traffic are irrelevant. Even if the Commission determines that it should reconsider its decision in the CMRS Second Report and Order that the costs of LEC interconnection services are segregable, see 9 FCC Rcd at 1498, para. 231, there are no statutory powers which state regulation precludes the Commission from exercising.

III. A "Bill and Keep" Regime for LEC-CMRS Interconnection, Even On An Interim Basis, Will Not Be Administratively Simple, Will Not Permit LECs to Recover Their Costs, and Will Not Be Economically Efficient

The Notice describes "bill and keep" as a specific arrangement under which "...each provider charges its own customers for originating traffic and agrees to terminate traffic for other providers without charge." See, e.g., Notice, para. 60. The Commission notes that a bill and keep arrangement appears to have a number of advantages, especially as an interim solution: 1) it is administratively simple; 2) it prevents incumbent LECs from charging excessively; 3) bill and keep is economically efficient if certain conditions are met. Notice, para. 61. However, bill and keep is not likely to be administratively any simpler than other arrangements, particularly on an interim basis.[18] Bill and keep would require LECs to reexamine how costs are recovered, and to develop some appropriate mechanism to recover the costs formerly charged to CMRS providers from other network users.

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[18]Even where it can be shown that the administrative costs exceed the expected revenues, a "bill and keep" arrangement may not be appropriate between competitive firms. See, e.g., Staff Evaluation of Unresolved Issues Between Ameritech Ohio and Time Warner, February 21, 1996, Public Utilities Commission of Ohio, Case No. 96-66-TP-CSS, at 11 (noting staff's misgivings regarding bill and keep as an appropriate mechanism in a competitive market).

Where administrative costs are high, competitors may have incentives to established simplified pricing arrangements, such as the ENFIA "A" arrangments where price is based on capacity, rather than usage. But where competitive firms exchange goods in services in ordinary commerce, they do not establish "bill and keep" arrangements. For example, two stock traders who bought and sold IBM stock from each other in roughly equal volumes would not agree to exchange stock with each other without compensation. Such an arrangement, although administratively simple, would quickly disintegrate as each would simply demand the other's total IBM holdings.

As the Notice points out, one of the preconditions for a bill and keep arrangement to be lawful is that both LECs and CMRS providers could recover interconnection and termination costs from their own subscribers. See, e.g Notice, para. 62. Presently, most LECs assess no extra charge when a LEC subscriber originates a call which terminates on a CMRS network. In order for LECs to change their practices to recover costs from their own subscribers (as opposed to CMRS interconnectors), they would need to develop new rates to be assessed on those subscribers. Understandably, both state regulators and the Commission would likely want to examine, in turn, whether these mechanisms are just and reasonable. See Notice, para. 59 (Commission requests comment on changes that would be necessary for LECs or CMRS providers to change current arrangements for recovering costs from end users).[19] Without reassessing charges on other network users, bill and keep will not afford LECs the recovery of costs incurred in terminating CMRS traffic.

The Notice cites a study by Professor Gerald Brock stating that bill and keep yields economically efficient results when either of two conditions are met: 1) traffic is balanced in each direction,[20] or 2) actual [incremental] interconnection costs are so low that there is little difference between a cost-based rate and a zero rate. See, e.g., Notice,, para. 61; Id., para. 60 ("bill and keep arrangements yield results that are equivalent to the networks charging one another incremental cost-based rates for shared network facilities if the incremental cost of using such facilities is equal to (or approximates) zero for both networks").

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[19] Also, contrary to the assumption in the Notice, para. 61, bill and keep could also likely involve the development of new billing and accounting systems, or least require appropriate modifications to existing systems which monitor CMRS providers' use of the LEC network.

[20]No party submits that bill and keep is appropriate because the traffic flows are balanced. See, e.g. Notice, para. 40. Nevertheless, some parties appear to advocate bill and keep for LEC-CMRS interconnection because that arrangement is often used between neighboring LECs (where traffic flows are approximately equal) See, e.g., Statement by Thomas E. Wheeler, CTIA, December 15, 1995 (noting that CTIA's bill and keep proposal follows the current practice between LECs); Id., (advocating a LEC-CMRS bill and keep compensation arrangement based on a comparison to the Internet). Clearly, these comparisons are inapposite to the LEC-CMRS context where traffic flows are not in balance, and are being exchanged between competitors..

The Notice notes that condition (2) is satisfied in the case of LEC-CMRS interconnection because the average incremental cost is approximately 0.2 cents per minute. Notice, para. 61.[21] Even if true, this presumes that recovery of incremental costs yields adequate cost recovery. Recovery of only incremental costs only may not be adequate. In some cases, LECs have had to upgrade their networks and make switch investments to accomodate CMRS competitors and LECs must be able to recover these costs. Additionally, as the Notice acknowledges, the use of incremental cost may not cover all common costs, particularly where services are provided over shared facilities. Notice, para. 48-49.[22] For example, the Notice states that "the costs of shared facilities whose cost varies with capacity, such as network switching, should be recovered in a manner that efficiently apportions costs among users." Id, para. 44. By this logic, any meaningful mutual compensation arrangement should apportion some share of common costs to all network users. Bill and keep for the costs of terminating access between the end office and LEC subscribers would not apportion any share of common costs to CMRS interconnectors.[23] Bill and keep also fails to recognize that LECs' common costs include not merely a contribution to overhead, but also the costs of doing business as a regulated utility, e.g., the obligation to extend service to all customers in all portions of its certificated area at non-discriminatory and reasonable rates, regardless of cost.

