

subsequent investigations regarding the LECs' physical and virtual collocation tariffs;⁹⁹ or (3) additional policy considerations.¹⁰⁰ We also tentatively conclude, in light of the court decision in *Pacific Bell v. FCC*,¹⁰¹ that our existing policies on expanded interconnection for interstate special access and switched transport services should continue to apply pursuant to our authority under sections 201 and 251(g). We seek comment on this tentative conclusion.

c. Unbundled Network Elements

74. Section 251(c)(3) imposes a duty upon incumbent LECs "to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory in accordance with the terms and conditions of the agreement and the requirements of this section and section 252." Incumbent LECs are required to provide these network elements "in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service." In addition, section 251(d)(2) provides that the Commission, in determining which network elements incumbent LECs should unbundle, "shall consider, at a minimum, whether (A) access to such network elements as are proprietary in nature is necessary; and (B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."¹⁰²

75. Together, sections 251(c)(3) and 251(d)(2) foster competition by ensuring that new entrants wishing to compete with incumbent LECs can purchase access to those network elements that they do not possess, without paying for elements that they do not require.¹⁰³ The ability to purchase, at reasonable, cost-based prices, access only to those network elements a carrier needs allows new entrants to enter the LEC's market gradually, building their own networks over time, and purchasing fewer unbundled elements as their own networks develop. Further, new entrants can purchase access to those elements incumbent LECs can provide most efficiently, and at the same time build their own facilities only where it would be efficient.

76. In addition, the requirement that rates, terms, and conditions be just, reasonable, and

⁹⁹ Tariffs for both virtual and physical collocation offerings filed by the LECs pursuant to the *Virtual Collocation Expanded Interconnection Order* are currently under investigation. *Special Access Physical Collocation Designation Order*, 8 FCC Rcd 6909; *Virtual Collocation Designation Order*, 10 FCC Rcd 11116. In these designation orders, we addressed disputes that arose over various standards issues, for example: space size, space warehousing, termination notice and reasons, cage inspections, and insurance.

¹⁰⁰ We address the pricing requirements for collocation in section II.B.2.d below.

¹⁰¹ *Pacific Bell v. FCC*, No. 94-1547 (D.C. Cir. Mar. 22, 1996). The court remanded for reconsideration the Commission's virtual collocation order, 9 FCC Rcd 5145, concluding that the Commission's regulations implementing the 1996 Act would render moot the questions about the future effect of the order. The petitioners had argued that the Commission lacked statutory authority to order incumbent LECs to provide virtual collocation.

¹⁰² 1996 Act, sec. 101, § 251(c)(3).

¹⁰³ The conferees recognized this critical function of section 251(c)(3): "[I]t is unlikely that competitors will have a fully redundant network in place when they initially offer local service, because the investment necessary is so significant. Some facilities and capabilities . . . will likely need to be obtained from the incumbent [LEC] as network elements pursuant to new section 251." Joint Explanatory Statement at 148.

nondiscriminatory: (1) prevents the incumbent LEC from offering unbundled elements on rates, terms, and conditions so overpriced or burdensome as to discourage competition; (2) enables new entrants to discipline the incumbent's pricing; and (3) allows entrants to take market share from the incumbent if the new entrant is more efficient or if the incumbent attempts to charge prices above competitive levels.

77. Section 251(d)(2) provides that the Commission will "determin[e] what network elements should be made available for purposes of subsection (c)(3)." As a result of this provision, and the obligation created by section 251(d)(1), we tentatively conclude that section 251 obligates the Commission to identify network elements that incumbent LECs should unbundle and make available to requesting carriers under subsection (c)(3). Rather than itemize an exhaustive list of network elements, however, some of which competing carriers may not desire, we further tentatively conclude that the Commission should identify a minimum set of network elements that incumbent LECs must unbundle for any requesting telecommunications carrier, and, to the extent necessary, establish additional or different unbundling requirements in the future as services, technology, and the needs of competing carriers evolve. We seek comment on these tentative conclusions.

78. Carriers may, of course, voluntarily negotiate agreements for unbundling elements that differ from those addressed by the Commission under section 251(c)(3).¹⁰⁴ In addition, section 252(e)(3) preserves a state's authority to impose other requirements of state law in its review of arbitrated agreements.¹⁰⁵ Thus, to the extent such requirements are consistent with the provisions of section 251(c)(3) and our rules,¹⁰⁶ we tentatively conclude that states may require additional unbundling of LEC networks.

79. In light of our obligations under sections 251(d)(1) and 251(d)(2), we also seek comment on whether and to what extent, beyond merely identifying network elements that incumbent LECs must provide on an unbundled basis pursuant to subsection (c)(3), the Commission should establish minimum requirements governing such unbundling. These requirements could include, for example, provisioning and service intervals, nondiscrimination safeguards, and technical standards. We believe that minimum national requirements governing the unbundling of network elements would likely offer several advantages. Such requirements would provide uniform technical requirements, and would enhance the ability of new entrants to take advantage of economies of scale and to plan and deploy networks stretching across state and LEC boundaries. We note that telecommunications equipment has heretofore been provided by national manufacturers selling to a nation-wide market, without substantial regional or state-to-state variation in equipment design. Minimum national requirements also may ensure some level of network and equipment interoperability between both competing and noncompeting carriers. Further, Commission minimums would reduce or eliminate the need for certain duplicative decision-making by the states, provide a ready framework for the many states that have not acted to unbundle LEC networks, and speed the negotiation and arbitration processes by reducing any ambiguity in the parties' obligations. Thus, states could rely on a set of generally applicable minimum requirements, while prescribing additional rules of unbundling tailored to their particular circumstance.

