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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers	)	CC Docket No. 95-185
	)	
Equal Access and Interconnection Obligations Pertaining to Commercial Mobile Radio Service Providers	)	CC Docket No. 94-54

NOTICE OF PROPOSED RULEMAKING

Adopted: December 15, 1995 Released: January 11, 1996

Comment Date: February 26, 1996
Reply Comment Date: March 12, 1996
Comments and Reply Comments are to be filed in CC Docket No. 95-185 only.

By the Commission:

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I. INTRODUCTION

A. Summary

1. In this Notice, the Commission continues its examination of whether our policies related to interconnection between commercial mobile radio service (CMRS) providers and local exchange carriers (LECs) are sufficient to advance the public interest.[1] We currently require LECs to offer interconnection to CMRS providers on reasonable terms and conditions, and to do so under the principle of mutual compensation.[2] We have not, however, set specific limits on the price of such interconnection, nor have we required that interconnection agreements be filed with regulatory authorities or that interconnection be provided pursuant to tariff.

2. We are concerned that existing general interconnection policies may not do enough to encourage the development of CMRS, especially in competition with LEC-provided wireline service. LECs unquestionably still possess substantial market power in the provision of local telecommunications services. If commercial mobile radio services, such as broadband personal communications services (PCS), cellular telephone services, satellite telephony, and interconnected specialized mobile radio (SMR) services, are to begin to compete directly against LEC wireline services, it is important that the prices, terms, and conditions of interconnection arrangements not serve to buttress LEC market power against erosion by competition.

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[1] We note that, as a matter of convenience, we refer elsewhere in this Notice generically to "CMRS providers." This usage is not intended to exclude the possibility of applying our policies more narrowly. Indeed, as discussed below, we are requesting comment on whether we should consider in this Notice interconnection arrangements between LECs and: (1) broadband PCS providers only; (2) broadband PCS, cellular telephone, satellite telephony, interconnected SMR, and other CMRS service providers that offer two-way, point-to-point voice communications, which could compete with LEC landline telecommunications services; or (3) all CMRS providers. These CMRS services are described in *Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, First Report, 10 FCC Rcd 8844, 8847-61, 8863-68 (1995)("*First CMRS Competition Report*").

[2] *See Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Second Report and Order*, 9 FCC Rcd 1411, 1497-98 (1994)("*CMRS Second Report*"). In general, the obligation to interconnect flows from the statutory common carrier obligation of LECs "to establish physical connections with other carriers." *See* 47 U.S.C. § 201.

3. This Notice therefore considers the policy issues involved in establishing compensation arrangements for LEC-CMRS interconnection. We tentatively conclude that in order to ensure the continued development of wireless services as a potential competitor to LEC services, we should move expeditiously to adopt interim policies governing the rates charged for LEC-CMRS interconnection. We further tentatively conclude that, at least for an interim period, interconnection rates for local switching facilities and connections to end users should be priced on a "bill and keep" basis (*i.e.*, both the LEC and the CMRS provider charge a rate of zero for the termination of traffic), and that rates for dedicated transmission facilities connecting LEC and CMRS networks should be set based on existing access charges for similar transmission facilities. We seek comment on these tentative conclusions and on a number of alternative pricing options for LEC-CMRS interconnection arrangements. We also tentatively conclude that information about interconnection compensation arrangements should be made publicly available, and seek comment on what method to use to achieve this objective, such as tariffing, public disclosure, or some other approach. We also seek comment on how we should implement both interim and permanent interconnection policies (*i.e.* a non-binding model, or mandatory general or specific federal requirements), and we tentatively conclude that we have authority to adopt these approaches. In addition, we propose compensation arrangements that should apply to interstate, interexchange traffic traversing interconnections between LECs and CMRS providers, which typically involve an interexchange carrier (IXC).

B. Overview

1. Goals

4. In developing policies regarding LEC-CMRS interconnection, our overriding goal is to maximize the benefits of telecommunications for the American consumer and for American society as a whole.[3] As with other areas of common carrier policy, we adopt policies that are intended to create or replicate market-based incentives and prices for both suppliers and consumers. By relying on market-based incentives and prices, where possible, and replicating them, where necessary, our policies have sought to ensure the availability to consumers of goods and services at the lowest overall cost. With the most efficient firms producing goods and services at the lowest cost, consumers benefit from lower prices. With consumers receiving cost-based pricing signals, they purchase communications goods and services only when they receive value greater than or equal to the cost of producing them. In general, reasonable and non-discriminatory rates should give consumers incentives to purchase the combination of services that they most value. As a matter of long-term policy, functionally equivalent services -- including services related to network interconnection -- should be available to all classes of consumers at the same prices, unless there are cost differences or policy considerations that justify different rates. In addition, these policies, over time, should ensure an efficient level of innovation in terms of the development of new

[3] 47 U.S.C. § 151.

services and the deployment of new technology, as well as the efficient entry of new firms. Service providers should make optimal levels of investments in developing new technologies and new services, and consumers should receive the maximum benefit from their purchases of telecommunications services.

5. Our policies also have sought to ensure and advance universal basic telephone service. For individual households, being connected to telecommunications networks -- whether wireline LEC networks or wireless CMRS networks -- facilitates access to emergency services, employment and educational opportunities, and social interaction. We recognize that not all the societal benefits accrue to the individual being connected with the network. Thus, we have pursued our mandate under the Communications Act by adopting specific programs designed to advance universal service in areas and for individuals where special needs exist.

6. Our primary means for achieving these public interest goals has been competition. Competition drives prices toward cost: in a competitive market, rival service providers will have strong incentives to reduce their prices to attract customers until prices approach their costs. The cost-based prices achieved in competitive markets ensure optimal utilization of the network by consumers and give service providers accurate information regarding the benefits and costs of introducing new services and incentives for investing in technological innovations. In addition, competition gives producers strong incentives to stimulate demand and reduce costs. By forcing producers to minimize the per-unit costs of providing service, competition generally advances, rather than hinders, universal service. It increases the number of consumers willing and able to connect to the nation's telecommunications networks.

7. Of course, full competition does not exist in many areas of telecommunications, and, because of the general benefits society derives from universal service, even full competition by itself may not be sufficient to further our public interest goals. In those circumstances, policymakers may need to intervene. Regulatory policies should be capable of implementation in a timely manner, cost-effective to both regulators and industry, and enforceable.

2. Need for Reform

8. The Communications Act provides that carriers shall offer interconnection when it is determined to be in the public interest.[4] The ability to interconnect has become more important because today telecommunications is increasingly provided by a system of

[4] 47 U.S.C. § 201(a).

independent, interconnected networks, often referred to as a "network of networks."[5] In this environment, the ability of communications to move seamlessly from one network to another is becoming increasingly vital. Uneconomic and unnecessary barriers to the flow of communications between the increasing number of diverse networks would seriously undermine the benefits of telecommunications to consumers and the American economy and would impede the development of competition between network providers.