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[21] It also presumes that an average incremental cost of 0.2 cents/minute represents the actual costs of traffic termination, even accounting for peak usage costs of 2.1 cents/minute. See Notice, para. 61, n.78. Essentially, the Notice proposed interim bill and keep on the basis that the average of 0.2 cents and 2.1 cents is zero.

[22]Admittedly, these are difficult issues to resolve. The Congressional guidelines to be followed by State commissions when they are asked to determining whether interconnection arrangements are just and reasonable provide that such the terms and conditions of such arrangements must provide for the recovery of costs "associated with the transport and termination on each carrier's network facilities." What degree of common costs should be "associated" with transport and termination is left up to state commissions to determine. See Section 252(d).

[23]The Commission leaves open the question of the costs of other shared facilities, such as tandem switching and common transport between tandem switches and end offices. Notice, para. 65. The Notice correctly concludes that the Commission concludes that interconnection rates for dedicated transmission facilities should be set based on existing access charges for similar transmission facilities. Notice, para. 43.

The facts of the LEC-CMRS environment also do not demonstrate that bill and keep is appropriate because the average incremental cost of 0.2 cents/minute sufficiently represents the actual costs of traffic termination, even accounting for peak usage costs of 2.1 cents/minute. See Notice, para. 61. Even if Brock's figures are considered to be accurate, they demonstrate that LECs incur more than $170 million dollars in costs to terminate CMRS traffic (assuming that 2 hours out of every day are peak usage periods, and that traffic volume during those hours is twice the average).[24] This figure is even higher if a more reasonable estimate of LEC costs is used - approximately $0.01 per minute, as shown by a 1993 study by the Commission staff, and by the attached SPR Study. See SPR Study, at 9-10.

Commissioner Ness states that "we must not abridge the LECs' legal or equitable rights, distort marketplace incentives for CMRS providers, or cause prices for other LEC customers to increase." Separate Statement of Commissioner Susan Ness (December 15, 1995). Yet that is exactly what bill & keep would do. Under such "rough justice," see id., LECs will not be provided the opportunity to recover costs, and such a result would abridge their legal and equitable rights. See, e.g., Notice, para. 62 (tentatively concluding that bill and keep would afford LECs adequate cost recovery and therefore not abridge their legal or equitable rights).

IV. CMRS Interconnection Cannot be Considered Independent of the Development of a Broader Interconnection Policy.

As discussed above, one of the primary flaws of a "bill and keep" arrangement for LEC-CMRS interconnection is that it permits CMRS providers to "free ride" on the investments made by LECs in network facilities, while other competitive providers of local and exchange access services, interexchange carriers, and the LEC shareholders all bear the cost burden of these facilities. This is

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[24]SPR estimates that LECs terminate 34 billion minutes of traffic per year. SPR Paper, at 9-10. If 2 hours of the day are peak usage, 1/6 of the 34 billion minutes represent peak minutes. Multiplying these minutes by Brock's cost estimate of 2.1 cents per minute yields roughly $119 million dollars in costs for peak traffic alone. The remaining 5/6 of the traffic, at Brock's rates, costs LECs roughly $57 million annually for interconnection, yielding a total of more than $170 million in costs which are "averaged out" in a bill and keep arrangement.

particularly true for interexchange carriers who presently bear the cost burden of the implicit subsidies built into the access charge rules. This is also particularly unfair to other competitive providers of local and exchange access service who compete with the both the incumbent LEC and a CMRS provider, many of whom may desire to compete with LECs in the offering of interconnection services to CMRS providers. These problems with the Commission's proposed interim plan demonstrate the market distortions that would occur were the Commission to adopt its interim plan. These distortions are likely one of the key reasons that the Telecommunications Act of 1996 provides for a single comprehensive framework for developing just and reasonable rates for interconnection and traffic termination arrangements between LECs and their competitors, as well as a new framework for addressing universal service issues. Accordingly, special federal rules for CMRS interconnectors would be unwise as well as unlawful.

CONCLUSION

Pursuant to the framework for negotiated interconnection and mutual compensation arrangements set forth by Congress in the Telecommunications Act of 1996, the Commission may not adopt mandatory federal rules, particularly rules imposing a particular compensation methodology. Any recommendations adopted by the Commission should recognize that a "bill and keep" arrangement between LECs and CMRS providers, even on an interim basis, is unnecessary to permit robust development of the CMRS industry, will not afford LECs adequate cost recovery, will create market distortions, and is inconsistent with the comprehensive treatment of interconnection arrangements contemplated in the Telecommunications Act of 1996.

Respectfully submitted,

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Bill-and-Keep:
A Bad Solution to a Non-Problem

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Bill-and-Keep:
A Bad Solution to a Non-Problem

I. Introduction and Executive Summary

The Federal Communications Commission has proposed using "bill-and-keep" to replace the current negotiated compensation arrangements between local exchange carrier ("LEC") and commercial mobile radio service ("CMRS") networks. The Commission has relied heavily on a paper by Gerald W. Brock. Brock claims that bill-and-keep would be an economically efficient approach if either of two conditions is met: (1) traffic flows between networks are balanced, and (2) actual interconnection costs are low. We show that neither condition holds in the case of LEC-CMRS interconnection. Traffic flows today are massively imbalanced between LEC networks and CMRS networks. Brock claims that bill-and-keep will create incentives for traffic flows to become more balanced. We show that, if anything, bill-and-keep creates incentives for traffic flows to grow even further out of balance. Interconnecting with CMRS providers costs LECs more than $440 million annually in direct costs alone, hardly a trivial amount and certainly well above zero (as would obstensibly be required for bill-and-keep to be an economically efficient approach).