¹⁰⁴ 1996 Act, sec. 101, § 252(a).

¹⁰⁵ 1996 Act, sec. 101, § 252(e)(3). Such requirements could include intrastate telecommunications service quality standards. Section 251(d)(3) also preserves the right of states to enforce consistent access and interconnection regulations. 1996 Act, sec. 101, § 251(d)(3).

¹⁰⁶ See, e.g., 1996 Act, sec. 101, § 252(c)(1).

80. We also seek comment on whether and to what extent we should establish national rules for unbundled network elements that allow for some variation among states. For example, we seek comment on the extent to which such rules should permit states to impose different obligations to address state-specific concerns and to experiment with alternative approaches, and whether permitting such variation would better achieve the goals of the 1996 Act. Would variations in technical requirements among states affect the ability of new entrants to plan and configure regional or national networks? Would a lack of explicit requirements impair a state's ability to complete arbitrations within the prescribed time-frame, or our ability to evaluate BOC compliance under section 271 within 90 days? Would a lack of clear national rules impair our ability under section 252(e) to assume a state commission's responsibilities if the state commission fails to act to carry out its responsibilities under section 252?

81. We also encourage parties to provide us with information regarding the policies that states have adopted to address network unbundling. While many states have not acted at all to unbundle LEC networks, several states have ordered some amount of LEC network unbundling. States such as Illinois, New York, California, and Maryland require, or plan to require, LECs to unbundle at least local loops. New York, for example, has implemented a request-based approach that requires unbundling only for requested elements (to date local loops and ports), and then only if essential facilities are involved. Other states, such as Maryland and Florida, require LECs to unbundle all network elements to the extent technically feasible and "reasonable" or "economically feasible," and address unbundling requirements for a specific element when that element is requested.¹⁰⁷ In contrast to these request-based approaches, some states, such as Colorado, Hawaii, and California, determine an essential or "key" set of LEC network elements that LECs must unbundle. We seek comment on the policies that other states have adopted.

82. Finally, with respect to each of the issues discussed below, we request comment on whether any existing state approaches, alone or in combination, would be suitable for incorporation into national rules implementing section 251(c)(3). We also ask commenting parties to identify state approaches that they believe are either inconsistent with the 1996 Act or that are inadvisable from a policy perspective.

(1) Network Elements

83. Section 3(29) defines a "network element" as both "a facility or equipment used in the provision of a telecommunications service" as well as "features, functions, and capabilities that are provided by means of such facility or equipment."¹⁰⁸ According to the Joint Explanatory Statement, "[t]he term 'network element' was included to describe the facilities, such as local loops, equipment, such as switching, and the features, functions, and capabilities that a [LEC] must provide for certain purposes under other sections of the conference agreement."¹⁰⁹ We believe that under this broad definition, an entire local loop, for example, could constitute a single network element, or comprise several network elements.¹¹⁰ An alternative interpretation,

¹⁰⁷ 85 Md. PSC 38, 54 (1994).

¹⁰⁸ 1996 Act, sec. 3, § 3(29).

¹⁰⁹ Joint Explanatory Statement at 116.

¹¹⁰ The simplest example of an existing local loop is a single twisted pair of copper wires connecting a customer premises to a LEC central office. Local loop traffic, however, may be combined with that of other loops prior to arriving at a LEC central office, such as where traffic from a single loop is switched or

albeit one that would provide competitors less flexibility, is that a network element, once defined, cannot be subdivided. We seek comment on our more flexible interpretation of "network element," and how to apply the definition in accordance with the unbundling proposals discussed below.

84. We also seek comment on the apparent distinction, drawn in the definition of "network element" in the 1996 Act, between the "facility or equipment used in the provision of a telecommunications service," and the service itself. We request comment on the meaning and significance of such a distinction in general and with respect to particular elements. For example, because the nature of a network element, under the definition in the 1996 Act, is a facility or function, and is not dependent upon the particular services offered by means of such facility or function, does the purchase of access to such an element entitle, or indeed obligate the requesting carrier to provide the customer with all services, intrastate and interstate, that use the element? Under this reading of the statute, a telecommunications carrier that purchased local switching as a network element would use that element to provide whatever intrastate and interstate switching services the customer desired. As discussed more fully below in section II.B.2.e., such an entitlement or obligation to provide all of the services that a particular network element currently is used to furnish may distinguish network elements from existing access services.

85. In addition, we request comment on the relationship between section 251(c)(3),¹¹¹ concerning unbundling, and section 251(c)(4),¹¹² which addresses resale of incumbent LEC services. Specifically, may requesting carriers order and combine network elements to offer the same services an incumbent LEC offers for resale under subsection (c)(4)? Does subsection (c)(3) in effect provide new entrants with an alternative way to "resell" the services of incumbent LECs in addition to the specific resale provision in subsection (c)(4)? In this regard, we note that section 252(d) provides different pricing standards for these two subsections, and we ask commenters to address the implications of this difference.¹¹³ To the extent that section 251(c)(3) contemplates the purchase of unseparated facilities (*i.e.* facilities used to provide both intra- and interstate services), as discussed above, we note that a telecommunications carrier would not necessarily be purchasing the same service(s) it would under section 251(c)(4). Does the difference, if any, between network elements and the services provided by means of such elements play a meaningful role in distinguishing these two subsections?¹¹⁴ We invite parties to

concentrated onto a single multiplexed line at a remote site. Thus, a "loop" may actually be composed of feeder plant (linking a LEC central office to a remote site), feeder/distribution interface elements at the remote site, and distribution plant (linking the remote site to a customer premises).