9. Efficient interconnection with LEC networks, which reach, on a nationwide basis, 93.8% of all households, benefits both subscribers and providers of services.[6] First, interconnection enables new providers to compete with incumbent LECs on the basis of the services they offer the public and the prices, quality, and features of those services. In the complete absence of interconnection, prospective new entrants would have to attract enough capital to build and provide origination, transport, and termination services for an entire geographic area, such as a metropolitan area. Second, interconnection allows subscribers of one network to obtain access to subscribers of all other interconnected networks. In a market with multiple and possibly competing networks, it is unlikely that all people would subscribe to all networks. Thus, without interconnection, subscribers to one network may be unable to reach people who subscribe only to some other network.

10. The availability of interconnection cannot, however, be divorced from its price. Interconnection that is priced too high can be the marketplace equivalent of no interconnection. An interconnection obligation is undermined if the charges imposed for interconnection are excessive, and society will not enjoy the benefits described above. On the other hand, if interconnection is available at an unreasonably low price, service providers that otherwise may have built their own facilities to serve part of a LEC's service territory in competition with the LEC may decline to do so. Facilities-based competition can confer benefits on customers such as lower prices, accelerated innovation, and deployment of new technologies. Interconnection at efficient prices should lead to the highest and best use of the existing telecommunications infrastructure, as well as the expansion of this infrastructure, because proper pricing will send economically efficient signals to firms to decide whether the costs of interconnection in a particular case are less than or greater than the benefits of interconnection.

11. In the absence of market power or other distortions, efficient forms of interconnection may develop through private negotiation. For example, small interexchange carriers interconnect with one another, and purchase and resell one another's services, with

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[5] *See, e.g.*, Lee McKnight and Russel Neuman, *The New Information Infrastructure: Strategy for U.S. Policy*, "Technology Policy and the National Information Infrastructure" (1995).

[6] FCC, Com. Car. Bur., Industry Analysis Div., *Monitoring Report*, CC Docket No. 87-339, Table 1.1 (May 1995).

little or no outside involvement. Similarly, Internet service providers have developed interconnection arrangements without intervention by outside parties.[7]

12. LECs, however, unquestionably still possess substantial market power in the provision of local telecommunications services. Thus, a LEC may have the incentive and the ability to prevent or reduce the demand for interconnection with a prospective local competitor, such as a CMRS provider, below the efficient level by denying interconnection or setting interconnection rates at excessive levels. Such abuse of market power could lead to at least two problems. First, a LEC may extract monopoly rents for interconnection. Excessive prices for termination of CMRS-originated traffic would lead to retail prices (charged to CMRS customers) that are above the efficient level and thus discourage CMRS customers from placing calls to wireline customers that would be made if LEC interconnection rates were set at efficient levels. Second, a LEC may attempt to restrict the entry of potential competitors. To the extent that certain CMRS providers are potential competitors to a LEC's local telephone service, or to the extent that a LEC may wish to provide certain wireless services, a LEC may have an incentive to withhold interconnection from some CMRS providers. Even where interconnection is mandated, a LEC still could potentially restrict entry either by setting the interconnection rates prohibitively high or by specifying technical requirements for interconnection that are disadvantageous for the connecting network.[8]

13. Another potential problem is that a LEC and an interconnecting CMRS provider may have the incentive and the ability to engage in collusive behavior. If the CMRS provider constitutes a substitute for the LEC network, the two networks could negotiate a high per minute charge to terminate each other's traffic as a means of giving each incentives to charge customers supra-competitive rates for local exchange service. It may be particularly likely that such collusive behavior could occur in cases where the CMRS provider is an affiliate of the LEC. Negotiation of interconnection arrangements could be used as a vehicle to keep the retail price of their respective retail services uneconomically high at the expense of customers. Depending on market structure developments, intervention may be necessary to prevent such outcomes.

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[7] *See Ex parte* letter from Robert F. Roche, CTIA, to Mr. William F. Caton, Acting Secretary, Federal Communications Commission, December 8, 1995, filed in CC Docket No. 94-54, Gerald W. Brock, *The Economics of Interconnection: Price Structure Issues in Interconnection Fees*, at 1-2 (April 1995)(Brock Paper No. 1).

[8] T. Krattenmaker & S. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price*, Yale L.J., 234, 243 (1986).

14. As set forth below, we have recognized LEC market power by requiring that LECs interconnect with CMRS providers.[9] Under our rules, LECs must negotiate in good faith to provide the type of interconnection arrangement desired by CMRS providers under the principle of mutual compensation, and to furnish interconnection for interstate traffic at reasonable and non-discriminatory rates. In response to an earlier Notice relating to CMRS interconnection issues, many commenters strongly argued, however, that our current policy can be and is being used by LECs to reduce competition.[10] LECs typically terminate many more calls that originate from the cellular network than an interconnecting cellular network terminates LEC-originated calls. This is due, in part, to cellular customers' reluctance to give out their wireless telephone numbers (since they generally are charged for incoming calls), charges for cellular air time, or technical limitations on cellular telephones (*e.g.*, limited battery life). Because of this imbalance, LECs clearly would benefit competitively from maintaining high, even if symmetrical, interconnection charges. With the growing significance of interconnection and competition in today's telecommunications environment, we believe that a reexamination of our policies addressing compensation arrangements for LEC-CMRS interconnection is essential.

3. Scope of This Notice

15. In this proceeding, we focus on the compensation arrangements regarding interconnection between LECs and CMRS providers. In Part II below, we summarize our current LEC-CMRS interconnection requirements and the mutual compensation policies that some states have considered for interconnecting local carriers that compete with one another. In Parts III and IV of this Notice, we address the compensation arrangements associated with the interchange of two types of traffic between LECs and CMRS providers. In Part III, we consider compensation issues with respect to traffic between LEC customers and the customers of an interconnected CMRS provider. We tentatively conclude that, at least for an

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[9] 47 U.S.C. § 332(c)(1)(B); *CMRS Second Report*, 9 FCC Rcd 1411, 1497-98 (1994); *The Need to Promote Competition and Efficient Use of Spectrum for Radio Common Carrier Services, Memorandum Opinion & Order*, 59 RR 2d 1275, 1283 (App. B) (1986) ("*Interconnection Order and Policy Statement*"); clarified, *Declaratory Ruling*, 2 FCC Rcd 2910 (1987), aff'd on recon., 4 FCC Rcd 2369 (1989).

[10] *Equal Access and Interconnection Obligations Pertaining to Commercial Mobile Radio Services, Notice of Proposed Rulemaking and Notice of Inquiry*, 9 FCC Rcd 5408 (1994)("*Equal Access and Interconnection NPRM and NOI*"); *see, e.g.*, Cox Comments at 2. In the *Equal Access and Interconnection NPRM and NOI*, we also sought comment on a few of the issues discussed in the instant notice, such as whether interconnection arrangements should be tariffed. We incorporate the record generated on these issues in the *Equal Access and Interconnection NPRM and NOI* into the record in this proceeding. *See* Appendix A for a list of parties filing comments and reply comments, including the abbreviations used for those parties.

interim period, interconnection rates for local switching facilities and connections to end users should be priced on a "bill and keep" basis, and that rates for dedicated transmission facilities provided by LECs to connect LEC and CMRS networks should be set based on existing access charges for similar transmission facilities. We seek comment on these tentative conclusions and on a number of alternative pricing options for LEC-CMRS interconnection arrangements. We also tentatively conclude that information about interconnection compensation arrangements should be made publicly available, and seek comment on what method to use to achieve this objective, such as tariffing, public disclosure, or some other approach. We also seek comment on how we should implement these tentative conclusions (*i.e.* a non-binding model, or mandatory general or specific federal requirements) and we tentatively conclude that we have authority to adopt these approaches.

