipment faster and more effectively than the LECs maintain and repair their own."[9]

The more recent Advanced Services MO&O reiterated the role of parity. "... LECs are also required to provide competing carriers with nondiscriminatory access to the operations support systems (OSS) functions for pre-ordering, ordering and provisioning loops."[10] But, unlike the Expanded Interconnection Order, the Advanced Services Order requires more: " ... [W]e now conclude that the deployment by any incumbent LEC of a collocation arrangement gives rise to a rebuttable presumption in favor of a competitive LEC seeking collocation in any incumbent LEC premises that such an arrangement is technically feasible ... We believe this 'best practices' approach will promote competition."[11]

The Advanced Services Order contains numerous examples of this "best practices" approach.[12] With this Order, the Commission recognizes that pronouncing a parity rule is not sufficient. ILECs may be required to adopt best practices adopted by comparable ILECs.

The bottom line is that, while parity rules can be valuable, they are not ideal even on their own terms, and they do not effectively substitute for other forms of regulation. Parity rules are likely to require other regulation to set the level of the level playing field *and* to set the vigor of parity enforcement. It is therefore quite incorrect to assume that increasing use of parity rules over time dramatically reduces the need for relatively efficient techniques of regulation.

II. (R)BOC Confusion

ILEC comparisons can be made at various levels, including (1) among operating companies held by the same holding company, (2) among operating companies held by different holding companies, or (3) among holding companies. In their recent *ex parte* filing, SBC/Ameritech appear to dismiss the first two kinds of comparison on the ground that they are "not RBOC-RBOC comparisons." This is a fallacy.

Recall that the basic point of benchmarking is to discipline a choice by a monopolist (or a firm that does not face adequate product-market competition) by adducing evidence from outside concerning what is feasible, etc. For reasons that are fairly obvious and that we

[9] Expanded Interconnection Order, para 62.

[10] Advanced Services Order MO&O, para 56 (note not included).

[11] Advanced Services Order, para 45.

[12] Several examples from the Advanced Services Order are described in Section III. D, below.

described in our original paper, economic logic predicts that, other things being equal, less discipline can be exerted in this way by comparing across commonly-owned or jointly-controlled units of observation. This basic principle applies no matter what the geographic or jurisdictional unit of comparison. Application of this simple logic enables us to clear up the confusion sown by SBC/Ameritech's over-reliance on forms of words.

Occasionally, it might be possible to discipline what (say) Michigan Bell does at one central office by pointing to what it does at another. However, this is likely to be a relatively weak tool, because Michigan Bell can present a united front across its central offices if it is determined to persuade regulators that some form of accommodation or product offering at central offices is infeasible or prohibitively costly.

More often, it is possible to discipline what one operating company does by pointing to what another operating company does. This is likely to be most useful if the operating companies are independent of one another. However, because (at the RBOC's sufferance) even commonly owned operating companies have some degree of operating autonomy, a comparison of operating companies can be useful even when the two operating companies are commonly owned (e.g., parts of the same RBOC). Although operating company practices are likely to be "shaded" in the direction of partners' interests, some variation and some disciplining effect may – and sometimes does – remain. SBC/Ameritech, Arrow, and other filings give examples.

Such intra-RBOC competition-through-comparison is inevitably limited, however, because of the economic incentive to shade practices towards partners' interests. A holding company will permit such internal variety only to the extent that it believes doing so will enhance its profits. In particular, if an RBOC feels that presenting a united front among its operating companies will significantly boost its profits, e.g., by retarding competition or by enhancing its regulatory information rents, one would expect this autonomy to be overridden.

If each RBOC implements a common practice in its various BOCs, then such intra-RBOC, BOC-to-BOC comparisons become vacuous. In this case, also, there is a confusing verbal difference, but no substantive difference, between BOC-to-BOC comparisons *across* two such RBOCs on the one hand, and RBOC-to-RBOC comparisons on the other.

More generally, a comparison between two BOCs held by separate RBOCs has two advantages. It can draw on whatever intra-RBOC variation is allowed to survive within each RBOC. And it is not stifled by the incentives of either BOC (or its RBOC owner) to shade practices in the direction of the other's interests. The latter advantage is lost if the two BOCs become commonly owned – in other words, if the RBOCs merge. This is the loss due to merger. The fact that the comparison can be called BOC-to-BOC while the merger is termed RBOC-with-RBOC does not alter that loss.

It is simply fallacious to assume that mergers among RBOCs have an effect only on comparisons that are verbally described as "RBOC-to-RBOC." On such logic, Staples and Office Depot could have claimed that their proposed merger would have no effect on competition because consumer shopping comparisons are "store-to-store" and not "chain-to-chain." GM and Ford might claim that they could merge with no loss of competition because consumer shopping is "dealer-to-dealer" and/or "model-to-model" and not "firm-to-firm." In short, it would be absurd.