¹¹¹ Section 251(c)(3) imposes a duty upon incumbent LECs "to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point." 1996 Act, sec. 101, § 251(c)(3).

¹¹² Section 251(c)(4) imposes a duty upon incumbent LECs to "offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers." 1996 Act, sec. 101, § 251(c)(4).

¹¹³ Some parties have asserted, for example, that allowing interexchange carriers to offer the same services over combined LEC network elements that the LEC already offers would enable such carriers to circumvent the section 271(e)(1) joint marketing restriction.

¹¹⁴ For example, under the Illinois Local Switching Platform concept, discussed in detail below, requesting carriers may offer services by means of the unbundled platform that the incumbent LEC does not offer.

comment on these and any other issues raised by the interplay of subsections (c)(3) and (c)(4). Parties should base their comments on specific statutory language.

(2) Access to Network Elements

86. Section 251(c)(3) requires incumbent LECs to provide "access" to network elements "on an unbundled basis."¹¹⁵ We interpret these terms as requiring incumbent LECs for a fee to provide requesting carriers with the ability to obtain a particular element's functionality, such as a local loop's function of transmitting signals from a LEC central office to a customer premises, separate from that of other functionalities or network elements, such as the local switch. Further, the term "unbundled" suggests that there must be a separate charge for each purchased network element.¹¹⁶ We seek comment on this and any alternative interpretations of section 251(c)(3).

87. Section 251(c)(3) further mandates that incumbent LECs provide access to network elements on an unbundled basis "at any technically feasible point."¹¹⁷ Parties are asked to identify and describe, in brief, each network element for which they believe access on an unbundled basis is technically feasible at this time. Further, we seek comment on whether a dynamic definition of "technically feasible" is practical for identifying elements beyond those discussed here,¹¹⁸ and, if so, what such a definition should be. We also ask whether the states, rather than the Commission, may apply the definition during the arbitration process. We further request that parties comment on experiences with providing or purchasing access to elements currently unbundled by the states, and any state approaches to determining the technical feasibility of unbundling elements that the Commission could use in a national model. We also seek comment on whether the technical feasibility of interconnection at a particular point affects, at least in part, the technical feasibility of providing access to a network element on an unbundled basis at that point. Finally, because subsection (c)(3) imposes an affirmative obligation on incumbent LECs to provide unbundled elements, we tentatively conclude that LECs have the burden of proving that it is technically infeasible to provide access to a particular network element. We also tentatively conclude that the unbundling of a particular network element by one LEC (for any carrier) evidences the technical feasibility of providing the same or a similar element on an unbundled basis in another, similarly structured LEC network. We seek comment on these tentative conclusions.

88. In addition to technical feasibility, section 251(d)(2) requires that the Commission "consider, at a minimum, whether . . . access to such network elements as are proprietary is necessary, and [whether] the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."¹¹⁹ We seek comment on the extent to which the Commission must "consider" these standards, how these standards should be interpreted, and on any additional considerations, such as possible risks to network reliability or other harm. We note that the 1996 Act uses the terms

¹¹⁵ 1996 Act, sec. 101, § 251(c)(3).

¹¹⁶ "Access" is defined as the "ability or permission to approach, enter, . . . or use." *Random House College Dictionary* 9 (revised ed. 1980). "Unbundle" is defined as "to separate (the charges for related products and services usually offered in a single transaction at one all-inclusive price)." *Id.* at 1428.

¹¹⁷ 1996 Act, sec. 101, § 251(c)(3).

¹¹⁸ See section II.B.2.c.3. below

¹¹⁹ 1996 Act, sec. 101, § 251(d)(2).

"technically feasible" and "economically reasonable" together in other sections of the Act,¹²⁰ and we seek comment on what effect the absence of the term "economically reasonable" in section 251(c)(3) has on economic considerations. Further, we request comment on whether this omission could be construed to imply that Congress intended for carriers requesting unbundling to pay its cost, and on whether that construction is consistent with the intent of the 1996 Act.¹²¹

89. We also request comment on whether the Commission should establish minimum requirements governing the "terms" and "conditions" that would apply to the provision of all network elements. For example, should the Commission require incumbent LECs to provide network elements using the appropriate installation, service, and maintenance intervals that apply to LEC customers and services? Alternatively, should the Commission require LECs to comply with national or industry-based standards? Would minimum national requirements for electronic ordering interfaces reduce the time and resources required for new entrants to compete in regional markets? What standard unbundling terms and conditions, if any, should the Commission use in evaluating applications under section 271(b)? Would national rules aid the states in arbitrating agreements within the statutory period? If parties believe that the Commission should specify minimum terms and conditions, we seek comment on what those terms and conditions should be, and how those terms and conditions might be enforced. Parties are encouraged to cite specific examples from the states that could be incorporated into minimum national requirements.

90. In addition, we request comment on the meaning of the requirement in section 251(c)(3) that LECs provide unbundled network elements "in a manner that allows requesting carriers to combine such elements in order to provide . . . telecommunications service."¹²² For example, should the required facilities or services associated with a particular network element vary depending on the services the requesting carrier wishes to provide or on the types of facilities the requesting carrier will use in combination with the requested elements? We also seek comment on the relationship between this provision and section 251(d)(2)(B), discussed above, which requires the Commission to consider whether the failure to provide access to an element would impair the ability of a requesting carrier to provide a desired service.