16. In Part IV, we examine the compensation arrangements that should apply to interstate interexchange traffic traversing interconnections between LECs and CMRS providers. Such traffic typically involves an additional carrier -- the interexchange carrier.[11] We tentatively conclude that, as with traffic between neighboring LECs or between LECs and competitive access providers (CAPs), CMRS providers should be entitled to charge for their provision of interstate access services as part of interstate interexchange traffic that originates from (or terminates to) CMRS customers, passes over LEC networks, and is connected with IXCs.

17. Decisions in this proceeding are clearly related to those in other ongoing rulemakings that address interconnection and related issues between various telephone service providers. In particular, we note that the policy changes discussed in this item are closely related to our upcoming Access Reform proceeding. Interstate access is essentially another form of interconnection between networks, that between LECs and IXCs. In the upcoming Access Reform proceeding, we will consider changes in our access charge rules, which govern the pricing and rate structures applicable to interstate access services provided by LECs to IXCs to originate and terminate long distance calls. We believe that, as a matter of long-term policy, there may be important reasons why the regulatory regime for interstate access charges should not vary dramatically from the rules relating to LEC-CMRS interconnection, to the extent that LEC-CMRS and LEC-IXC interconnections use similar features and functions. We also acknowledge, however, that there may be significant reasons, including our interest in facilitating the competitive development of CMRS and

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[11] For example, when a party in New York places a call to the customer of a CMRS provider in California, an interexchange carrier would typically carry the call from New York to a LEC in California, and the LEC would transmit the call to the CMRS provider for termination to the customer. Similarly, if the CMRS customer in California were to call the party in New York, the call would, in many cases, pass from the CMRS provider's network to the LEC's network to the IXC, which would transmit the call to New York.

considerations relating to the Part 36 jurisdictional separations rules, that may necessitate differences in regulatory regimes.

18. We note that two other pending proceedings involve interconnection issues relating to CMRS providers. First, petitions for reconsideration have been filed on the *CMRS Second Report and Order*.[12] Second, pending notices of proposed rulemaking in CC Docket No. 94-54 raise issues of whether we should impose equal access obligations on CMRS providers, and what resale obligations should apply to CMRS providers.[13] Recognizing that none of these proceedings, including this one, can be viewed in a vacuum, we are mindful of the issues raised in these proceedings as we formulate policy changes in the rules regarding LEC-CMRS interconnection. We also seek comment on the interrelationship between each of these proceedings and this Notice.

II. BACKGROUND

19. In 1994, as part of its implementation of Sections 3(n) and 332 of the Communications Act of 1934, as amended by Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 (Budget Act),[14] the Commission released the *CMRS Second Report and Order*, establishing the regulatory treatment of mobile services.[15] The Budget Act mandated that mobile service providers offering similar services would be subject to consistent regulatory classification. This objective was accomplished by replacing the common carrier and private carrier classifications with the new categories of Commercial Mobile Radio Services (CMRS) and Private Mobile Radio Services (PMRS).[16] The *CMRS*

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[12] *See CMRS Second Report*, 9 FCC Rcd 1411 (1994).

[13] *Equal Access and Interconnection NPRM and NOI*, 9 FCC Rcd 5408 (1994); *Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services*, Second Notice of Proposed Rulemaking, 10 FCC Rcd 10666 (1995)(*"Resale NPRM"*).

[14] Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, Title VI, § 6002(b)(2)(A), 6002(b)(2)(B), 107 Stat. 312, 392 (1993). The Budget Act also required the Commission to submit the *First CMRS Competition Report*.

[15] *CMRS Second Report*, 9 FCC Rcd 1411 (1994). In an earlier action in this proceeding, we established filing procedures for foreign ownership waivers pursuant to the Budget Act. *See Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services*, First Report and Order, 9 FCC Rcd 1056 (1994).

[16] CMRS is defined as "any mobile service (as defined in section 3(n)) that is provided for profit and makes interconnected service available (A) to the public or (B) to such classes of eligible users as to be effectively available to a substantial portion of the public." PMRS means "any mobile service (as defined in section 3(n)) that is not a commercial mobile service or the functional equivalent of a commercial mobile service." *CMRS Second Report*, 9 FCC Rcd at 1417, para. 11.

Second Report also implemented the Budget Act's requirement that the Commission order a common carrier, pursuant to the provisions of Section 201 of the Act, to establish physical interconnections with any CMRS provider that requests reasonable interconnection.

20. In the *CMRS Second Report*, we found that there is no distinction between a LEC's obligation to offer interconnection to cellular carriers and all other CMRS providers, including PCS providers, and thus we required LECs to provide reasonable and fair interconnection for all commercial radio services.[17] We determined that it is in the public interest to require LECs to provide the type of interconnection reasonably requested by all CMRS providers. We also applied the same jurisdictional principles to CMRS as we had for cellular carriers prior to the passage of the Budget Act: we asserted plenary jurisdiction over the physical plant used in the interconnection of CMRS carriers, but we declined to preempt state regulation over the rates for intrastate interconnection, unless the charge for the intrastate component of interconnection was so high that the price effectively precluded interconnection.[18]

21. We also established three requirements applicable to LEC provision of reasonable interconnection to CMRS providers. First, we applied the same principle of mutual compensation that we had already adopted for LEC-cellular interconnection.[19] This principle requires LECs to compensate CMRS providers for the reasonable costs incurred by such providers in terminating traffic that originates on LEC facilities. Similarly, CMRS providers are required to provide such compensation to LECs in connection with wireless-originated traffic terminating on LEC facilities.[20] Second, we required LECs to establish reasonable charges for interstate interconnection provided to CMRS licensees, which should not vary from the charges established by LECs for interconnection provided to other mobile service providers.[21] Third, in determining the type of interconnection that is reasonable for a CMRS system, we held that the LEC may not deny to a CMRS provider any form of interconnection arrangement that the LEC makes available to any other carrier or other customer, unless the LEC meets its burden of demonstrating that the provision of such interconnection is either not technically feasible or economically reasonable.

22. In July 1994, we issued a *Notice of Proposed Rulemaking and Notice of Inquiry* to address the interconnection obligations of LECs to CMRS providers and CMRS providers

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[17] *Id. at* 1497-98, para. 230.

[18] *Id.* at 1498, para. 231.

[19] *Declaratory Ruling*, 2 FCC Rcd at 2915.

[20] *CMRS Second Report*, 9 FCC Rcd at 1498, para. 232.