Closer to home, one can vividly see the absurdity by considering the access charge example. SBC/Ameritech, consistent with their verbal focus on whether benchmarking is "RBOC-to-RBOC," argue that "[d]ata for each operating company were combined and averaged to arrive at the final [X-factor], and therefore the result would not have been affected had there been one fewer separate RBOC holding company owner."[13] By that logic, nothing would be different had *all* operating companies been owned by one holding company, Bell America. But this would take us right back to the full-blown ratchet effect: every productivity improvement that Bell America made would go one-for-one into the X-factor for Bell America.[14]

Similarly, SBC wrongly suggests that two benchmarking comparisons used by the DOJ would be unaffected by potential mergers because neither "is an RBOC-to-RBOC comparison."[15] DOJ's analysis compared, first, the number of unbundled local loops provisioned by Ameritech in Michigan with the number of unbundled local loops provisioned by BellSouth in Louisiana, and, second, the test methodology for OSS used by Bell Atlantic-New York with BellSouth's test methodology. In each case, the comparisons are of companies operating in different regions. If the two operating companies were to become commonly owned through a merger, the value of the comparison would be weakened due to the incentives for the merged holding company to establish common policy across its operating companies, or to shade their practices in the direction of their partners' interests. That, not verbal characterizations of whether the comparison is at the BOC or RBOC level, is the point.

III. Benchmarking Examples

Here we briefly respond to SBC/Ameritech's claim that many of the examples given in our original filing were not in fact benchmarking, and also describe some further examples.

As an initial matter, we observe that some degree of judgment is almost inevitably required in trying to determine from the outside whether an ILEC-ILEC comparison is causally pivotal in a particular decision. As SBC and Ameritech themselves note, "the Commission generally considers all available data and analyses in reaching its

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[13] *Ex Parte*, p. 12.

[14] *Ex Parte*, footnote 44, claims that "Dr. Farrell has further retreated from his argument, effectively conceding that the disincentive is masked because 'nobody can really know for sure how the X factor will be adjusted and when[.]'" We address this important misinterpretation in subsection III. C below.

[15] *Ex Parte*, footnote 49.

decisions"[16] and reports broadly on these considerations. It is relatively unusual that an important matter will be decided based entirely on one particular datum. Thus, it is not simple to diagnose from the outside whether the regulatory analysis turned on one particular factor. This, however, does not mean that the loss of an information source is unimportant.

A. Local Number Portability

SBC and Ameritech argue that the Commission's decision on the method for implementing local number portability did not rely on Ameritech's adoption of LRN. In view of the background and analysis, we find that a surprising position.
The Commission found that " ... two methods have emerged as the primary ones advocated by parties in this proceeding: Location Routing Number (LRN) and Query on Release (QOR)."[17] Six of the RBOCs and GTE advocated the QOR method.[18] Although several states had selected LRN for long-term implementation,[19] only Ameritech among the major ILECs advocated the LRN method.[20]

The Commission evaluated which number portability method or methods to approve from two perspectives: (1) satisfaction of performance criteria and (2) public interest considerations.

In terms of the first perspective -- performance criteria -- the Commission concluded that QOR would be incompatible with the 1996 Act, which requires that consumers be able to retain their numbers " ... without impairment of quality, reliability, or convenience when switching from one telecommunications carrier to another."[21] The Commission found that:

> any long-term number portability method must not result in any degradation of service quality or network reliability when customers switch carriers. We further conclude, based on the record in this proceeding, that [this criterion] prohibits the use of QOR as a long-term number portability method.[22]

In reaching this conclusion, and thus effectively adopting the other contending long-term number portability method, LRN, the Commission made use of technical information

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[16] *Ex Parte*, p. 10.

[17] In the Matter of Telephone Number Portability, First Memorandum Opinion and Order on Reconsideration, CC Docket 95-116. Adopted: March 6, 1997. Released: March 11, 1997. Para 6. Henceforth Telephone Number Portability Order.

[18] Telephone Number Portability Order, para 14 and footnotes 33 and 34.

[19] Telephone Number Portability Order, para 8.

[20] Telephone Number Portability Order, footnote 120.

[21] United States Code Service, 1998, Title 47, Chapter 5, Section 153, Definition (30).

[22] Telephone Number Portability Order, para 20.

about alternative methods of implementing number portability.[23] In this phase, the Commission did not explicitly rely on comparisons of ILEC plans and experience. But the Commission would hardly have banned QOR had it not been confident that LRN could reasonably be implemented. In achieving such confidence, it was surely relevant that the record established that Ameritech had decided that implementation of LRN was practical, and that smaller carriers in Illinois were in agreement to use the LRN method.[24] This information, the knowledge that Ameritech's state regulator in Illinois had, through an industry workshop, resolved numerous operational issues with respect to implementing LRN,[25] and the agreement of Sprint, GTE, MCIMetro, MFS and TCG to use the LRN method in Illinois provided a counterweight to the claims of the ILECs advocating QOR.

In assessing the two number portability methods from the second perspective -- public interest considerations -- the Commission weighed whether QOR rather than LRN would result in significant cost savings as well as which method would more easily meet the Commission's implementation schedule.[26]

The Commission faced conflicting estimates of the short-term costs of implementing QOR. Six RBOCs and GTE estimated that deployment of QOR would collectively save them $624 million to $649 million annually.[27] In contrast, MCI estimated that for three carriers for which it had sufficient information to provide estimates, the savings would be just 20 percent to 23 percent of the respective LEC's estimate, and for a fourth carrier MCI estimated that QOR would cost more than LRN.