91. Section 251(c)(3) further requires incumbent LECs to provide requesting carriers with "nondiscriminatory" access to unbundled network elements.¹²³ That section also requires LECs to provide access on "terms, and conditions that are . . . nondiscriminatory."¹²⁴ We seek comment on what minimum requirements, if any, we should adopt to ensure that LECs do not discriminate among requesting carriers. For example, one criterion might be whether an end user could perceive any differences in the quality of service provided by one carrier as compared with another. Another criterion might be to require LECs to make it as easy to switch local service providers as it is for customers to switch interexchange providers. Further, unlike subsection

¹²⁰ See, e.g., 1996 Act, sec. 101, § 254(h)(2). The House Committee, in considering H.R. 1555, dropped the term "economically reasonable" from its unbundling provision, reporting that "this requirement could result in certain unbundled . . . elements . . . not being made available." H. Rep. 104-204, 71 (1995).

¹²¹ In any event, access to network elements must be available at rates, terms, and conditions that are just, reasonable, and nondiscriminatory. 1996 Act, sec. 101, § 251(c)(3).

¹²² 1996 Act, sec. 101, § 251(c)(3).

¹²³ *Id.*

¹²⁴ *Id.*

(c)(2), which requires that interconnection offered requesting carriers be "at least equal in quality to that provided" by the LEC itself, subsection (c)(3) does not contain such a requirement. Nevertheless, we request comment on whether we can and should prohibit an incumbent LEC from providing requesting carriers with access inferior to that which it provides itself.¹²⁵

(3) Specific Unbundling Proposals

92. We now consider particular network elements to which incumbent LECs must provide access on an unbundled basis under section 251(c)(3). As discussed above, we propose to identify a minimum number of elements that incumbent LECs must unbundle, and we seek comment on what minimum requirements of unbundling, if any, the Commission should adopt for each element. AT&T, for example, has publicly advocated that the Commission should require the unbundling of eleven network elements: loop distribution, concentration, and feeder plant; local and access tandem switches; dedicated and common transport; SS7 signalling links, signal transfer points, and signal control points; and operator services.¹²⁶ MCI advocates, in addition, the unbundling of loop and trunk ports from local switching.¹²⁷ Some LECs favor the unbundling of significantly fewer elements.¹²⁸

93. We address below four categories of elements: loops, switches, transport facilities, and signaling and databases. For each of the proposed network elements discussed in these categories, we request that parties comment on the following issues:

- (1) the technical feasibility of providing access to that or an equivalent element on an unbundled basis, how such access should be provided, and any demonstrable network reliability concerns;
- (2) whether and to what extent LECs currently allow other carriers to access such elements;
- (3) whether the Commission should establish a standard for defining the element, and if so, what level of technical detail is required in the definition, and what facilities or functionalities should be included or excluded from the definition;
- (4) whether the Commission should establish minimum requirements for the terms and conditions of provisioning the element, and if so, what they should be;
- (5) whether the failure to unbundle the element would impair a requesting carrier's ability to provide the services that it seeks to offer;
- (6) whether proprietary interfaces or technology are involved in providing the element, and if so, whether unbundled access to the element is necessary; and
- (7) any other issues presented by the unbundling of this element that are important to effectuating the goals of section 251(c)(3) and the 1996 Act.

(a) Local Loops

94. We propose to require incumbent LECs to provide local loops as unbundled network elements. The Joint Explanatory Statement accompanying the 1996 Act expressly cites the local

¹²⁵ We note that there may be network elements, such as particular switching functionalities unbundled from other functionalities, for which it is technically infeasible for LECs to provide equal access to requesting carriers.

¹²⁶ AT&T Letter to Regina Keeney, Chief, Common Carrier Bureau (Mar. 21, 1996).

¹²⁷ MCI Presentation to Chairman Reed Hundt (Mar. 29, 1996).

¹²⁸ Ameritech Letter to Regina Keeney, Chief, Common Carrier Bureau (Mar. 1996).

loop as an example of a network element.¹²⁹ In addition, the competitive checklist of section 271(c)(2)(B) specifies the unbundling of local loops from local switching or other services as a precondition to BOC provision of in-region interLATA services.¹³⁰ Further, several states have ordered, and LECs currently offer, loops unbundled from local switching,¹³¹ and thus we tentatively conclude that the unbundling of local loops is technically feasible.

95. We first seek comment on whether and the extent to which the Commission should prescribe a set of minimum requirements for unbundling and provisioning loops. For example, we could require only that incumbent LECs must, upon request, provide at central offices individual transmission links to customer premises regardless of the technology involved.¹³² It appears, however, that in states that already have ordered loop unbundling, the general requirement to unbundle is merely the first step in a process of providing new entrants with meaningful facilities with which to compete.

96. The New York Commission, for example, having anticipated and addressed many of the problems associated with unbundling loops and ports, is still grappling with issues such as operational interfaces between carriers, the timing of loop provisioning relative to number porting, and underlying delivery systems supporting loop-provisioning.¹³³ In view of such complex and resource-intensive issues, we seek comment on whether there are minimum requirements that would build upon the progress of preexisting state initiatives and facilitate the provisioning of unbundled loops. What requirements, for example, would avoid the need for duplicative decision-making by states and variations among states in the effectiveness of loop unbundling, while better enabling new entrants to plan and fund regional networks? To what extent is the avoidance of interstate duplication and variation necessary to achieving the goals of the 1996 Act? How should the Commission structure national requirements to provide sufficient flexibility to carriers and the states for use of different or new "loop" technologies or services?

97. In addition, we tentatively conclude that we should require further unbundling of the local loop. We seek comment on which subloop elements are technically feasible to unbundle. For example, the Commission could require incumbent LECs to provide access to loop feeder and distribution plant on an unbundled basis at remote switching or concentration sites, in

¹²⁹ Joint Explanatory Statement at 116.