[21] *Id.* at 1498, para. 233.

to one another.[22] Relying on our authority under Section 201(a) of the Communications Act, we sought comment on whether we should require LECs to offer interconnection to CMRS providers under tariff pursuant to Section 203, or alternatively, whether we should retain our current requirement that LECs establish, through good faith negotiations with CMRS providers, the rates, terms, and conditions of interconnection.[23] We also sought comment on whether, in lieu of imposing a tariff filing obligation, we should revise the good faith negotiation requirement by adding new safeguards against unreasonably discriminatory rates, terms, and conditions. Specifically, we asked whether we should require that negotiated interconnection arrangements contain a "most favored nation" clause that would guarantee that the most favorable terms, conditions, and rates provided by the LEC to one CMRS provider would be offered to all similarly situated parties, or whether we should require LECs to file with the Commission all carrier-to-carrier interconnection agreements so that the terms, conditions, and rates are available for public inspection.[24] Early in the summer of 1995, members of the staffs of the Common Carrier Bureau and the Wireless Telecommunications Bureau convened some informal meetings with pioneers' preference PCS licensees Cox and APC and the LECs with whom the pioneers preference PCS licensees will interconnect (NYNEX, Pacific Telesis, and Bell Atlantic). The purpose of these meetings was to discuss in more detail the interconnection issues raised in the written comments previously filed by these parties in this proceeding, in particular the appropriate pricing of interconnection.

23. *State Proceedings.* States have taken a wide variety of actions with regard to interconnection arrangements between incumbent LECs and competitors, including CMRS providers. State regulation of interconnection between LECs and CMRS providers varies widely. In most states, interconnection arrangements are negotiated between the service provider and the LEC, with virtually no government involvement. In other states, including California, Connecticut, and New York, CMRS providers and other prospective entrants must satisfy certain universal service requirements and meet other specified service obligations to qualify for low interconnection rates.[25]

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[22] *Equal Access and Interconnection NPRM and NOI*, 9 FCC Rcd 5408 (1994). We also tentatively concluded that, in concept, equal access obligations should be imposed on cellular licensees, but that the full panoply of equal access requirements that apply to landline LECs should not apply to CMRS providers. Accordingly, we sought comment on whether equal access requirements should be tailored to meet the individual circumstances of particular CMRS providers. *Id.* at 5411, para. 3.

[23] *Id.* at 5455, para. 113.

[24] *Id.* at 5457, para. 119.

[25] *See, e.g.*, State of Connecticut, Department of Public Utility Control, *Investigation Into Wireless Mutual Compensation Plans*, at 15 (Sept. 22, 1995).

24. With respect to state regulation of interconnection arrangements between LECs and competitive local service providers that predominantly use wireline technology, a large number of states have removed many of the legal barriers to competition for local services. Other states are considering allowing competition for LEC services. In the states that allow competition for local exchange services, there are at least three different systems in place to allow for interconnection compensation between competing local networks. Many of these arrangements are interim pending the establishment of permanent rules.[26] Some states have adopted mutual compensation policies with rates for termination of traffic subject to tariff regulation by the state commission.[27] Other states have required "bill and keep" arrangements, under which neither of the interconnecting carriers recovers any revenues from the other carrier for terminating the other's traffic, but instead recovers all its costs from its own end user customers. For example, the Washington Utilities and Transportation Commission has adopted the bill and keep method for interconnection compensation between LECs and new entrants as an interim measure, to be replaced by a capacity-based charge when the details are worked out.[28] Third, a substantial number of states have directed LECs and prospective competing carriers to negotiate arrangements, but have not imposed detailed regulatory requirements with respect to those agreements.

III. COMPENSATION FOR INTERCONNECTED TRAFFIC BETWEEN LECS AND CMRS PROVIDERS' NETWORKS

A. Overview

25. In the following section, we consider a number of alternative compensation arrangements that could apply to traffic passing between LECs and CMRS providers' networks. After summarizing the parties' positions on these two-carrier calls, we discuss existing compensation arrangements for such interconnection and economic pricing principles applicable to interconnection compensation arrangements. We tentatively conclude that, to advance our overriding policies with respect to LEC-CMRS interconnection arrangements, a "bill and keep" approach (*i.e.*, a zero rate for terminating traffic) should be applied with respect to local switching facilities and connections to end users during an interim period. We seek comment on whether we should adopt these tentative conclusions as a non-binding model for state regulators and/or negotiating parties, or whether we should mandate either

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[26] For example, California adopted a bill and keep arrangement for 1 year, Connecticut for 18 months, Texas for 9 months, and Pennsylvania for an unspecified interim period. After these initial periods, the interconnecting firms will be expected to pay LECs for call termination.

[27] For specific examples, *see* para. 72, *infra*.

[28] *See Washington Utilities and Transportation Commission v. U S West,* Docket Nos. UT-941464-65, UT-950146, UT-950265, Fourth Supplemental Order Rejecting Tariff Filings and Ordering Refiling; Granting Complaints, In Part (Oct. 31, 1995).

broad, general parameters or specific, detailed prescriptions and we tentatively conclude we have authority to adopt these approaches.

B. Compensation Arrangements

1. Positions of the Parties

26. While a few LEC commenters are content with the existing guidelines governing LEC-CMRS interconnection,[29] many wireless carriers urge the Commission to establish more specific compensation requirements.[30] Most of these parties argue that the Commission's existing mutual compensation policy, under which wireless carriers are compensated for traffic that terminates on their wireless networks on the same terms as LECs are compensated for traffic terminating on their networks -- is not being enforced. These parties suggest three possible approaches for modifying the current mutual compensation policy, which are described below.

27. *Reciprocal Compensation.*[31] Some CMRS providers assert that, although the Commission has repeatedly affirmed its long-standing policy of "mutual compensation" for LEC-cellular interconnection, and extended this to LEC-CMRS interconnection, the policy is, in Comcast's words, "long standing, but largely ignored."[32] PCIA asserts that, not only have LECs declined to pay compensation to cellular and paging companies for terminating their traffic, but some LECs have actually imposed originating access charges on those carriers for delivering traffic to them.[33] Point contends that this lack of reciprocal treatment is particularly unfair because, Point claims, it is more expensive for a CMRS carrier to terminate a call than it is for a LEC to terminate a call.[34] PageNet claims that LECs' refusal

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[29] *See, e.g.*, NYNEX Comments at 6; Pacific Bell Comments at 5-11.

[30] APC Comments at 4-5; Columbia PCS Comments at 5-7; Comcast Comments at 1-8; Cox Comments at 2-3; GCI Reply Comments at 3; MCI Comments at 12; McCaw Comments at 25; Nextel Comments at 17-18; PageNet Comments at 9-10; PCIA Comments at 13-14; Point Comments at 6-8; Time Warner Reply Comments at 7-8; Western Wireless Comments at 7.