Bill-and-keep amounts to a large giveaway to CMRS providers at the expense of LEC subscribers. First we demonstrate that CMRS providers currently pay between $800 million and $1.1 billion in interconnection charges to LECs annually. This revenue is part of the LECs' intrastate revenue and is taken into account by state regulators and by companies when setting basic rates. LECs, unlike CMRS providers, must provide universal service at regulated prices. Bill-and-keep would result in the complete loss of this revenue stream. Moreover, LECs would still incur all the costs of providing CMRS interconnection. The effect of the Commission's proposal, without any compensating adjustments, is to saddle state regulatory commissions with the problem of dealing with a $800 million to $1.1 billion reduction in LEC revenues and no reduction in LECs' costs to provide CMRS interconnection.

The Commission claims that bill-and-keep will help make CMRS service more competitive with LECs' landline service and that this giveaway can be justified on that basis. We show that the

retail price of cellular service depends little, if at all, on the level of LEC interconnection charges. LECs charge CMRS providers $0.03 per minute, on average, for interconnection. Cellular usage charges average $0.375 per minute. It is hard to imagine how LEC interconnection charges of $0.03 per minute could have significantly limited cellular's growth, when cellular firms charge over ten times that amount in usage charges to subscribers. The Commission's premise is apparently that lower interconnection charges will lower prices and expand output at the margin. This outcome is highly unlikely because cellular's growth rate is largely exogenous and independent of LEC interconnection charges. Even if cellular carriers passed along interconnection price reductions fully to customers in the form of lower prices, this would reduce average cellular usage prices to $0.345 from $0.375, hardly making cellular a close substitute for landline usage prices. Thus, the Commission's rationale for adopting bill-and-keep is suspect.

The massive giveaway that bill-and-keep would provide the wireless industry would be at the expense of LEC subscribers. Since the wireless industry is vibrant and healthy, it needs no such giveaway. Subscribership, revenues and investment have all been growing phenomenally in recent years. The advent of PCS and the deployment of digital cellular technology will both serve to substantially increase the amount of capacity available to serve customers. As new PCS providers grow, the industry structure will change and rivalry will increase. As a result, prices will decline and wireless service will become a more attractive substitute for wireline service.

The Commission need not rush into a bad interim compensation plan. There is no urgent need to disturb the current arrangements in place for LEC-CMRS interconnection. These arrangements should be considered along with the broader issues of establishing interconnection arrangements between competing networks of all sorts. Viewed in this broader context, the Commission's proposed interim plan of bill-and-keep in LEC-CMRS interconnection will compromise the long-term goal of establishing a common structure of interconnection charges and arrangements for both wireline and wireless providers. In fact, by imposing bill and keep, the Commission would be displacing the very negotiated agreements that Congress clearly favors in the Telecommunications Act of 1996. Bill-and-keep for LEC-CMRS interconnection is truly a bad solution to a non-problem.

II. The Basis for the Commission's Bill-and-Keep Proposal

The Commission has tentatively concluded that it should adopt bill-and-keep as an "interim" compensation arrangement for calls transferred between LEC and CMRS networks.[1] The bill-and-keep arrangement would apply to terminating access from LEC end offices to LEC end-user subscribers and to terminating access from equivalent CMRS facilities to CMRS subscribers. The Commission also tentatively concluded that transport costs between LEC and CMRS networks using dedicated facilities be recovered through flat rates, using arrangements already available in LECs' existing interstate and intrastate access tariffs.[2] It suggested that transport costs using shared facilities could be recovered using traffic-sensitive charges, such as the LECs' usage-sensitive charges for tandem-switched transport in their existing access tariffs.

In the Commission's discussion supporting its tentative conclusion it is apparent that it relied heavily on a paper by Gerald W. Brock submitted by Comcast.[3] Brock's analysis can be summarized briefly. He concludes that bill-and-keep is an economically efficient approach if either of two conditions is met:

(1) Traffic is balanced in each direction, so that the level of compensation becomes irrelevant; or

(2) Actual interconnection costs are so low that there is little difference between a cost-based rate and a zero rate.[4]

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[1] Federal Communications Commission, *In the matter of Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket No. 95-185, *In the matter of Equal Access and Interconnection Obligations Pertaining to Commercial Mobile Radio Service Providers*, CC Docket No. 94-54, Notice of Proposed Rulemaking (adopted: Dec. 15, 1995; released: Jan. 11, 1996) [hereinafter "Notice"], at para. 60.

[2] Notice, at para. 64.

[3] Gerald W. Brock, *Interconnection and Mutual Compensation with Partial Competition* (1995) [hereinafter "Brock Paper"]. We note that Comcast owns cable systems, has an interest in CLECs and holds wireless licenses.

[4] Notice, at para. 61; Brock Paper, at 4 ("With the mutual compensation approach, the actual level of payments makes no difference *so long as traffic is exactly balanced in both directions*." [emphasis in original]); and, Brock Paper, at 2 ("[Bill-and-keep] is an attractive approximation to the theoretically correct policy of cost based prices when the incremental cost of terminating service is low.").

Applying Brock's own test, one can observe that if neither of these conditions holds, then a bill-and-keep arrangement is economically inefficient. While administratively simple, bill-and-keep then can hardly be viewed as an appropriate basis for interconnection, and is hardly superior to today's arrangements.[5] We show below that neither of Brock's conditions is met. Under imbalanced traffic conditions, and when costs are not close to zero, bill-and-keep leads to a disproportionate burden being imposed on the carrier that terminates the most traffic. In the case of LEC-CMRS traffic, LEC subscribers will bear this burden.