¹³⁰ 1996 Act, sec. 151, § 271(c)(2)(B). Our obligation under that section to review BOC applications to provide such services implicitly requires some standard by which to judge the applications.

¹³¹ NYNEX, Rochester Telephone, and Ameritech, among others, are providing unbundled local loops. NYNEX estimates, for example, that approximately 10,000 unbundled loops are currently in service in its region. Illinois defines a loop as "a transmission path capable of transporting analog or digital signals from the network interface at a customer's premises to a distribution frame, digital signal cross-connect panel, or similar demarcation which is accessible to the interconnector." Ill. Admin. Code tit. 83. § 790.10.

¹³² We note that some local switches in LEC central offices can process concentrated loop traffic without prior demultiplexing of the individual loop traffic. This complicates the task of providing an interconnecting carrier access to a particular loop

¹³³ *Order Considering Loop Resale and Links and Ports Pricing*, Case Nos. 95-C-0657, 94-C-0095, and 91-C-1174 (NYPSC Feb. 1, 1996).

addition to access to the switching or concentration equipment itself.¹³⁴ Hawaii, for example, divides local loop functions into these three categories.¹³⁵ Illinois also recently required LECs to provide subloop elements in response to a bona fide request.¹³⁶ Such requests may come from carriers deploying cable or fiber feeder facilities that lack distribution plant. We thus seek comment on whether requiring access to loops prior to their concentration or multiplexing would allow requesting carriers to provide services they could not provide at LEC central offices, and whether such access would involve proprietary equipment. Finally, we request comment on what minimum requirements for subloop unbundling, at this early stage where few if any states have addressed the issue, would pave the way for rapid adoption and provision of subloop elements.

(b) Local Switching Capability

98. In addition to the local loop, we tentatively conclude that incumbent LECs should provide unbundled local switching capability as a network element. The Joint Explanatory Statement expressly cites switching equipment as an example of a network element.¹³⁷ In addition, the competitive checklist of section 271(c)(2)(B) specifies the unbundling of local switching from transport, local loop transmission, or other services as a precondition to BOC provision of in-region interLATA services. Finally, we believe unbundling of local switching capability is critical to the implementation of section 251(c)(3) and the provision of competing telecommunications services.

99. Unlike a local loop, local switching equipment is often shared by thousands of customers. As a result, it may be difficult to identify or define the use of such equipment for a particular customer. One possible way to identify a switching element is to define the element in terms of the *capacity* of a local switch to switch traffic from line to line, line to trunk, trunk to line, or trunk to trunk.¹³⁸ This is both the most essential and rudimentary capacity of a local switch. Today's modern switches, however, are capable of significantly more advanced functions, such as call waiting, conference calling, signaling, and centrex. Under the 1996 Act's definition of network element, these functions could constitute individual network elements separate from the basic switching functionality, or could be grouped in part or whole with the basic functionality, which would allow requesting carriers, in turn, to offer the functions they desire.

100. Illinois, for example, is investigating a "local switching platform" approach to unbundling the local switch. The platform is described in terms of "virtual" switch capacity, including all the services and functions performed by the switch on a per line basis, such as dialtone, telephone number provision, all CLASS and CCF features, originating and terminating

¹³⁴ In discussing the 1996 Act, Representative Watts of Oklahoma addressed the need for subloop unbundling: "As rules that define facilities-based competition are developed and implemented, I expect those charged with that responsibility to make certain . . . [that] all local exchange service providers . . . provide line-side interconnection and unbundling of the local loop into its functional sub-elements -- feeder and distribution." 142 Cong. Rec. H1145-06.

¹³⁵ Hawaii PUC Order No. 14129, 3 (August 14, 1995).

¹³⁶ Ill. Admin. Code tit. 83, § 790.320(b). To date, the Illinois Commission has not addressed a specific request for unbundled loop subelements.

¹³⁷ Joint Explanatory Statement at 116.

¹³⁸ Such a definition could include functions of dialtone, digit reception, number translations, etc.

usage, and 911 services.¹³⁹ According to its advocates, unlike merely reselling a single switching service, under the platform structure requesting carriers incur added risk because the cost of the platform includes the cost of all functionalities provided by the switch on a per line basis, regardless of the functionalities ultimately purchased by an end user. This added risk translates into added profits if the requesting carrier is able to sell a combination of these switching functionalities at a higher profit than would have been possible under a simple resale arrangement. Moreover, because requesting carriers are not tied to the incumbent LEC's retail price structure, concerns about possible price squeezes are reduced.

101. Other states have defined a switching "port," which usually includes all the capabilities of the local network provided at the main distribution frame of a LEC central office. For example, New York treats a port essentially as an interconnection point into the rest of the NYNEX network. Thus a port defined in this way is not in the nature of an unbundled element that a competing carrier could combine with its own transport and other loop facilities to provide a competing telecommunications service. Rather, such a port is effectively equivalent to the LEC's bundled retail local service offering minus the loop. We seek comment on whether such a definition of "port" is consistent with the requirements of section 251(c)(3), especially the requirement that incumbent LECs provide elements in a manner that allows carriers to combine them to provide telecommunications services. Further, we seek comment on alternative definitions of "port,"¹⁴⁰ and on whether the port should be a separate unbundled element from the switch.

102. We also request comment on these and alternative approaches to unbundling the local switch, and on the technical feasibility of such approaches. Under the switching platform approach, for example, what control, if any, can and should requesting carriers have over the operations of a LEC local switch, and is access to proprietary functions or equipment necessary? Further, should the Commission identify several permissible approaches to switch unbundling, and what minimum requirements, if any, should apply? What requirements of switch unbundling would help the Commission in evaluating applications under section 271(b), and the states and the courts in arbitrating and evaluating agreements between carriers?