The Commission found itself in the familiar regulatory position of assessing conflicting claims from incumbent ILECs and competitors about relative costs:

> Proponents of QOR contend that the use of the QOR enhancement to LRN would result in real cost savings, not just a short-term deferral of expenses, because the number of ported calls in some areas will never reach the level where it is more cost effective to disable QOR and complete the build-out necessary to support LRN. We conclude, however, that the statutory scheme that Congress has put in place should, over time, result in vigorous facilities-based competition in most areas, and therefore LRN will be the most economical long-term solution. Thus, deploying QOR would most likely result in short-term cost savings, not overall cost savings. In fact, at least one incumbent LEC, Ameritech, has already decided that it is

[23] Telephone Number Portability Order, paras 21-30, and Appendix C.

[24] Telephone Number Portability Order, footnote 120.

[25] Telephone Number Portability Order, para 9.

[26] Telephone Number Portability Order, para 31.

[27] Telephone Number Portability Order, footnote 124.

> beneficial to deploy LRN from the outset, rather than converting from QOR to LRN at some later date.[28]

Presumably the Commission would not have mentioned this latter fact if it were irrelevant to its decision. Presumably also the phrase "at least one incumbent LEC, Ameritech" should be read as indicating that the adoption by other, smaller ILECs was less central in the Commission's decision process.

SBC argues that "[t]he decision applied to <u>all</u> LECs (including CLECs), not just RBOCs, so that many hundreds of companies could have served as potential 'benchmarks' if needed."[29] But the "many hundreds" of other LECs had overwhelmingly *not* adopted LRN. Evidently the Commission found it salient that one RBOC had adopted the LRN method. While a small number of other LECs had also done so,[30] the Commission's phrasing strongly suggests (a) that a comparative, benchmarking-type argument was involved, and (b) that adoption by the smaller ILECs in Illinois played a supporting footnote part, not a lead role.

We invite the Commission and its staff to consider, in the light of their experience and of this history, how it might have reached a decision on a number portability method had the Commission instead been confronted with a unified front in which no major ILEC had so much as begun to address operational issues in implementing LRN and all major ILECs supported the QOR method.

B. Shared Transport

The SBC *Ex Parte* then suggests that benchmarking played no role in the Commission's decision on shared transport.[31] We find that view equally surprising.

In its initial Local Competition Order in August 1996 the Commission held that it is technically feasible to provide access to interoffice transport facilities between end offices and between end offices and tandem switches.[32] One year later in its Local Competition Third Order the Commission found that no new evidence had been presented to convince the Commission otherwise, and explicitly noted that:

> ... Ameritech is the only party to contend that it is not currently able to measure and bill for shared transport. In contrast, Bell Atlantic, NYNEX,

[28] Telephone Number Portability Order, para 38 (note not included).

[29] *Ex Parte*, p. 6.

[30] Telephone Number Portability Order, footnote 120.

[31] *Ex Parte*, p. 8.

[32] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, First Report and Order, CC Docket 96-98. Adopted: August 1, 1996. Released: August 8, 1996. Paras. 442 and 443.

> and PacTel have stated that they offer shared transport in conjunction with unbundled local switching.[33]

The same Local Competition Third Order provides a further example of the Commission comparing the practices of major ILECs to reach a decision about competitors' access to ILEC network elements. The Commission rejected "Ameritech's contention that purchasing access to the switch as a network element does not entitle a carrier to use the routing table located in that switch."[34] The Commission noted that:

> ... Ameritech is the only incumbent LEC that has argued in this record that the routing table is not included in the unbundled local switching element. Other incumbent LECs have stated that they offer shared transport in conjunction with unbundled local switching ... This suggests that other incumbent LECs recognize that the routing table is a feature, function, or capability of the switch.[35]

The Commission thus used information that several ILECs were offering switched transport and access to routing tables as a benchmark by which to reject Ameritech's claims regarding the infeasibility of providing switched transport and the severability of routing from the function of the local switch.

C. Access Charge Productivity "X factor"

In our previous submission we reviewed the disincentive created by the "ratchet effect" that can occur if the X-factor in price cap regulation is updated periodically. When the X-factor is based on the average productivity increase of several ILECs that standard reduces, but does not eliminate, the incentive problem. We demonstrated that a merger of two price-cap ILECs would increase the adverse incentive effect. The disincentive effect will exist even when the set of firms used to calculate the average includes ILECs in addition to the RBOCs.

SBC asserts that Farrell has "retreated from" this argument and "conced[ed] that the disincentive effect is masked because [quoting Farrell] 'nobody can really know for sure how the X-factor will be adjusted and when'."[36] And, SBC's economic witnesses earlier argued that:

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[33] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Third Order on Reconsideration and Further Notice of Proposed Rulemaking, CC Docket 96-98. Adopted: August 18, 1997. Released: August 18, 1997. Footnote 77. Henceforth Local Competition Third Order.

[34] Local Competition Third Order, para 45 (note not included).

[35] Local Competition Third Order, para 46 (note not included). Bell Atlantic, NYNEX, and PacTel are the other incumbent LECs to which reference is made. (Local Competition Third Order, footnote 77.)

[36] *Ex Parte*, footnote 44.