[5] In our view, bill-and-keep has serious problems in a competitive environment even if Brock's two conditions are satisfied. It is a simplistic approach that suffers from serious economic disabilities and is attractive only on the basis of an illusory ease of administration. It creates opportunity and incentive for some carriers to enjoy valuable benefits (at others' expense) while contributing little added value themselves. Unbalanced traffic flows between carriers are a likely consequence of bill-and-keep. Finally, it allows entrants to prosper in circumstances where their entry reduces economic efficiency. In this paper, our focus is, however, on the specific disabilities of bill-and-keep in the instant context. There are a lot of reasons not to adopt bill-and-keep, many of which are not addressed in this proceeding.

III. Traffic Flows Between LEC and CMRS Networks

The Commission recognizes that considerably more traffic flows from CMRS networks to LEC networks than vice versa.[6] The precise nature of the imbalance will, of course, vary among different LECs and CMRS providers. However, a reasonable rule of thumb derived from LEC data we have reviewed is that approximately 80 percent of the traffic flowing between LEC and CMRS networks terminates on a LEC network and that the remaining 20 percent terminates on a CMRS network. The Commission identifies some reasons that could explain why this is so:

- Many CMRS subscribers are reluctant to publicize their wireless telephone numbers.
- CMRS subscribers are usually charged for air time on all calls, even incoming calls.
- Many cellular phones are powered off during substantial periods, in order to conserve battery life. They are not available for receiving calls during this time, but can be turned on briefly to place calls.

A. Incentives to Change Traffic Imbalances

While Brock's first condition clearly does not hold for the current pattern of LEC-CMRS traffic, the Commission asks whether a bill-and-keep arrangement likely would lead to balanced traffic flows or would it create incentives to perpetuate or exacerbate existing traffic imbalances between LEC and CMRS networks.[7] Brock claims that bill-and-keep will create incentives for traffic flows to become more balanced.[8] He says this will be so because under bill-and-keep "each company has an incentive to increase the efficiency of its operations in order to reduce its costs and to maximize its outgoing traffic relative to its incoming traffic because outgoing traffic is the most profitable."[9]

Would this be true in the LEC-CMRS context? Currently, according to Commerce Department figures, cellular providers pay 8 percent of their revenues in the form of interconnection charges

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6 Notice, at para. 40.

7 Notice, at paras. 41 and 62.

8 Brock Paper, at 23-27.

9 Brock Paper, at 24.

to LECs.[10] On calls from CMRS subscribers to LEC subscribers, CMRS providers typically charge their own subscribers for air time and thus realize some revenues to offset the interconnection charges they incur. On the other hand, LECs typically do not charge their customers to call CMRS subscribers locally, and realize no additional revenue for calls to CMRS networks.[11] The current situation can be characterized by the information presented in Table 1.

Table 1
Division of Revenues
(Current Arrangement)

	CMRS to LEC Traffic (80 percent of total)	LEC to CMRS Traffic (20 percent of total)
LEC receives . . .	8 percent of revenue	0 percent of revenue
CMRS provider receives . . .	92 percent of revenue	100 percent of revenue
TOTAL	100 percent of revenue	100 percent of revenue

It should be clear from the data on current traffic patterns and revenues that a bill-and-keep arrangement would mean that CMRS providers would be billing-and-keeping considerably more than LECs would. Take, for example, what perhaps would be the most common configuration between a LEC and a CMRS provider: the LEC is required to offer retail flat-rated calling to its customers and the CMRS provider offers usage-based calling to its retail customers. Suppose that the two providers interconnect at the LEC end office. The division of revenues between them would be as shown in Table 2.

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[10] This calculation is explained in the Appendix.

[11] One exception to this would be the arrangements some LECs and CMRS providers have made where LEC subscribers are not assessed toll charges to call a CMRS number, when such a call would otherwise be a toll call. The CMRS provider pays the LEC switched access charges in lieu of the LEC customer paying the toll.

Table 2 Division of Revenues (Bill-and-keep)		
	CMRS to LEC Traffic (80 percent of total)	**LEC to CMRS Traffic (20 percent of total)**
LEC receives . . .	0 percent of revenue	0 percent of revenue
CMRS provider receives . . .	100 percent of revenue	100 percent of revenue
TOTAL	100 percent of revenue	100 percent of revenue

What incentive would a LEC have to manipulate traffic in either direction? It would realize no additional revenue by attempting to stimulate traffic in either direction. In would only incur additional costs for stimulating additional calls and so could have an incentive to reduce traffic, if possible. However, it would have no incentive to "maximize its outgoing traffic relative to its incoming traffic because outgoing traffic is the most profitable," as Brock claims it would, because neither type of traffic would be profitable. LECs usually don't charge their customers to call wireless numbers. Under bill-and-keep, they would get no revenue from CMRS providers. They would have no incentive to change traffic patterns because they would get no marginal revenue for either type of call.

The CMRS provider in this example, since it imposes air time charges on its customers, would have an incentive to increase both kinds of traffic. However, the factors the Commission cited would still be operative: *viz.*, air time charges, limited battery life, *etc.*, so that CMRS subscribers would continue to be reluctant to publicize wireless telephone numbers and to leave wireless phones turned on for extended periods waiting to receive calls.[12] For these reasons, CMRS to LEC traffic would probably only increase relative to the other direction, increasing the degree of imbalance.

[12] The new PCS services may begin to temper this somewhat. For example, Sprint Spectrum's new PCS service offered in the Washington, D.C. area includes paging along with voice service so that the subscriber can screen incoming calls and avoid air time charges. In addition, Sprint Spectrum offers the first minute of incoming calls free of airtime charges. A Sprint Spectrum customer may be more willing to give out his wireless telephone number because he could screen incoming calls during the first minute.