[31] The synonymous terms "reciprocal compensation" and "mutual compensation," strictly speaking, mean only that compensation flows in both directions between interconnecting networks -- the LEC compensates the CMRS provider and the CMRS provider compensates the LEC -- but do not specify the amount of such compensation in either direction. Many of the parties, however, use these terms to refer to what we call "symmetrical" compensation arrangements, in which the compensation amount per unit of traffic is equal in both directions. *See infra* ¶¶ 78-81.

[32] Comcast Comments at 5; *see* PCIA Comments at 13-14, PageNet Comments at 10.

[33] PCIA Comments at 13-14.

[34] Point Comments at 7.

to pay compensation is particularly egregious in the context of paging, because a majority of pages originate on the LECs' facilities and terminate on the paging carriers' facilities.[35] In addition, Cox warns that a failure to examine LEC-CMRS interconnection issues comprehensively at the outset could hinder the ability of PCS to be a full service substitute for the local exchange carrier monopoly.[36]

28. CMRS providers request that the FCC take further action to ensure that they receive reciprocal compensation for LEC-CMRS traffic, including both the level of compensation for inter-carrier traffic and when it should be paid.[37] They assert that, because of their relative lack of market power compared with LECs, they do not have the ability to enforce compensation by LECs for terminating their calls.[38] PageNet requests that the Commission require LECs to begin negotiating reciprocal compensation agreements with CMRS carriers within 60 days of the order issued in this proceeding.[39] Point and Western Wireless argue that the Commission must require LECs to compensate CMRS carriers at rates no less than they receive from CMRS carriers for the traffic originated by CMRS providers that LECs terminate, and Point also requests compensation from LECs for their fair proportionate share of the fixed line rates that they are charging CMRS carriers.[40] Columbia PCS asks the Commission to recognize that the greater leverage that large CMRS providers have compared to smaller firms enables them to negotiate discriminatory interconnection agreements. Columbia asserts that the Commission should therefore impose an "equal charge per minute of use" requirement on all LECs for providing interconnection to CMRS providers.[41]

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[35] PageNet Comments at 10.

[36] Cox Comments at 2.

[37] *See, e.g.*, Nextel Comments at 17-18; APC Comments at 4-5; Columbia PCS Comments at 7.

[38] *See, e.g.*, Century Reply Comments at 15-18; Columbia PCS Comments at 6; Point Comments at 7; Nextel Comments at 17; Western Wireless Comments at 7.

[39] PageNet Comments at 10.

[40] Point Comments at 7; Western Wireless Comments at 7; *see* PageNet Comments at 9-10.

[41] Columbia PCS Comments at 7-8 (describing requirement as "equal per unit of traffic"); *Ex parte* Letter in CC Docket No. 94-54 from J.A. Molloy, GO! Communications Corporation (successor to Columbia PCS, Inc.) to W.F. Caton, Acting Secretary, Federal Communications Commission (clarifying that terms referred to an "equal charge per minute of use" as contained in the original Modification of Final Judgment and subsequent Commission rules reflecting that requirement for all LECs [local transport access service]).

29. *Cost-Based Compensation.* Comcast, Cox, and Time Warner all acknowledge that the mutual compensation model (presumably with symmetrical charges paid by the LEC and the CMRS provider) works well when there are roughly balanced volumes of traffic going back and forth between two carriers. They assert, however, that when one party receives significantly more traffic than the other -- in this case the LEC in the near term -- it can exercise its market power by setting an unreasonably high compensation rate. Citing a 1984 FCC working paper on the exchange of traffic between international carriers as a comparison, these parties assert that, because the competitive carrier will likely originate more traffic than it terminates, the monopoly carrier has the incentive and the ability to hold out for a high mutual compensation rate. They declare that this same rationale will lead LECs to set artificially high interconnection rates since, for the foreseeable future, there will be a substantially greater amount of traffic going to LECs than to PCS carriers.[42] In addition to the problem of unbalanced traffic, Cox adds that mutual compensation does not account for potential discrimination: a LEC could negotiate a high interconnection rate with its cellular affiliate, since the LEC's shareholders would not care which corporate entity was accruing the profit. The unaffiliated CMRS firm, however, would be forced to pay the same high rate and thereby be inhibited from competing with the LEC in its local exchange. Thus, while Comcast, Cox, and Time Warner maintain that a non-discriminatory mutual compensation requirement is a necessary component of any interconnection system, they argue that it is not sufficient to ensure that CMRS providers will be able to compete with the LEC in the local service market.[43]

30. Thus, Cox asks the Commission to ensure that interconnection rates are cost-based, as well as non-discriminatory, and that the LECs offer unbundled access to LEC databases and other network capabilities, as well as termination of traffic. It notes that the Commission recognized that reasonable interconnection rates were the key to the development of competition in the interstate access market, but argues that, despite the Commission's best intentions, LECs' initial expanded interconnection tariffs illustrate the intransigence of LECs when their position in the market is threatened.[44] Cox and Comcast argue that the lack of cooperation and compliance by LECs has been effective in delaying the timing and minimizing the significance of expanded interconnection. Thus, Cox also proposes that the Commission establish a mechanism for prompt review of LEC

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[42] Comcast Comments at 11-16; Cox Comments at 6-10; Time Warner Reply Comments at 8 (citing *Promoting Competition Piecemeal in International Telecommunications*, FCC Office of Plans and Policy Working Paper No. 13, at 26 (1984).

[43] Comcast Comments at 4-12; Cox Comments at 2-15; Time Warner Reply Comments at 7-9

[44] Cox Comments at 10, *citing Local Exchange Carrier Rates, Terms and Conditions for Expanded Interconnection for Special Access*, First Report and Order, 8 FCC Rcd 8344, 8346 ("either requiring removal of expanded interconnection service because of the LEC's failure to justify their rates, or alternatively, allowing apparently unreasonably high rates to take effect, would frustrate the competitive goals of our expanded interconnection proceeding").

interconnection rates upon request of a CMRS provider, in order to ensure that the LEC unbundled its network sufficiently and did not include excessive overhead loadings in its rates.[45]

31. Pacific Bell responds that, at present, interconnection compensation rates are appropriately based on costs, but that the costs of terminating traffic on CMRS and LEC networks may well differ and justify different compensation rates. Thus, Pacific concludes that "traffic imbalance is completely irrelevant" since the issue of appropriate compensation should be based on costs. It also states that access to databases and other unbundled network capabilities is being considered in the Advanced Intelligent Network proceeding and is clearly beyond the scope of our CMRS Equal Access and Interconnection proceeding (CC Docket No. 94-54).[46]

32. *Bill and Keep*. Comcast, Cox and Time Warner advocate an alternative compensation model referred to as "Bill and Keep" or "Sender Keep All," under which the carrier interconnecting and delivering traffic to another would not compensate the terminating carrier for terminating calls. With its comments, Comcast submits a paper by Dr. Gerald W. Brock, Director of the Graduate Telecommunication Program, George Washington University, examining the economic characteristics of a mutual compensation scheme for LEC-CMRS interconnection. Brock contends that, when a market is composed of segments that are monopolized and segments subject to competition, interconnection and compensation arrangements are critical to the development of effective competition. Brock argues that, if there are no regulatory controls on compensation for interconnection, the monopolist can extend its power to the entire market. He states that the level of rates under mutual compensation is irrelevant only if the level of incoming and outgoing traffic is exactly balanced, but that this situation rarely, if ever, occurs. Brock adds that the interconnection rules governing traffic to and from monopoly networks should not be dependent on technology and should apply to both wireline and wireless services.[47]

33. Brock states that, although existing policy toward international settlement rates and theoretical analysis support the goal of cost-based compensation rates for jointly provided services, the actual definition and measurement of costs are not simple tasks. For example, Brock states that most telecommunications equipment is engineered for peak period usage. Because most of the cost of service is related to the capacity of the plant rather than the actual number of minutes used, however, the true cost for peak period usage is much greater

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[45] Comcast Comments at 9; Cox Comments at 7-13. *Accord,* New Par Comments at 22 (LECs must not charge CMRS providers for elements or services that (i) are not needed or wanted by the interconnecting CMRS carrier or (ii) are not charged to interconnecting landline LECs).