> ... [I]t is unlikely that any ILEC anticipates that a productivity improvement it makes today will be systematically taken away in a future price cap revision. Each time X has been revised, the method of calculating X has been revised, and the process is too unpredictable to optimize against.[37]

This represents not only an economically old-fashioned view of optimization under uncertainty, but, more importantly, a very rosy view of what will happen absent regulatory commitment and certainty. It is not necessary that the process for determining the X-factor be fully specified in advance for an ILEC to rationally anticipate that a fraction of the productivity improvements it achieves will be incorporated into a revised standard. Indeed, one might well argue that the less the Commission is committed to a particular method, the greater might be the *ex post* temptation to re-initialize the price cap level (thus improving consumer welfare and economic efficiency *ex post*). If anything, a future Commission, keen to reduce access charges and not bound by any highly predictable commitment concerning the adjustment of X, might be the prospect that would most deter an ILEC from investing in increased productivity.

Implicitly recognizing this very point, SBC also (in apparent tension with their first argument) points out that the Commission has recognized the adverse incentive of the ratchet effect. [38] The Commission stated that:

> ... [W]e plan ... on ensuring, to the extent possible, that we do not substantially undermine each price cap incumbent LEC's incentives to improve its efficiency. For instance, we would plan to make adjustments based on demonstrated industry-wide performance ... rather than adjustments that are tied to a particular price cap incumbent LEC's interstate earnings.[39]

SBC then, surreally, seems to believe that this announcement of average-practice benchmarking implies that it doesn't matter much whether mergers reduce the efficacy of average-practice benchmarking.

D. Recent Examples

Since our original submission, benchmarking has continued to be used by the Commission and by industry participants, including RBOCs themselves.

1. In its recent Advanced Services Order, the Commission adopts a best-practice benchmarking approach to determining the technical feasibility of a collocation arrangement:

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[37] Schmalensee and Taylor Reply, para 76.

[38] *Ex Parte*, p. 10.

[39] In the Matter of Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, Fourth Report and Order. Adopted: May 7, 1997. Released: May 21, 1997. Para 167.

> … [W]e now conclude that the deployment by any incumbent LEC of a collocation arrangement gives rise to a rebuttable presumption in favor of a competitive LEC seeking collocation in any incumbent LEC premises that such an arrangement is technically feasible … We believe this 'best practices' approach will promote competition.[40]

Elsewhere in the Advanced Services Order the Commission repeatedly cites the practices of one or more RBOCs or GTE in giving reasons for the establishment of specific rules. For example:

- In clarifying existing rules that ILECs must permit the collocation of advanced services equipment that is used for interconnection or access to UNEs when it also contains switching functionality, the Commission noted "SBC notes that it currently permits collocation of remote switching modules in its central offices."[41]
- In requiring ILECs to make cageless collocation arrangements available to requesting carriers, the Commission noted "U S WEST makes cageless collocation arrangements available to competitors."[42]
- In requiring ILECs to make collocation space available in single-bay increments, the Commission noted " … SBC is willing to provide competitors with collocation space of less than 100 square feet … GTE provides collocation space in minimum increments of 25 square feet."[43]
- In requiring that Space Preparation Cost Allocation be charged on a pro-rated basis, the Commission stated "One approach … adopted by Bell Atlantic… was that the competing provider would be responsible only for its share of the cost of conditioning the collocation space … Bell Atlantic committed to allowing smaller competing providers to pay on an installment basis."[44]
- The Commission found that " … incumbent LECs must remove obsolete unused equipment from their premises upon reasonable request by a competitor or upon the order of a state commission … The record reflects that some incumbent LECs already remove obsolete equipment to increase collocation space"[45] and specifically noted that "U S WEST often removes 'obsolete' equipment to increase available space in central offices … Ameritech already removes equipment that is not used and useful from central offices."[46]

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[40] Advanced Services Order, para 45.

[41] Advanced Services Order, para 29 and footnote 61.

[42] Advanced Services Order, para 42 and footnote 100.

[43] Advanced Services Order, para 43 and footnote 105.

[44] Advanced Services Order, paras 50-51.

[45] Advanced Services Order, para 60.

[46] Advanced Services Order, footnote 149.

- In considering what would constitute reasonable provisioning intervals, the Commission observed "Both GTE and Ameritech state that they respond to physical collocation requests within ten days by advising the requesting carrier whether space is available or not. We view ten days as a reasonable time period ..."[47]

2. In an *ex parte* presentation to the Commission, SBC recently compared the performance of Pacific Bell with Ameritech, Bell Atlantic, BellSouth, SWB, and U S WEST over 1996, 1997, and 1998.[48] The metrics of comparison included: installation orders, installation commitments met, installation average interval, downtime of total switches, initial repair trouble reports, out-of-service interval, repeat trouble reports, and state complaints.

3. NARUC solicited examples of ideas that either industry or regulators have used in implementing the Act. NARUC and the NRRI issued an extensive compilation of submitted "best practices" for dispute resolution, customer service, advanced telecommunications services, universal service, market entry and competition issues, numbering issues, collocation, and OSS and other issues.[49]

IV. What if Size Matters?

SBC's comments emphasized that there are numerous other comparators in addition to the major ILECs. For some purposes, it is indeed the case that smaller ILECs and CLECs provide useful information for benchmarking the performance of a major ILEC. For other purposes, however, the size of the comparators may well be important.