B. Symmetry in Interconnection

It is ironic that CTIA has complained of the lack of symmetry in current interconnection charges. Indeed, current charges are not symmetrical. However, CMRS firms are the major beneficiaries of the asymmetry. They keep 92 or 100 percent of the revenues, depending on the direction of traffic.

Bill-and-keep is proposed as a way to create symmetrical interconnection charging. In fact, it does just the opposite. Revenue division, after implementing bill-and-keep, is not 50-50. It will often be 100-0, with the CMRS carrier keeping all the revenue.

In the Notice, the Commission cites states several instances of states having adopted bill-and-keep on an interim basis. However, the states that have adopted bill-and-keep have done so only for wireline CLECs. The presumption there is that the CLEC will *not* charge its own subscribers for terminating calls. LEC subscribers benefit as a result. For example, if a LEC subscriber calls his/ her customer, who is a wireline CLEC subscriber, the customer is not annoyed by having to pay for the call. That benefit is the *quid pro quo* under bill-and-keep. The benefit accrues to LEC subscribers, who ultimately bear the cost of terminating CLEC calls at no charge.

Under bill-and-keep for CMRS providers, there is still the *quid* but no *quo*. That is, the LEC would not (be able to) charge either party for calls from the CMRS network to the LEC network (the *quid*). But CMRS providers will presumably continue to charge air time for terminating calls (no *quo*). If a LEC subscriber calls his customer, who is a CMRS subscriber, the customer may well be annoyed by having to pay for the call.

IV. LEC Costs for CMRS Interconnection

What of Brock's other condition; that interconnection costs must be close to zero? The Commission cites results from another Brock analysis, reporting that LEC terminating access costs are, on average, $0.002 per minute.[13] Several things should be noted with regard to this number. First, Brock himself acknowledges that costs are much higher than this during the busy hour. He estimates busy hour costs to be $0.021 per minute. He gets to the $0.002 number by averaging busy hour minutes with off-peak minutes, which are costless, he claims.

Two of the authors of this report examined information about LEC costs for switched access in a 1993 study.[14] We found evidence that switched access costs are $0.013 per minute on average. We relied on published econometric analyses of LEC reported cost data. These analyses measure as incremental costs some of what engineering studies often classify as overhead, due to the absence of a direct mechanical relationship between costs incurred for personnel or financing or executive activities and decisions to offer more or less of a particular product. That is, as LECs provide more switched access, the econometric analyses disclose that some costs traditionally thought of as pure overhead tend to increase somewhat also. This sensible outcome (that overheads grow as firms increase their scale of operation) is difficult to deal with in engineering studies, such as the analysis on which Brock relies. Since econometric analyses can capture these effects, they should be used when addressing broad pricing questions such as setting a compensation policy for interconnection with other kinds of networks.

In 1993, members of the Commission staff did a similar analysis to Monson-Rohlfs.[15] They also examined LEC switched access revenues and costs and reported a cost estimate of $0.01 per

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[13] Notice, at para. 61 fn 78, citing Gerald W. Brock, *The Economics of Interconnection: Incremental Costs of Local Usage* (Apr. 1995).

[14] Calvin S. Monson and Jeffrey H. Rohlfs, *The $20 Billion Impact of Local Competition in Telecommunications* (Bethesda, Md.: Strategic Policy Research for United States Telephone Association, 1993).

[15] Michael J. Marcus and Thomas C. Spavins, "The Impact of Technical Change on the Structure of the Local Exchange and the Pricing of Exchange Access: An Interim Assessment," presented at Telecommunications Policy Research Conference, Solomons Island, Maryland, Oct. 3, 1993.

minute, only slightly lower than the estimate Monson-Rohlfs used. Even so, the Commission staff's number is five times Brock's figure.

Finally, when costs are expressed in solely per-minute terms, an appreciation of the overall significance of the magnitudes involved is lost. Per-minute cost estimates should be combined with the number of minutes involved to provide a revealing frame of reference. With a fraction of a cent per-minute here and there, and approximately 34 billion minutes per year, one is actually talking about more than $440 million in annual costs. That amount is our estimate of the annual costs that LECs incur to interconnect with CMRS providers, based on our $0.013 per-minute cost estimate.[16] This is not a trivial sum and is not "close to zero" in an economically meaningful sense. So, Brock's second condition does not hold either. His claim that bill-and-keep is economically efficient does not follow under prevailing conditions.

[16] CTIA's estimate that cellular interconnection charges paid to LECs are more than $800 million annually appears to be based on an estimate that there are 34 billion minutes of cellular traffic that originate or terminate on LEC networks. At a cost of $0.013 per minute, that quantity of traffic costs LECs more than $440 million annually to handle.

V. Bill-and-Keep Would Be a Large Giveaway to CMRS Carriers at the Expense of LEC Subscribers

A. CMRS Carriers Currently Pay Between $800 million and $1.1 Billion Annually for Interconnection

CTIA claims that CMRS firms pay more than $800 million annually to LECs for interconnection.[17] We agree that the magnitude of charges being paid is at least that amount. Based on data available from the Commerce Department, up to $1.1 billion annually may be involved.[18] LECs would no longer receive this revenue under the Commission's bill-and-keep approach. They would still incur costs to originate and complete calls to and from CMRS networks, but would lose the revenue currently used to recover those costs.

B. Uses of This Revenue

In addition to recovering the costs that they incur to interconnect with CMRS carriers, the $800 million to $1.1 billion in revenue is taken into account by regulators and LECs when setting the price of basic landline telephone service. Unlike CMRS providers, LECs are required to provide universal service at regulated rates. The loss of CMRS interconnection revenues, without any compensating adjustments, will put $800 million to $1.1 billion worth of upward pressure on local telephone rates. This translates to between $0.43 and $0.58 per month per landline customer in the United States.[19] It would be cruelly ironic if the FCC were to achieve its goal of making wireless telephony more competitive with wireline telephony by putting upward pressure on the price of the latter, especially where it cannot be held directly responsible for the political consequences of its actions.