103. Finally, in conjunction with the next section addressing transport facilities, we request comment on whether requirements governing a local switching element could be tailored to apply to a tandem switching element. Parties should address the issues discussed above in the context of tandem switches.

(c) Local Transport and Special Access

104. We also propose to require incumbent LECs to provide access to unbundled transport facilities as network elements. We note that the competitive checklist of section 271(c)(2)(B) requires the provision of local transport from the trunk side of a LEC switch unbundled from switching or other services as a precondition to BOC provision of in-region interLATA services. We tentatively conclude that the unbundling of local transport and special access facilities is technically feasible. We note that the Commission's action in the *Expanded Interconnection* proceeding effectively required substantial unbundling of these facilities.

105. We propose to require unbundling of LEC facilities that correspond to the current

¹³⁹ See Ill. Comm. Comm'n Docket Nos. 95-0458, 95-0531.

¹⁴⁰ For example, MCI defines a port as the link from the LEC main distribution frame to the switch. MCI Presentation to Chairman Reed Hundt (Mar. 29, 1996).

interstate transport and special access rate elements. For direct-trunked transport networks, transport trunks would be unbundled from local switches, and the link from the serving wire center (SWC) to the IXC point of presence (POP) would be unbundled from the link between the central office and the SWC. For tandem-switched transport networks, the elements could include, among other options, unbundled trunks from the end office to the tandem office, trunks from the tandem office to the SWC, trunks from the SWC to the IXC POP, and the tandem switch itself. Finally, for special access we propose to require the unbundling of channel termination facilities from interoffice facilities.

106. We seek comment on the technical feasibility of unbundling direct-trunked and tandem-switched transport and special access facilities in this or in any alternative manner,¹⁴¹ and on how LECs should unbundle any other network facilities used to transport traffic from LEC central offices to IXC POPs or to other LEC central offices.

(d) Databases and Signaling Systems

107. The 1996 Act contemplates the unbundling of incumbent LECs' signaling systems and databases. Congress specifically included "databases" and "signaling systems" in the definition of network elements.¹⁴² The 1996 Act also requires BOCs to provide access to "databases and associated signaling necessary for call routing and completion" as a precondition for entry into in-region interLATA services.¹⁴³ Therefore, we tentatively conclude that requiring incumbent LECs to unbundle their signaling systems and databases is consistent with the intent of the 1996 Act.

108. Many incumbent LECs have Signaling System 7 (SS7) networks that are separate from, but interconnected with, the telecommunications networks that carry voice and data communications between end users. SS7 networks perform three primary functions: (1) call set up, which establishes transmission paths for calls; (2) access to remote databases, which provides specialized call routing information to switches; and (3) custom local area signaling service (CLASS) features, such as caller ID, which require the transmission of certain information between the calling and called parties. We request that commenters identify the points at which carriers interconnect with LEC SS7 networks today and the signaling and database functions currently provided by incumbent LECs on an unbundled basis. Commenters should also discuss the technical feasibility of establishing other points of interconnection and other unbundled signaling and database functions not currently offered by incumbent LECs.

109. An example of unbundling particular signaling and database elements is Colorado's requirement that incumbent LECs provide unbundled access to signaling links, signal transfer points, and service control points as well as access to non-proprietary signaling protocols used in the routing of local and interexchange traffic, 800 service, alternative billing service, and line

¹⁴¹ As discussed above, we ask parties to address the unbundling of tandem switches in accordance with the issues raised in the local switching section, and comment on any issues pertaining exclusively to tandem switching.

¹⁴² 1996 Act, sec. 3, § 3(29). *See also* statement of Sen. Pressler, noting that "access to signaling and databases [is] important if you are going to compete and get into the market." 141 Cong. Rec. S8163 (June 12, 1995).

¹⁴³ 1996 Act, sec. 151, § 271(c)(2)(B)(x).

information database (LIDB) service.¹⁴⁴ Colorado has not specified whether access to signaling and databases is limited to those particular services. Hawaii has taken a similar approach by requiring incumbent LECs to unbundle signaling links, signal transfer points, and service control points, and has not specified which services provided by these network elements must be made available to competitors.¹⁴⁵ By contrast, Louisiana has ordered unbundled access to incumbent LEC databases for all services that the incumbent LEC provides itself, including 800 service, LIDB, and advanced intelligent network (AIN) services.¹⁴⁶ Does the variation among the Colorado, Hawaii, and Louisiana regulations governing unbundled signaling and databases reflect differing circumstances that should be accommodated in our rules? Would such variation among states be consistent with the goals of the 1996 Act? Would new entrants be better served by uniform federal rules concerning unbundled access to signaling systems and databases? If so, would any of the regulations adopted by the states be useful to incorporate into national rules?

110. We also seek comment on the relative importance to potential entrants of the various functions performed by incumbent LECs' signaling systems and databases. For example, call set up plays an important role in the transmission of calls that are routed through more than one switch. Thus, it would appear that such functionality will be needed by entrants to provide competing local exchange service. However, we are aware that there are alternative suppliers of call set up services other than incumbent LECs. What bearing, if any, should this have on our adoption of unbundling rules for call set up? Are there existing suppliers for other functions performed by incumbent LECs' signaling systems and databases?

111. In addition, a competitor may seek to provide certain call processing features to its customers by reselling the incumbent LEC's call processing services. We seek comment on the importance of unbundled access to the incumbent LEC's advanced call processing features, such as single number service,¹⁴⁷ in the market entry decisions of potential competitors. We also seek comment on whether the software "building blocks" used by incumbent LECs to create call processing services are network elements to be unbundled. Given the array of existing and potential call processing services that could be provided by incumbent LECs' signaling systems and databases, we seek comment on whether the establishment of uniform national guidelines governing all call processing services provided via remote databases would facilitate the state arbitration process, judicial review, and/or Commission activities under section 253. We also seek comment on whether it would be consistent with the 1996 Act to permit variation among states with regard to unbundling call processing services provided via remote databases.