Indeed, the parties base their case for the merger in part on the claim that even today's SBC is a different kind of creature than the proposed big SBC. And Robert Crandall argued at the Round Table that "it is hard to consider GTE as an appropriate benchmark for Bell Atlantic or some of the other RBOCs. They are not involved in the 271 process. Their entire structure, the dispersed operating systems around the country, are really very different from the RBOCs, and it is hard to argue you are losing a very important benchmark there."[50] Presumably if these arguments are correct, then as Michael Katz asked "Well, how is some little CLEC that is going to be a hundredth the size and in a very different market position and certainly not under the strictures of 271 then going to be a good benchmark?"[51]

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[47] Advanced Services Order, para 55.

[48] Notice of *Ex Parte* Presentation, SBC Communications, Inc., February 23, 1999.

[49] "A Compilation of 'Best Practices' to Implement the Telecommunications Act of 1996," NARUC Winter Meetings, February 1999.

[50] Round Table transcript, pp. 52-53.

[51] Round Table transcript, pp. 63-64.

While there is no clear criterion for how close in size ILECs must be to be useful comparators (indeed, it will clearly differ from problem to problem), large differences in size may well make benchmarking more difficult and argue for it to be applied more softly. The parties' own assertions regarding the dramatic effects of bulking-up on efficiency and aggressiveness suggest that we consider the implications if indeed a merged SBC/Ameritech is very different from today's SBC. This would suggest that, in the relevant range, a factor of two in size would make a big relevant difference. As we show next, if that were true, the mergers currently under review would result in a loss of "similar" comparators much more dramatic than the "eight to six to four" that one might get by counting "large" ILECs.[52]

Table 1 below gives estimates of the proportions of U.S. customer lines controlled by ten large holding companies, including the Regional Bell Operating Companies, GTE, and the Southern New England Telephone Company, as of 1997. Table 2 shows what the shares would be after the proposed mergers. From these tables, we note the following:

- Following the BA/NYNEX and SBC/Pactel/SNET mergers (using 1997 numbers), Bell Atlantic/NYNEX, SBC/Pactel/SNET, BellSouth, GTE, and Ameritech all have percentages of lines within the range from 10.7 percent to 19.9 percent. Thus, each of them faces at least four (in three cases, five) comparators that differ in size by no more than a factor of two. With this illustrative definition of "comparably-sized" companies, close to three quarters of the nation's lines currently are served by ILECs that have *four or five* comparably-sized comparators.

- If the Bell Atlantic-GTE and SBC-Ameritech mergers were to be approved, the merged entities would have shares (using the same 1997 numbers) of 31.1 percent and 29.2 percent, respectively. Each would be well over twice the size of BellSouth, and more than three times the size of any other remaining comparator. Moreover, BellSouth would now have only U S WEST within the 2-to-1 threshold, and U S WEST would have only BellSouth. Thus, for purposes for which a more than 2-to-1 size differential seriously reduces the value of ILEC-ILEC comparisons, more than 80 percent of the nation's access lines would be served by ILECs having only *one* fully effective comparator.

[52] That is, going from the 1996 level of seven RBOCs plus GTE, to today's structure with five RBOCs plus GTE, to the four survivors from that set after the proposed mergers.

Table 1
Share of Customer Lines for Selected LECs (%)
Post SBC/PacTel/SNET & Bell Atlantic/NYNEX Mergers

Company	1997
SBC/PACTEL/SNET	18.5
AMERITECH	10.7
BELL ATLANTIC/NYNEX	19.9
GTE	11.2
BELLSOUTH	12.0
US WEST	8.3
SPRINT	3.8
ALLTEL	0.9
FRONTIER	0.5
CITIZENS UTILITIES	0.5
CLECs	1.6
OTHER	12.0
Total	100.0

Sources:
Federal Communications Commission, *1997 Statistics of Communications Common Carriers*, Table 1.1.
Federal Communications Commission, *Trends in Telephone Service,* January 1999, Table 9.1.
Federal Communications Commission, *1997 Statistics of Communications Common Carriers*, Table 2.5.
Southern New England Telephone Company, SEC Form 10-K for the Fiscal Year Ended December 31, 1997.

Table 2
Share of Customer Lines for Selected LECs (%)
Post SBC/PacTel/SNET/Ameritech & Bell Atlantic/NYNEX/GTE Mergers

Company	1997
SBC/PACTEL/SNET/AMERITECH	29.2
BELL ATLANTIC/NYNEX/GTE	31.1
BELLSOUTH	12.0
US WEST	8.3
SPRINT	3.8
ALLTEL	0.9
FRONTIER	0.5
CITIZENS UTILITIES	0.5
CLECs	1.6
OTHER	12.0
Total	100.0

Sources:
Federal Communications Commission, *1997 Statistics of Communications Common Carriers*, Table 1.1.
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V. Some Additional Issues Raised by Professor Arrow

Professor Kenneth Arrow has criticized our analysis on a number of grounds, suggesting that benchmarking among large ILECs is no longer (if it ever was) very important.[53] Specifically, as we read his declaration, Professor Arrow makes seven major claims:

1. That there are many more benchmarks, and much more information, available to regulators than we suggest: (a) because there are many relatively small ILECs, and they count; and (b) because each large ILEC has signed many interconnection agreements.