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17 CTIA, *Fact Sheet Reciprocal Termination* (accompanying a Dec. 15, 1995 press release).

18 The Appendix shows how this estimate is obtained.

19 This comes from dividing $800 million (and $1.1 billion) by the number of LEC access lines (156,769,460 as of Dec. 31, 1994, *1995 Statistics of the Local Exchange Carriers for the Year 1994* (Washington, D.C.: United States Telephone Association, 1995), at 8), and then dividing that result by 12 to express the magnitude involved on a monthly basis.

C. Relationship Between Retail CMRS Prices and Interconnection Charges

We now turn to the Commission's other rationale for implementing bill-and-keep for LEC-CMRS traffic; *viz.*, a zero price for terminating access will make CMRS service competitive with LEC landline service.[20]

We will show in this section that the retail price of CMRS service depends little, if at all, on the level of LEC interconnection charges. As we have already stated, CTIA estimates that wireless firms pay LECs $0.03 per minute in access charges. However, wireless usage charges average $0.375 per minute. LEC interconnection charges are only a small fraction of CMRS usage prices, approximately 8 percent.[21] The Commission's rationale, in effect, is that reducing what amounts to only 8 percent of CMRS costs will make CMRS service competitive with LEC landline services.

We show this is not the case by looking at cellular, by far the largest group of CMRS providers. The cellular industry has experienced tremendous growth. Given that some cellular firms report extremely rapid growth rates of 30 to 50 percent per year, it is reasonable to infer that any constraints on cellular growth have largely derived from capacity and organizational limitations. It is hard to imagine how LEC interconnection charges of $0.03 per minute could have significantly limited cellular's growth, when it charges over ten times that amount in usage charges to its subscribers.

Nevertheless, the Commission's premise is that lower interconnection charges will result in lower prices and expand output at the margin. But this premise is mistaken. As noted above, the cellular growth rate is largely exogenous, primarily limited by organizational constraints on how fast each firm's supply can grow. Under these conditions, the price of cellular service is essentially independent of LEC interconnection charges. This means that any interconnection charge reduction will, for the most part, not be passed on to subscribers. Instead, reductions will simply increase the scarcity rents of the cellular industry. Interconnection charge reductions will not significantly expand output and thus have minimal effect on competition with LEC services.

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20 Notice, at paras. 9-14.

21 The Appendix shows how this estimate is obtained.

Even assuming for the sake of argument that CMRS carriers would pass interconnection charge reductions through to subscribers in the form of lower prices, adopting bill-and-keep and eliminating interconnection charges completely for terminating access would have little effect on competition. There are many reasons that consumers do not view CMRS service as a substitute for LEC landline service which have very little to do with LEC interconnection charges. Even if interconnection charges were eliminated and the reduction were passed through entirely to CMRS subscribers in the form of lower prices, a usage price of $0.345 per minute as compared with $0.375 means that CMRS service would still constitute only a very distant economic substitute for LEC landline service.

Thus, the Commission's rationale for adopting bill-and-keep to spur local competition is analytically suspect. Given that traffic flows are massively imbalanced and that LEC interconnection costs are significant, the case that bill-and-keep would improve economic efficiency falls apart. Given the level of wireless usage prices compared with LEC interconnection charges, it is unlikely that bill-and-keep could (even minimally) transform CMRS service into an economically effective substitute for LEC landline service, since there would still be $0.345 or more of price differential between wireless usage pricing and the typical LEC offering of regulated, flat-rated local calling. Bill-and-keep amounts to nothing more than a large-scale giveaway to CMRS *providers* at the expense of LEC *subscribers*. With that thought in mind, we turn to the long-term policy implications of the issue of compensation for LEC-CMRS interconnection.

VI. Long-Term Policy Implications

In this section, we discuss the past and future growth of wireless. The wireless industry has grown rapidly and continues to experience high growth rates. This growth has happened within the environment of the current LEC-CMRS interconnection arrangements. It is easy to see that the wireless business is healthy and growing quickly. Wireless revenues will, in all likelihood, continue to grow rapidly on into the future.[22] It does not need a regulatory giveaway, like bill-and-keep, for its phenomenal growth to continue.

A. The Cellular Success Story

The cellular industry has grown rapidly and its history is illustrated with graphs showing lines pointing upward. Figures 1 through 5 show ten years of phenomenal growth in cellular subscribers, service revenues, capital investment, roamer revenues, and cell sites.

These are the CTIA's own statistics that are telling this story. Cellular subscribership has grown from 91,600 in December 1984 to 24,134,421 by December 1994. In just the last year of that period, from December 1993 to December 1994, subscribership grew by a little over 50 percent. Revenues have grown in a similarly spectacular fashion, growing by 31 percent from December 1993 to December 1994 to reach more than $14 billion annually.[23] CTIA's president Thomas Wheeler noted at one point a couple of years ago that two of every three new telephone numbers are assigned to wireless customers.[24]

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22 *See, e.g.*, Mark Landler, "An Aerial Assault on the Wired Nation," *New York Times* (Feb. 26, 1996) at D1 (quotes David J. Roddy, chief telecommunications economist at Deloitte & Touche, that he expects wireless service revenues to double in four years from 1995's level of $22 billion).

23 CTIA, *Wireless Factbook* (Spring 1995), at 7-8.

24 "Domestic Cellular Market Cracks 19 Million Subscribers," *Global Telecom Report* (Sept. 14, 1994).