112. Under another scenario, a competitor that is providing resold local exchange service might seek to distinguish its offerings by connecting its own call processing database to the

¹⁴⁴ *Proposed Rules Regarding Implementation of §§ 40-15-101 Et. Seq. -- Requirements Relating To Interconnection and Unbundling*, Commission Decision Adopting Rules, Docket No. 95R-556T (Co. Pub. Util. Comm'n Apr. 1, 1996).

¹⁴⁵ *Instituting a Proceeding on Communications, Including an Investigation of the Communications Infrastructure of the State of Hawaii*, Order, Docket No. 7702 (Haw. Pub. Util. Comm'n Aug. 14, 1995) at 3.

¹⁴⁶ *Regulations For Competition in the Local Telecommunications Market*, General Order (La. Pub. Serv. Comm'n Mar. 15, 1996) (Louisiana PSC Order). AIN is an evolving network architecture that uses centralized databases to provide certain call processing services.

¹⁴⁷ With single number service, a subscriber is assigned a telephone number which, when dialed, causes the network to call a series of numbers until the subscriber is located or determined to be unreachable. Such numbers might include the subscriber's home, office, and mobile phone.

incumbent LEC's network, which would allow the competitor to provide call processing features not offered by the incumbent LEC. Enabling new entrants to offer their own call processing services in this way would likely stimulate local exchange competition. We seek comment on whether this type of interconnection is technically feasible without jeopardizing network reliability.

113. We also note that in our *Intelligent Networks* (IN) proceeding,¹⁴⁸ we are considering unbundling advanced intelligent network (AIN) elements, which include signaling systems and databases. In the IN NPRM, we tentatively proposed ordering Tier 1 LECs¹⁴⁹ to provide access to several specific AIN elements in order to promote competition in the provision of AIN services. Subsequently, a group of Tier 1 LECs filed a joint proposal calling for a two-year testing plan to explore methods of third-party interconnection to LEC AINs.¹⁵⁰ We seek comment on what role, if any, the LEC proposal for a testing program should play with regard to access to signaling and database elements that we address in this proceeding.¹⁵¹

114. We further note that our IN proceeding has focused on providing all interested third parties with access to Tier 1 LECs' AIN elements, primarily for the purpose of providing competing AIN services. Section 251 of the 1996 Act provides any requesting telecommunications carrier unbundled access to incumbent LECs' network elements "for the provision of a telecommunications service."¹⁵² We seek comment on whether mandating the unbundling of signaling systems and databases pursuant to section 251 would be sufficient to meet the objectives of the IN proceeding. To the extent that section 251 does not require incumbent LECs to provide certain third parties with access to unbundled AIN elements, we seek comment on whether we should use our section 201 authority to require such access. We also seek comment on how the unbundling of signaling systems and databases in this proceeding should affect our actions in the IN proceeding.

115. Requiring incumbent LECs to provide unbundled access to their signaling and database networks could also potentially permit competing carriers to gain access to competitively sensitive data. Louisiana has addressed this potential problem by specifically prohibiting incumbent providers from accessing the customer proprietary network information (CPNI) of an interconnecting carrier in order to market services to the interconnecting carrier's customers.¹⁵³ We seek comment on whether such a restriction should be implemented in federal

¹⁴⁸ *Intelligent Networks*, Notice of Inquiry, 6 FCC Rcd 7256 (1991); *Intelligent Networks*, Notice of Proposed Rulemaking, 8 FCC Rcd 6813 (1993).

¹⁴⁹ Tier 1 LECs are those exchange carriers having annual revenues from regulated telecommunications operations of \$100 million or more. *Commission Requirements for Cost Support Material to be Filed with 1990 Annual Access Tariffs*, 5 FCC Rcd 1364 (1990).

¹⁵⁰ Letter from Sandra Wagner, Director, Federal Regulatory, SBC Communications, Inc., to William F. Caton, Acting Secretary, FCC (June 23, 1995).

¹⁵¹ We incorporate the record compiled in the IN proceeding into this proceeding by reference.

¹⁵² 1996 Act, sec. 101, § 251(c)(3).

¹⁵³ *Louisiana PSC Order*

standards.¹⁵⁴ Are there other state regulations concerning access to competitors' CPNI that would prevent this type of anticompetitive conduct while allowing us to establish interconnection and unbundling rules for signaling and database facilities?

116. Finally, we request comment on other network elements to which the Commission should require access on an unbundled basis, and specific standards that should govern their unbundling. For example, the statutory definition of network element includes "subscriber numbers" and "information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service."¹⁵⁵ We tentatively conclude that these elements should be unbundled and we request comment on the standards we should set for such unbundling. In addition, section 271 of the 1996 Act requires incumbent LECs to unbundle "operator call completion services" as a precondition for providing in-region, interLATA services.¹⁵⁶ In light of this, we tentatively conclude that incumbent LECs should be required to unbundle operator call completion services as a network element pursuant to section 251(c) of the Act. We seek comment on this tentative conclusion.