2. That ILEC-versus-ILEC benchmarking is no longer important, and that, instead, the key question is one of parity -- whether an ILEC treats its competitors as well as itself in the supply of an input.

3. That major IXCs, and notably Sprint because it is also an ILEC, know how to monitor ILEC behavior, so that ILEC-ILEC benchmarking is not much needed.

4. That much information is collected and used at the operating-company or study-area level, not at the holding-company level, and mergers of holding companies do not affect the amount of such information that is available.

5. That observations of the practices of ILECs are correlated, and that this means that additional observations provide less added information than one might think, and thus that our illustrative calculations of the loss of information may be biased upwards.

6. That in many cases a merger will have no effect on best-practice benchmarking.

7. Finally, that as a general matter, regulators can alter their methods of regulating ILECs to take account of any reduction in the information available to them; so that, by assuming that regulators follow a fixed rule, our analysis overestimates the loss from reduced information

We address these claims in turn.

[53] Arrow Declaration. Some of the same points are also raised in the Schmalensee and Taylor Reply, or in the Gilbert and Harris Reply, but we focus here on Professor Arrow's comments.

Claim 1(a): A number of smaller ILECs, and CLECs, provide additional information.

This is undoubtedly true for some purposes. We can only suggest the Commission and its staff consider whether they believe they could do as good a job protecting consumers if the primary comparators for Bell America were Sprint and Frontier. We suspect the answer is no. If so, the Commission must decide where to draw the line: on this side of the pending mergers, or on the far side? The effect of the proposed mergers on one crude illustrative measure of the availability of commensurate-sized comparators is discussed above.

Claim 1(b): Each ILEC has many interconnection agreements (with various CLECs, and in various states) that provide new information.

This claim apparently assumes that the ability of a large ILEC (say, Bell Atlantic) to deny efficient interconnection to one rival carrier is well disciplined by Bell Atlantic's own dealings with another rival carrier. But this flies in the face of basic economics. Even textbook monopolists generally face multiple customers, and it is well established that most-favored nation rules do not solve the monopoly problem. The essence of benchmarking (as of competition) is using choices made by others to discipline Bell Atlantic, not linking one set of Bell Atlantic terms and conditions to another.

Claim 2: Parity benchmarking, not ILEC-ILEC benchmarking, is the important comparison.

This claim is discussed in section I above.

Claim 3: IXCs and out-of-region ILECs can monitor ILEC behavior.

IXCs and out-of-region ILECs (including Sprint in both those roles) may be more knowledgeable negotiators for interconnection than are some other CLEC entrants. However, there is no reason to think that the only problem in achieving efficient negotiated interconnection arrangements is ignorant CLECs. Rather, CLECs inevitably face difficulty in persuading regulators to adopt enforcement provisions that the CLEC may know would be reasonable but that the ILEC challenges as unreasonable.[54]

Of course, Sprint could point to its in-region behavior *qua* ILEC and use this experience to help inform the regulator about what should be expected from other ILECs. For that matter, the regulator could use this information *sua sponte*. But this is precisely the kind of benchmarking we discuss – the use of information from a different ILEC. It is not a substitute for it.

[54] Of course, CLECs have incentives to request unreasonable provisions as well, for the same reason – namely, that the regulator has trouble distinguishing reasonable from unreasonable proposals because it has limited information independent of the ILEC. Indeed, this is why "always do what CLECs ask" would not be a good rule for regulators to follow.

Claim 4: Mergers of holding companies do not affect the flow of operating company level data.

Much information is indeed reported at the study-area level. In such cases, in formal terms a holding-company merger does not change the quantity of information flowing. But it is important to distinguish the *formal* flow of information -- what pieces of paper are filed and what questions answered -- from the flow of truly *useful* information. As we argued at length in our previous submission, post-merger there is an incentive for sister operating companies to harmonize their practices and to shade their choices in the direction of their sisters' interests. This very often will lead to a diminished flow of useful information, in two ways. First, as we showed, harmonization of practices generically, though not always, would cause a loss of useful information even if the harmonized practice were an unbiased average of previous practices. Second, and more importantly, the incentive to internalize competitive or comparative cross-effects leads to a loss of *useful* information even if the *formal* information flow remains the same. Ignoring the incentive effects is like saying that there are just as many firms setting prices after the formation of a cartel as there were before.

Claim 5: Correlated observations of ILEC behavior make the loss of information from merger less important.

Observations from different ILECs are, no doubt, correlated, as we ourselves stressed in our original submission. But there are two very different sources of correlation, with two very different implications. Recall that, in our expository model, each of n ILECs (prior to a merger) reports a statistic x_i, where $i = 1, \ldots, n$. Each x_i is drawn from a distribution with parameter b, and thus each observation of x_i contains information about b. The Commission wishes to learn about b, perhaps in order to set a performance standard. From a Bayesian viewpoint, the unknown parameter b is itself a source of correlation among the observations. But this correlation is not a statistical artifact or something that makes incremental observations less useful. Rather, this correlation is precisely the point: one wants to estimate the common component.[55] Industry-wide factors such as technological progress in equipment, trends in household Internet use, and so on may well have similar effects on different ILECs' productivity performance (for instance), but surely these effects are part of b: that is, they affect what could be expected from an efficient firm. The fact that certain variables systematically affect the parameter of interest does not in any way diminish the value of incremental observations in estimating that parameter.