[46] Pacific Reply Comments at 6-7, 10.

[47] Attachment to Comcast Comments, Gerald W. Brock, "Interconnection and Mutual Compensation With Partial Competition," at 2-6 (Brock-Comcast Paper).

than the cost for off-peak usage. In fact, Brock states that the cost of carrying off-peak traffic may be very near zero.[48] Based on these findings, Brock recommends two practical approaches to consider in applying the principle of cost-based mutual compensation: (1) "sender keep all" and (2) "peak usage measurement."

34. According to Brock, sender keep all is an economically efficient approach as long as the real cost of terminating traffic is approximately zero. He explains further that, under this model, each carrier has an incentive to increase the efficiency of its operations and reduce its costs so as to maximize the volume of its outgoing traffic.[49] Brock claims that, although sender keep all departs from the theoretical goal of cost-based compensation by setting below-cost prices for terminating traffic, there is less opportunity for manipulation than if prices were set above cost because, if traffic is balanced, price is irrelevant. According to Brock, decreasing the incentives for traffic manipulation will tend to increase the balance of the traffic and reduce the significance of the difference between the cost and the zero compensation rate. Thus, Brock contends that, with mutual compensation rates above cost, the monopolist has an incentive to send as much traffic as possible to its own affiliate and as little as possible to the competitors of its affiliate. Brock states that, although under sender keep all the monopolist has no incentive to send traffic to an affiliate, the monopolist does have an incentive to refuse to accept terminating traffic, but the interconnection requirement implies an obligation to terminate any traffic that is presented.

35. Brock states that the NYNEX-Teleport interconnection agreement provides an example of a combination of usage charges and sender keep all arrangement. Generally, the agreement establishes a particular charge for a two-way channel of given capacity between the two companies. Traffic is measured at the busy hour each month and the relative measurements are used as an allocation factor for the established channel rate. When traffic is exactly balanced, the payments to each company cancel out and the established rate is irrelevant. Brock states that this type of arrangement is essentially a sender keep all arrangement for non-peak traffic, because relative traffic is only measured at the peak hour and thus either company can increase its traffic to the other at non-peak times without affecting the charges due. Brock notes that the difference between peak and off-peak traffic is beneficial for administrative simplicity and economic efficiency: because the incremental cost of terminating traffic during off-peak periods is virtually zero it is administratively easier simply to ignore off-peak periods. He asserts that capacity charges, rather than per minute charges, allow attention to be focused on the cost of service at the peak load, which is generally the real cost of service.[50] Brock concludes that, while the structure of the NYNEX-Teleport agreement is beneficial for equating termination charges to cost during the

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[48] Brock-Comcast Paper at 23-27.

[49] Comcast Comments at 14-15; Brock-Comcast Paper at 23-27.

[50] Brock-Comcast Paper at 23-27.

off-peak period, it does not solve the problem of increasing market power through high charges.

36. In response to LECs' arguments against bill and keep, Cox states that LEC arguments that the costs of terminating traffic are higher than the costs of originating traffic appear to be based on the erroneous assumption that the terminating carrier will route the call through most of its network, and the originating carrier will transfer the call to the terminating carrier at the tandem or higher. Cox states, however, that it is asking only that bill and keep be used for traffic terminated at the end office, where the cost of termination is *de minimis* (on average about $0.002 per minute, according to Cox) and that LECs would be compensated for calls terminated at the tandem. Because the cost of end office termination is so small, Cox argues that the fact that traffic flows between LECs and CMRS providers may be imbalanced at the outset of competition is irrelevant. Cox adds that studies using the LECs' own data reveal that the transaction costs of measuring and charging for terminating traffic at the end office are probably higher than the *de minimis* cost of terminating traffic, thus making bill and keep for end office termination an economically efficient result.[51]

37. In considering whether a bill and keep approach would constitute a taking for Fifth Amendment purposes, CTIA contends that such a finding would require that the property at issue be rendered worthless, that the loss would involve more than merely anticipated profits, or that a physical invasion occurred, none of which is the circumstance in this case. CTIA also cites to a recent decision by the Washington Utilities and Transportation Commission, which ordered bill and keep on an interim basis, to support its position that bill and keep is not a system of interconnection for "free." CTIA states that bill and keep is a system of reciprocal exchange of traffic in which each company receives something of value and can recover the costs for termination from its own end users in flat monthly charges.[52] CTIA adds that bill and keep is fair compensation based on the fact that it is the dominant practice between adjacent LECs around the country for terminating local extended area service traffic between adjacent exchanges.[53]

38. Only NYNEX and Pacific Bell responded in opposition to Comcast's proposal. NYNEX opposes the proposal on the grounds that the Commission's mutual compensation policy is designed to ensure that both LECs and CMRS providers receive compensation for

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[51] *Ex parte* letter from J.G. Harrington, Counsel for Cox Enterprises, Inc., to Mr. William F. Caton, Acting Secretary, Federal Communications Commission, October 19, 1995.

[52] *Ex parte* letter from Randall S. Coleman, Vice President for Regulatory Policy and Law, CTIA, to Ms. Regina Keeney, Chief, Common Carrier Bureau, Federal Communications Commission, December 8, 1995 (citing *Washington Utilities and Transportation Commission v. U.S. West,* Docket Nos. UT-941464-65, UT-950146, UT-950265, Fourth Supplemental Order Rejecting Tariff Filings and Ordering Refiling; Granting Complaints, In Part (October 31, 1995)).