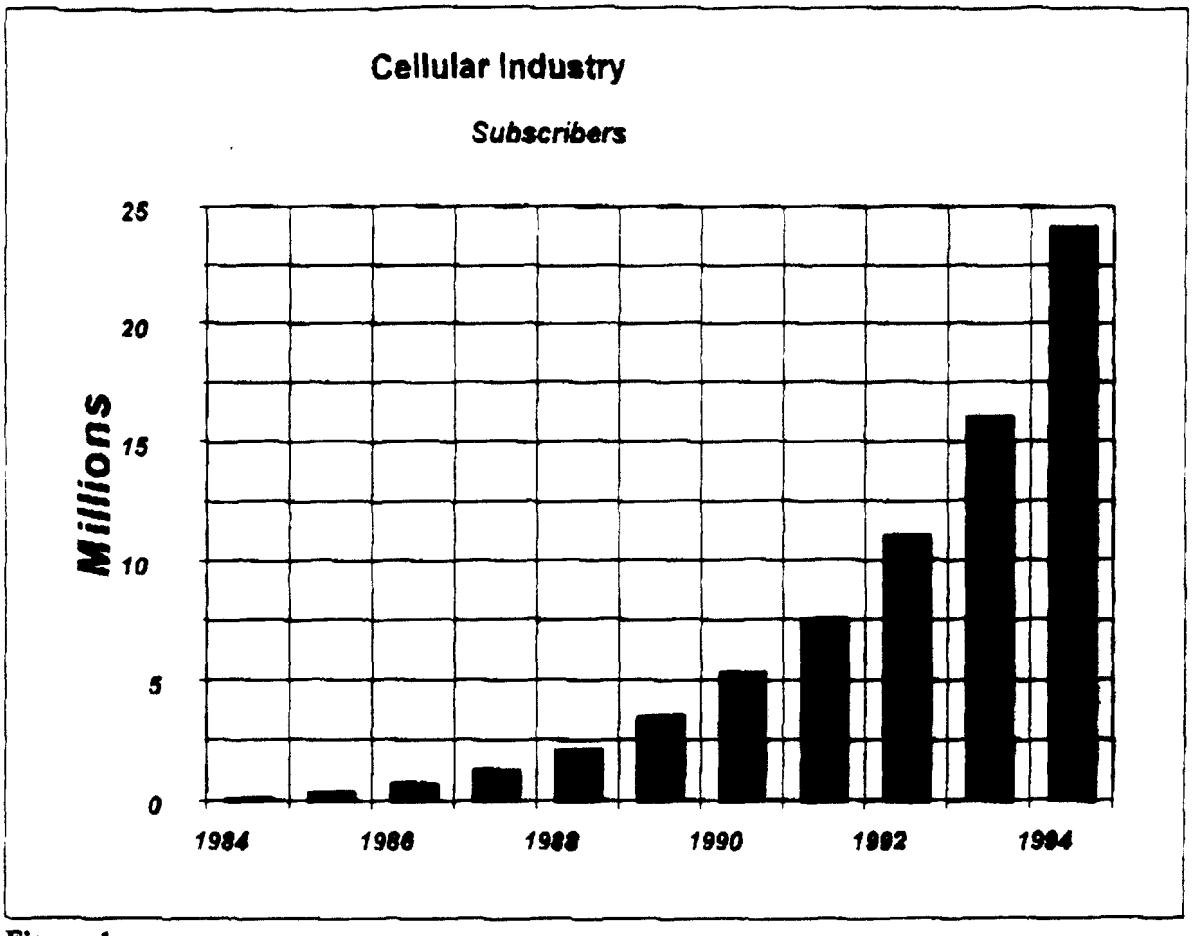
Cellular Industry
Subscribers
Millions
25
20
15
10
5
0
1984
1986
1988
1990
1992
1994