A second kind of correlation is correlation among the *errors* in observation of b. It is much less clear whether this kind of correlation exists or is important. If it does exist, then from a purely statistical point of view -- that is, ignoring all incentive effects -- this

[55] This is why we ourselves stressed the existence of such "correlation," the Farrell and Mitchell Submission, p. 10; it is mistaken to describe it as something we "acknowledge ... [but] do not incorporate," see Arrow Declaration, para 28.

kind of correlation does indeed reduce (not eliminate) the incremental value of additional observations beyond the first few. But incentive effects do matter.

Claim 6: A merger often does not affect best-practice benchmarking.

Professor Arrow correctly notes that a merger affects best-practice benchmarking if one of the merging firms has or would have the best practice, no non-merging firm also has it, and the merging firms jointly prefer not to offer this best practice.[56] These are exactly the issues we explored in our declaration. We showed that, with reasonable assumptions, mergers among large ILECs are likely substantially to affect best-practice benchmarking, even though there are plenty of cases where any particular merger does not affect a particular best-practice comparison.

Claim 7: Regulators can re-optimize in response to merger-induced changes such as losses in the amount of comparative information available.

Regulators can indeed modify their procedures, and doing so mitigates the loss from any adverse change, including such a reduction in information. But it would be quite wrong to infer (as one might from one reading of Professor Arrow's paragraph 35) that re-optimization in response to an information loss could easily make performance better than before. After all, if regulation could be more efficient with less information, regulators could presumably just throw out information without waiting for mergers to restrict information flow for them.[57]

It is perhaps also telling that some of Professor Arrow's illustrative examples of how regulators might re-optimize are at best counter-intuitive. At paragraph 34, he suggests

[56] More detailed comments on Professor Arrow's formulation are in order. First, "moving away from" an established best practice is not the main point: the question is whether a new best practice gets offered in the first place. Second, the relevant question about non-merger parties is whether they implement the best practice, not whether they have it available. Third, the incentive issue is, as it happens, particularly clear in the example (section 271 entry) that Professor Arrow chooses to highlight. Bell Atlantic has an incentive to satisfy the section 271 entry conditions. GTE does not. Post-merger, Bell Atlantic's incentive to satisfy the entry conditions will be balanced not only against its own incentive to slow CLEC entry but also against GTE's. Economic logic predicts, therefore, that wherever marginal adjustments can be made and the effect on speed or likelihood of section 271 entry is continuous rather than dramatic, Bell Atlantic will have an increased incentive to shade towards the exclusionary rather than towards compliance with section 271.

[57] Formally, a logically sufficient condition for a merger-induced loss in information to make regulation less efficient is that the optimal regulatory rule post-merger would itself perform better (or no worse) with more information than with less. In other words, if (as is generically true) the re-optimized rule itself could use more information, then the re-optimization cannot overcome the loss of information. To see this, write I for the pre-merger available information, J for the less informative post-merger information, R for the pre-merger rule, and S for the post-merger rule. The regulator maximizes a performance function V, taking information as given; thus, $V(R, I) \geq V(S, I)$ and $V(S, J) \geq V(R, J)$. We want to compare $V(R, I)$ and $V(S, J)$. If $V(S, I) \geq V(S, J)$ – that is, if rule S performs at least as well with more information as it does with less – then $V(R, I) \geq V(S, I) \geq V(S, J)$. If either of these inequalities is strict, then there is a strict loss despite the mitigation from re-optimization.

that a less informed regulator might respond by making *less* [sic] allowance for uncertainty. The opposite response seems more likely to be consistent with rational regulation. Similarly, at paragraph 32, he suggests that in establishing a price cap a regulator may choose a *more* [sic] demanding X-factor to take account of a predicted increase in ratchet problems. But it is the responsiveness of the X-factor to any firm's productivity changes, and not the level of the X-factor, that cause the ratchet-weakening of cost incentives. Therefore, such a "damn the torpedoes" approach would presumably lead to deteriorating financial performance by the ILECs, as a tougher standard is imposed despite their lowered gains in productivity. Sustaining a more aggressive long-run X-factor in those circumstances would be impossible *ex post* and/or unwise. In general, as we stressed in our original submission, setting *any* long-run X-factor, especially a demanding one, requires enough information on what the firm should be able to achieve so that poor financial performance can be *confidently* attributed to incompetent management rather than to an overly demanding X-factor. Achieving such confidence takes a lot of information; it seems unwise to suggest a tougher productivity standard as a strategy to make up for the effect of having little.

VI. Quotations and Paraphrases from the Economics Round Table[58]

In their recent *Ex Parte* filing, SBC/Ameritech paraphrase some of my comments at the Economics Round Table. I am concerned lest their paraphrases inadvertently distort the meaning of my remarks.