[53] *Id.; see also* Cox *Ex Parte* letter, October 19, 1995, at 3.

the reasonable costs incurred in terminating traffic on each other's networks. By contrast, NYNEX contends, these costs would not be recovered by either party under Comcast's proposal. NYNEX argues that Comcast has not offered a sound policy basis that would justify a change in the Commission's mutual compensation policy at this time.[54] Pacific Bell contests the characterization of interconnection charges between affiliates as simple "pocket to pocket" transfers. Pacific claims that an affiliate desires an appropriate interconnection rate to the same extent as any other CMRS provider because it will affect the price charged to customers, and too high a price will put the affiliate in a less competitive position.[55] Finally, Pacific contends generally that the comments provide no basis for changing the Commission's current policies regarding interconnection.[56]

2. Discussion

39. In the following sections, we consider what types of compensation arrangements for interconnection between CMRS networks and LEC networks would best serve the public interest. First, we discuss existing compensation arrangements and seek additional information about these arrangements. Second, we consider general principles of cost causation that we believe should govern LEC-CMRS interconnection arrangements. We address the rate structure implications of the different components of network costs, and explain our belief that the cost of fixed facilities dedicated to a particular party should be recovered through non-traffic sensitive (NTS) charges to that party, while the costs of certain shared network facilities should be recovered through prices reflecting parties' use of network capacity. We also discuss economic theories that optimally should govern rate levels in LEC-CMRS interconnection arrangements. Third, we discuss our tentative conclusions that, during an interim period, "bill and keep" arrangements (*i.e.*, a zero rate) should apply to the termination of traffic from end offices to end-users, and that flat rates should apply to dedicated transmission facilities connecting LEC and CMRS networks. We also seek comment on a number of alternative options that could be used to set LEC-CMRS interconnection rates in the near term. We note that our analysis below assumes that LECs and CMRS providers are likely to continue using existing technical forms of interconnection, and we seek comment on whether our analysis should change if different technical forms of interconnection are used. We invite commenting parties to address our analysis of these and other issues regarding interconnection pricing that are discussed at length below.

a. Existing Compensation Arrangements

40. According to the comments received in this proceeding, at present, cellular carriers typically pay LECs three types of usage-sensitive charges for local calls from cellular

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[54] NYNEX Reply Comments at 6.

[55] Pacific Reply Comments at 6.

[56] Pacific Reply Comments at 8.

subscribers to LEC subscribers, regardless of the physical interconnection facility used:[57] (1) per-call charges for call set-up; (2) per-minute charges for usage; and (3) per-minute. per-mile charges for transport between the cellular carrier's mobile telephone switching office (MTSO) and the LEC's tandem or end-office switch.[58] Some cellular carriers contend that, notwithstanding our mutual compensation requirement, they typically are forced to pay LECs these charges for calls originating from cellular customers and terminating to LEC wireline customers, as well as for calls originating from LEC customers and terminating to cellular customers.[59] Commenters also submit that, typically, substantially more traffic flows from cellular carriers to LECs than *vice versa*.[60] This may be due to cellular customers' reluctance to give out their wireless telephone numbers, because of charges for cellular air time, technical limitations on cellular telephones (*e.g.*, limited battery life), or other factors. On the other hand, for services such as paging, most (or all) of the interconnected traffic flows from LECs to CMRS providers, rather than *vice versa*, because most pager devices are incapable of originating calls.

41. We invite commenting parties to provide more detailed information about existing LEC-CMRS interconnection arrangements. Specifically, we are interested in data regarding the rate structures and price levels in those arrangements. We also request comment on what facilities and technical arrangements are used in providing LEC-CMRS interconnection, what rate elements are applicable to providing the services, and the functions that are associated with each rate element. To what extent are these arrangements filed in tariffs before state commissions, or are otherwise publicly disclosed? To what extent do these arrangements make use of provisions in FCC tariffs? We also seek comment on the extent of, and reasons for, the imbalance of traffic flowing between LECs and CMRS providers. Are traffic flows likely to be more balanced in the future for existing commercial mobile radio services or new services such as PCS? Do LECs' current charges/tariffs differ depending on the flow of traffic? We also invite parties to submit data on the extent to which existing LEC-CMRS interconnection arrangements involve both interstate and intrastate traffic. In particular, we seek empirical data and analysis on the extent to which significant levels of interstate wireless traffic are being carried under such arrangements. We

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[57] *See Equal Access and Interconnection NPRM and NOI*, 9 FCC Rcd 5408, 5451, para. 105 for a description of Type 1, Type 2A, and Type 2B interconnection facilities.

[58] *Ex parte* letter from Kathleen Q. Abernathy, Counsel for Air Touch Communications to Mr William F. Caton, Acting Secretary, Federal Communications Commission, October 11, 1995, at 4

[59] *Id.; see* PCIA Comments at 13-14.

[60] According to Pacific Telesis, 94% of LEC-CMRS exchange traffic terminates on its network and 6% terminates on wireless networks, and wireless traffic is growing at about 20% per year in California, although the termination ratio remains about the same. *Ex Parte* Letter from Alan Ciamporcero, Vice President, Pacific Telesis, to Michele Farquhar, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, December 7, 1995.

also seek comment on the extent to which our mutual compensation requirement is not being observed in the marketplace.

b. General Pricing Principles

(1) Rate Structure

42. In general, we believe that costs should be recovered in a manner that reflects the way they are incurred. Network providers incur costs in providing two broad categories of facilities, dedicated and shared. Dedicated facilities are those that are used by a single party -- either an end user or an interconnecting network. Shared facilities are those that are used by multiple parties. Shared facilities can be further divided into two sub-categories, those that need to be augmented to increase the network's capacity and those that need not. In the first such sub-category are facilities, such as switches and multiplexing electronics, for which incremental investments can increase the volume of traffic that the network can handle during peak periods. In the second such sub-category are facilities, such as telephone poles and buildings that house equipment, whose capacity will not restrict the volume of traffic that the network can handle during peak periods.

43. The cost of a dedicated facility can be attributed directly to the party ordering the service that uses that facility. To the extent that the benefits of a dedicated facility accrue to the party to whom it is dedicated, it is efficient for that party to pay charges that recover the full cost of the facility. To ensure that the party pays the full fixed cost of the facility, the cost should be recovered on a non-traffic sensitive (NTS) basis (*i.e.*, without regard to actual usage). Charging a flat, cost-based rate ensures that a customer will pay the full fixed cost of the facility, and no more; this ensures that the customer will, for example, add additional lines if and only if the customer believes that the benefits of the additional lines will exceed their cost. An additional advantage of a flat fee is that it does not distort usage. The alternative, a usage-based charge, would cause parties with high traffic volumes to overpay (*i.e.*, pay more than the fixed cost of the facility), while parties with low traffic volumes would underpay (*i.e.*, pay less than the fixed cost of the facility). In addition, a usage-based charge would give all parties an uneconomic incentive to reduce their traffic volumes or to avoid connecting with networks that impose such charges. It would also give parties with low volumes of traffic, who face below-cost prices, an incentive to add lines that they valued below their cost.

44. 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. Since the cost of capacity is a function of the volume of traffic the facilities are able to handle during peak load periods, we believe, as a matter of economic theory, that network capacity costs should primarily be recovered through traffic-sensitive (TS) rates charged for peak period traffic, with lower rates for non-peak usage. The peak load price should be designed to recover at least the cost of the incremental network capacity added to carry peak period traffic. Pricing traffic during peak periods based on the cost of the incremental

capacity needed to handle additional traffic is economically efficient because additional traffic will be placed on the network if and only if the user or interconnecting network is willing to pay the cost of the incremental network capacity required to handle this additional traffic. Such pricing also ensures that a call made during the peak period generates enough revenue to cover the cost of the facilities expansion it requires, and it thus gives carriers an incentive to expand and develop the network efficiently. In contrast, off-peak traffic imposes relatively little additional cost because it does not require any incremental capacity to be added, and consequently, the price for carrying off-peak traffic should be lower.