Figure 1

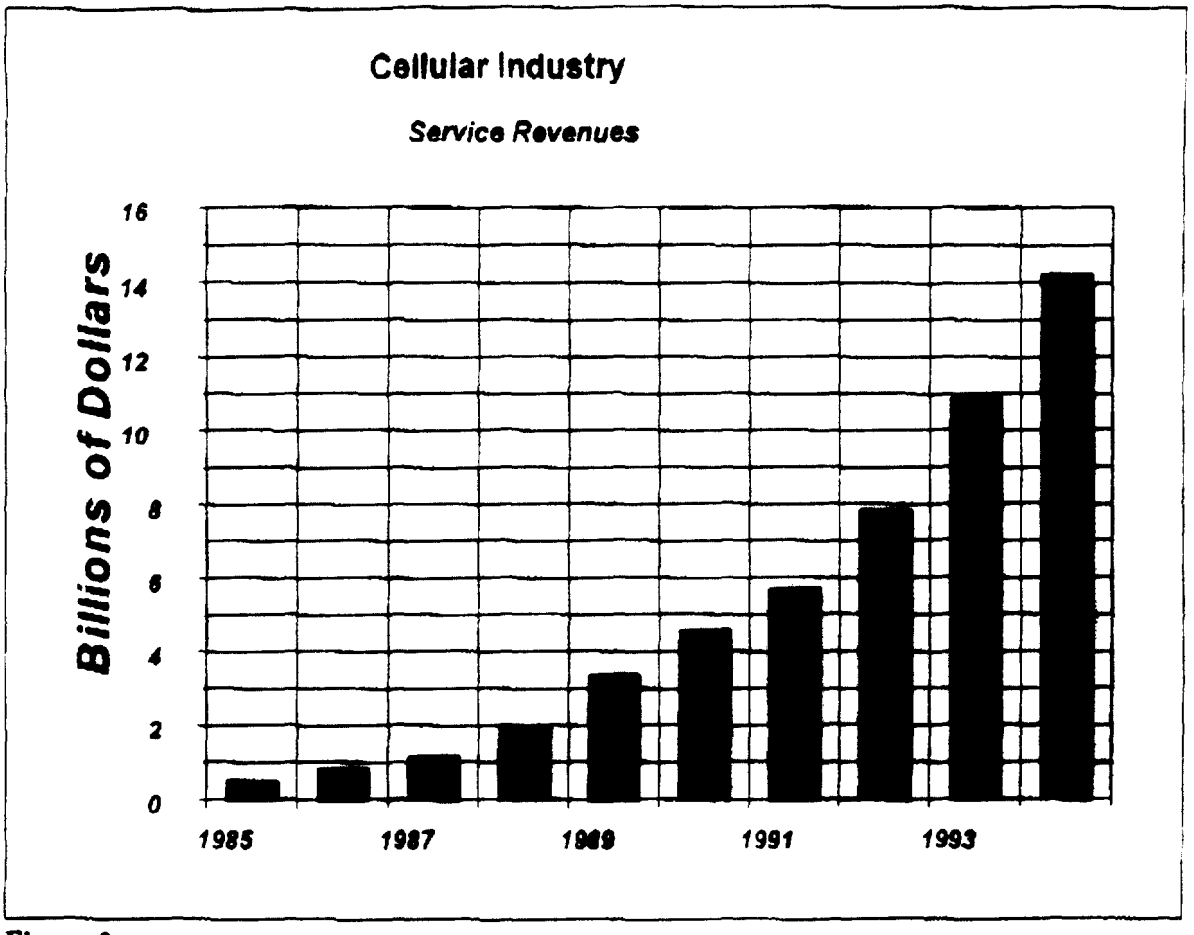
Cellular Industry
Service Revenues
Billions of Dollars
16
14
12
10
8
6
4
2
0
1985
1987
1989
1991
1993

Figure 2

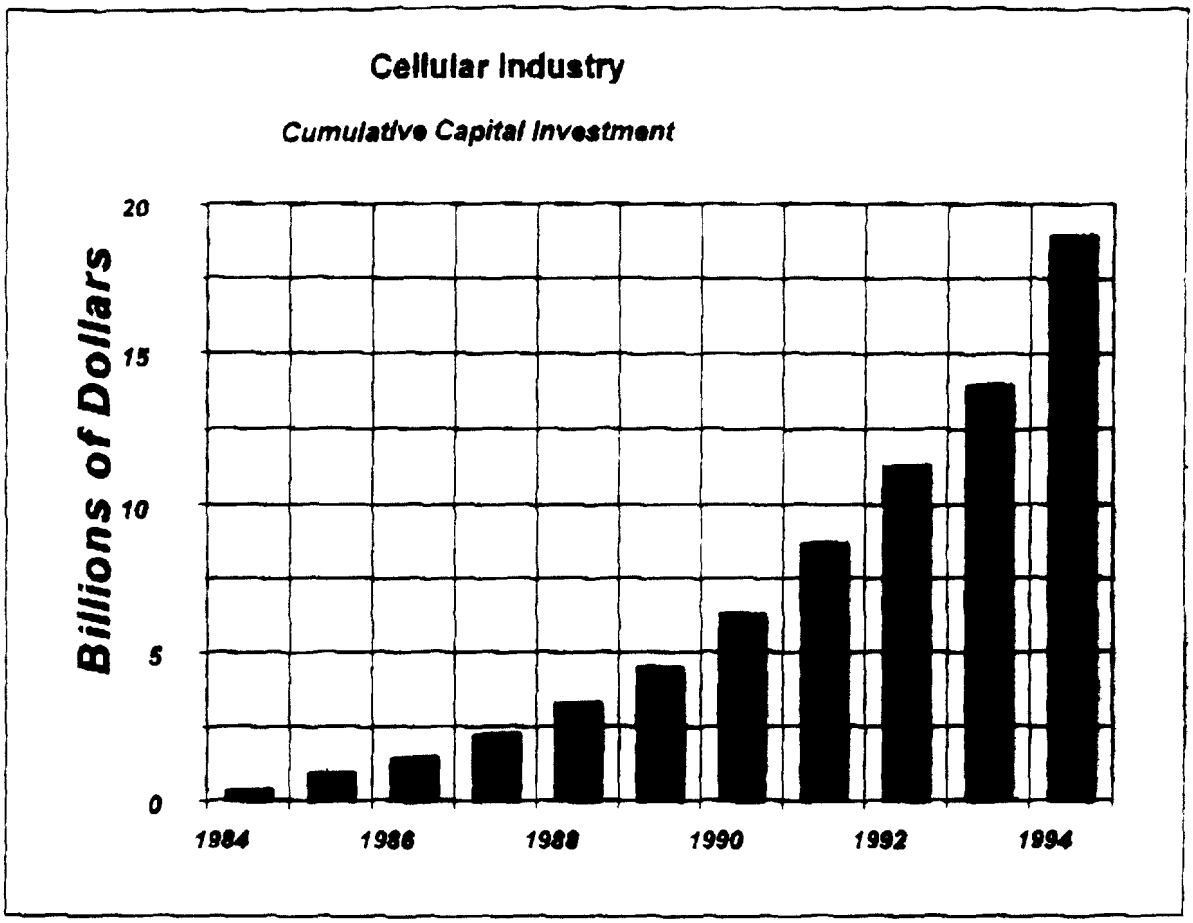
Cellular Industry
Cumulative Capital Investment
Billions of Dollars
20
15
10
5
0
1984
1986
1988
1990
1992
1994

Figure 3