1. At the Round Table, I said:

> ... if you really believe that these mergers are both necessary and sufficient conditions for a really vigorous out of region entry, then I think they should go ahead, and the sooner the better... But I think there is a lot of skepticism and there is substantial grounds for skepticism ...[59]
>
> If you believe that these mergers are both a necessary condition and a sufficient condition for these LECs plunging wholeheartedly into out of region facilities based competition, then I think that is great. If you are not convinced of that, then you obviously have to discount your consideration.[60]

SBC/Ameritech paraphrase this as:

[58] This section is by Joseph Farrell writing alone.

[59] Round Table transcript, p.70.

[60] Round Table transcript, p.71.

> … Sprint's economist Dr. Joseph Farrell acknowledged that, if the merger is necessary and sufficient to permit the introduction of the vigorous out-of-region competition that will flow from the implementation of the National-Local Strategy, the merger should be approved notwithstanding his argument about benchmarking.[61]

Unfortunately, there is a danger that their paraphrase might be misread to make it sound as if I accepted the claim that such vigorous entry "will flow from the implementation of the National-Local Strategy." I do not. As the full quotation indicates, I think there is good reason to be heartily skeptical that the necessary and sufficient condition for really vigorous ILEC-ILEC competition is to allow ILEC-ILEC mergers.

2. At the Round Table, I said:

> How can regulators find out what is feasible? It seems to me like there are three generic methods… One is what could politely be described as making independent assessment or rudely described as trying to run a shadow business… That is pretty hard to do well, and it is pretty hard especially to do well if you are dealing with thinking about imposing an interconnection duty, let's say, that has never been imposed before in that form.
>
> The second thing that a regulator can do, which is the traditional thing that regulators do, is to use information from the firm's past to get an estimate of what the firm can do in the future. That is the traditional approach. In some sense it works, but in some sense it works rather badly. We are very familiar with some of the bad incentive effects that are created and notice that this, too, does not do you really a bit of good when you are trying to figure out whether sub-loop unbundling in three days at a reasonable price is feasible or not.
>
> The third thing you can do is to use information from other firms. Notice that this is fundamentally how competitive markets do it… and that should clue us in to the idea that this probably has some pretty good features.
>
> Well, it does have some pretty good features. It also has some defects and it has some problems, but those defects and problems surely are not perfectly correlated with the defects and problems of the other methods that regulators

[61] *Ex Parte*, p. 3.

> can use… [so] it is surely true that the arsenal or tool kit of information tools that regulators have with it is a heck of a lot better than the arsenal or tool kit that they have without it.[62]

SBC/Ameritech paraphrase this as:

> Dr. Farrell explained that benchmarks… are only one of three potential sources of information the Commission may consider in seeking to determine what practices are feasible.[63]

Perhaps they meant to write that I "explained that benchmarks… are *one* of *only three* potential sources of information…," which better conveys my meaning (although the list is not necessarily exhaustive).

3. At the Round Table, I said:

> I think it is true that… nobody can really know for sure how the X factor will be adjusted and when. It is absolutely not true that that implies that each ILEC is going to assume that the X factor is completely exogenous to its actions.
>
> … [I]n 1997 when there was the access reform proceeding, there were parties who argued that there should be company by company re-initialization. In other words, take away any so-called excess profits company by company. That did not happen. I am glad it did not happen, but it obviously was not common knowledge that it would not happen.[64]

SBC/Ameritech paraphrase this as:

> … Dr. Farrell has further retreated from his argument, effectively conceding that the disincentive is masked because 'nobody can really know for sure how the X factor will be adjusted and when,' and now arguing only that that fact does not make the X factor '<u>completely</u> exogenous.'[65]

[62] Round Table transcript, pp. 47-48.

[63] *Ex Parte*, p. 4.

[64] Round Table transcript, pp. 68-69.

[65] *Ex Parte*, footnote 44.

This characterization makes sense only if one believes that uncertainty and lack of commitment reduce ratchet disincentives. As the reinitialization example in my actual remarks suggests, it is equally possible as a matter of economics, and probably much more likely as a practical matter, that lack of commitment makes things worse. See the discussion in section III. C above.

4. I am happy to reiterate my general view that innovative services should be walled off from the culture of regulation and entitlement.[66] Perhaps it is important to remind ourselves here, however, that the apparent vision of the Telecommunications Act is imposing duties on ILECs in order to help non-incumbents compete and innovate, so the walling-off is less easy than one might hope. I agree that benchmarks will be irrelevant (or at least regulators need not worry about them) *where regulation is unnecessary*. Today, it remains necessary in many aspects of the industry if we are to prevent exercise of significant ILEC market power.

[66] *Ex Parte*, p. 21. The speech cited has been published in a modified form: *Industrial and Corporate Change*, December 1997. See also my article with Michael L. Katz, "Public Policy and Private Investment in Advanced Telecommunications Infrastructure," *IEEE Communications Magazine*, July 1998.

CERTIFICATE OF SERVICE

I, Trisha McLean, do hereby certify that on this 12th day of April 1999, copies of the attached "Response to Some Criticisms of Benchmarking Analysis" and accompanying cover letter were served by first class mail, postage prepaid, or hand delivered as indicated, on the following parties:

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