45. We recognize that there may be practical problems in implementing a peak sensitive pricing system. For example, different parts of a given provider's network may experience peak traffic volumes at different times (*e.g.*, in LEC networks, business districts may experience their peak period between 10:00 and 11:00 a.m., while suburban areas may have their peak periods between 7:00 and 8:00 p.m.). Moreover, peak periods may change over time. For instance, charging different prices for calls made during different parts of the day may cause some customers to shift their calling to the less expensive time periods, which could potentially shift the peak or create new peaks.[61] We seek comment on whether a system with a long peak period (*e.g.*, 8:00 a.m. to 9:00 p.m.) and with peak and off-peak rates that reflect both the difference in costs across these periods and customers' propensity to substitute across time periods would improve the utilization rates of the network and would be administratively simple. We seek comment on this analysis, and on possible methods for implementing peak-load pricing or other schemes to recover shared network capacity costs. We also seek comment on possible administrative costs associated with peak-load pricing or other schemes to recover shared network capacity costs.

46. There are also certain shared facilities, such as land, buildings, and telephone poles, whose costs do not vary with capacity (or peak period traffic volumes). As we discuss in the following section on rate levels, there are theoretical and practical problems associated with recovering these shared costs and overheads. We seek comment on how these costs should be recovered and, in particular, on whether they should be recovered entirely through peak rate charges, or through off-peak rates as well. Finally, we note that a carrier may incur varying costs to provide a given service in different geographic areas. We seek comment on how this should be taken into account.

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[61] *Compare* United Kingdom Office of Telecommunications, *A Framework for Effective Competition: A Consultative Document on the Future of Interconnection and Related Issues*, ¶ 14.17 (Dec. 1994).

(2) Rate Levels

(a) Long Run Incremental Costs

47. The long run incremental cost (LRIC) of a service is the theoretical foundation for efficient pricing of interconnection and other network services.[62] Economists generally agree that prices based on LRIC reflect the true economic cost of a service and give appropriate signals to producers and consumers and ensure efficient entry and utilization of the telecommunications infrastructure.[63] Since customers will buy a good only if the benefit to the customer exceeds the price, prices based on LRIC ensure that customers purchase a good only when the benefit exceeds the cost. Similarly, since firms will offer a service when the revenue exceeds the cost, prices based on LRIC ensure a firm has an incentive to offer a service when customers' willingness to pay for the service exceeds the cost of providing it.

48. Pricing at LRIC raises some difficulties, however. First, attempting to determine the LRIC of a specific service for a particular LEC is likely to raise significant practical and administrative problems. In addition, given that services are provided over shared facilities and there are economies of scale and scope, setting the price of each discrete service based on the LRIC of that service will not recover the total costs of the network. Similarly, where technological developments are reducing the costs of providing service, setting the price of discrete services equal to the forward-looking LRIC of each service is not likely to recover the historical, embedded costs of the network (or the interstate share of such costs assigned by our Part 36 separations rules). We seek comment on the empirical magnitude of these cost differentials.

(b) Recovering Costs in Excess of Long Run Incremental Costs

49. The fact that pricing based on the LRIC of specific services may not cover all common costs raises difficult issues for pricing interconnection. In particular, this problem means that, if all costs are to be recovered, some services must be priced above LRIC, which will cause some distortions. It is therefore necessary to consider whether terminating

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[62] We have defined long-run incremental cost as including "the full amount of incremental investment and expenses which would be incurred by reason of furnishing additional quantities of service, whether in a new or an existing service category." We added that, in estimating LRIC, one "determine[s] prospectively the effect on total costs, including the effect on common costs, . . . of adding units of service." *American Telephone & Telegraph Co.*, 55 FCC 2d 224, 231 n.18 (1975) (citing *American Telephone & Telegraph Co.*, 18 FCC 2d 761, 766 (1969)).

[63] *See generally* Alfred E. Kahn, I *The Economics of Regulation: Principles and Institutions* 85 (1970). *See also* Stephen Breyer, *Regulation and Its Reform* 52 (1982); Harold Hotelling, "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates, 6 *Econometrica* 242 (1938).

carriers should be allowed to recover such costs in excess of LRIC, and if so, to address the method of recovering such costs that would minimize economic distortions and best advance our goals. We seek comment on how best to deal with this recovery issue and, in particular, on the following approaches.

50. One approach would be to allow carriers to set LEC-CMRS interconnection rates equal to the LRIC of the individual services associated with interconnection, and to recover common costs by having the rates for other services, such as vertical calling features (*e.g.*, call waiting, call forwarding, or caller ID), exceed LRIC. This would clearly benefit those CMRS and LEC networks that seek to interconnect with one another's network. We seek comment on whether, and on what basis, LEC-CMRS interconnection offerings should be treated differently from a carrier's other service offerings, which generally are priced to recover some portion of shared costs and overheads.

51. Another approach would be to allocate shared costs and overhead among services in an inverse relationship to the sensitivity of demand for each of the services.[64] Under this "Ramsey rule," a higher percentage of shared costs and overheads would be allocated to services for which the quantity demanded declines less as the price increases, than to services for which demand is more sensitive to changes in price. In theory, this approach has the advantage that it efficiently minimizes reductions in the quantities of services demanded due to prices above LRIC.[65] While demand sensitivity is clearly relevant to setting efficient prices, there is some concern about how Ramsey principles should be applied to markets subject to actual or potential competition. We recognize that Ramsey pricing principles were developed in the context of a regulated monopoly and not for markets subject to existing or potential competition.[66] We seek comment on whether such an approach is desirable for markets in which competition is developing. We also seek comment on whether such a pricing rule is in the public interest, given that it may result in imposing the greatest burdens on those customers who have the fewest alternatives.

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[64] The sensitivity of demand is measured by the elasticity of demand, which is defined as the percentage change in the quantity of a service demanded for a given percentage change in price.

[65] *See* Frank P. Ramsey, *A Contribution to the Theory of Taxation*, 37 Econ. J. 47 (1927); *see generally* Kenneth E. Train, *Optimal Regulation: The Economic Theory of Natural Monopoly* 115-40 (1992) (discussing efficiency properties of Ramsey prices); Bridger M. Mitchell & Ingo Vogelsang, *Telecommunications Pricing: Theory and Practice* 43-61 (1991) (same).

[66] Alfred E. Kahn & William B. Shew, *Current Issues in Telecommunications Regulation: Pricing*, 4 Yale J. on Reg. 191, 248 (1987) ("The standard formula for Ramsey pricing assumes a monopoly supplier. The competition in telecommunications markets is likely to alter the prices that satisfy the Ramsey principle. How it alters them will depend on whether regulation is confined to the incumbent firm or extended to competitive entrants as well.").