d. Pricing of Interconnection, Collocation, and Unbundled Network Elements

(1) Commission's Authority to Set Pricing Principles

117. Section 251, in some instances, explicitly sets forth requirements regarding rates for service, interconnection, and unbundled elements. For example, sections 251(c)(2), (c)(3), and (c)(6) require that incumbent LECs' "rates, terms and conditions" for interconnection, unbundled network elements, and collocation be "just, reasonable, and nondiscriminatory,"¹⁵⁷ and, with respect to interconnection and unbundled elements, in accordance with section 252. Section 251(c)(4) requires that incumbent LECs offer "for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers," without unreasonable conditions or limitations.¹⁵⁸ Section 251(b)(5) requires that all LECs "establish reciprocal compensation arrangements for the transport and termination of telecommunications."¹⁵⁹ We tentatively conclude that this statutory language establishes our authority under section 251(d) to adopt pricing rules to ensure that rates for interconnection, unbundled network elements, and collocation are just, reasonable, and nondiscriminatory. We also tentatively conclude that we have statutory authority to define what are "wholesale rates" for purposes of resale, and what is meant by "reciprocal compensation arrangements" for transport and termination of telecommunications. We seek comment on this tentative conclusion.

118. We note that, under the statutory framework established by Congress, states have

¹⁵⁴ We plan to initiate a proceeding in the near future to implement the provisions of the 1996 Act that address CPNI.

¹⁵⁵ 1996 Act, sec. 3, § 3(29).

¹⁵⁶ 1996 Act, sec. 151, § 271(c)(2)(B)(vii)(III).

¹⁵⁷ 1996 Act, sec. 101, §§ 251(c)(2), (c)(3), (c)(6) (emphasis added).

¹⁵⁸ 1996 Act, sec. 101, § 251(c)(4) (emphasis added).

¹⁵⁹ 1996 Act, sec. 101, § 251(b)(5) (emphasis added).

the critical role under section 252 of establishing rates pursuant to arbitration and of reviewing rates under BOC statements of generally available terms.¹⁶⁰ Rates for both arbitrated agreements and BOC statements of generally available terms must be in accordance with section 252(d), which sets forth specific "pricing standards" for interconnection and unbundled elements, wholesale services, and transport and termination of traffic under reciprocal compensation arrangements. The 1996 Act appears to give a role to both the states and the Commission regarding rates for interconnection, unbundled network elements, wholesale services, and reciprocal compensation arrangements. We believe that the statute, and in particular our statutory duty to implement the pricing requirements of section 251, as elaborated in section 252, is reasonably read to require that we establish pricing principles interpreting and further explaining the provisions of section 252(d) for the states to apply in establishing rates in arbitrations and in reviewing BOC statements of generally available terms and conditions. Such an approach appears to be consistent with both the language and the goals of the statute.

119. Establishing national pricing principles would be likely to improve opportunities for local competition by reducing or eliminating inconsistent state regulatory requirements, thereby easing recordkeeping and other administrative burdens. In addition, national pricing principles would be likely to increase the predictability of rates, and facilitate negotiation, arbitration, and review of agreements between incumbent LECs and competitive providers. We seek comment on these tentative conclusions. We also seek comment on the potential consequences if the Commission does not set specific pricing principles. For example, would the lack of consistent rates, even in contiguous geographic areas, create a barrier to entry or to deployment of facilities throughout a multistate market? In addition, if the Commission is required to assume the responsibility of a state commission, pursuant to section 252(e)(5), would an absence of federal pricing principles impede the Commission's ability to arbitrate or review an agreement in a timely fashion?

120. Finally, consistent with our earlier discussion that sections 251 and 252 do not make jurisdictional distinctions between interstate and intrastate services and facilities, we tentatively conclude that the pricing principles we establish pursuant to section 251(d) would not recognize any jurisdictional distinctions, but would be based on some measure of unseparated costs. We do not believe section 2(b) requires a different conclusion. We seek comment on this tentative conclusion. We also seek comment on whether we need to revise our cost allocation rules in Part 64, or whether we need to adopt a similar set of cost allocation rules to remove the costs and revenues of services provided pursuant to sections 251 and 252 before the separations process is applied.

(2) Statutory Language

121. Section 251(c)(2)(D) requires that incumbent LECs provide interconnection "on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, in accordance with . . . the requirements of this section and section 252." Section 251(c)(3) similarly requires incumbent LECs to provide "nondiscriminatory access to network elements on an unbundled basis . . . on rates, terms, and conditions that are just, reasonable, and nondiscriminatory in accordance with . . . the requirements of this section and section 252." Likewise, section 251(c)(6) requires incumbent LECs to provide "on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, for physical collocation of equipment." Section 252(d)(1) provides that state determinations of

the just and reasonable rate for the interconnection of facilities and equipment for

¹⁶⁰ 1996 Act, sec. 101, §§ 252(c)(2) and (f)(2).

purposes of subsection (c)(2) of section 251, and the just and reasonable rate for network elements for purposes of subsection (c)(3) of such section --

(A) shall be (i) based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element . . . , and (ii) nondiscriminatory, and

(B) may include a reasonable profit.¹⁶¹

We seek comment on the proper interpretation of each of these statutory provisions. We also seek comment on any specific principles that parties believe the Commission should promulgate to ensure that the rates established or approved by states are just, reasonable, and nondiscriminatory. We seek comment below on the national pricing principles that states might apply in setting and reviewing rates for interconnection, collocation, and access to unbundled network elements. We also seek comment on what enforcement or monitoring mechanism, if any, the Commission or the industry should adopt to ensure that all carriers comply with any pricing principles that the Commission establishes.

122. Further, we believe that any pricing principles we adopt should be the same for interconnection and unbundled network elements, because sections 251(c)(2) and (c)(3) and 252(d)(1) use the same standard for both types of services. We invite parties to comment on whether there are any reasons to make a distinction. In addition, we believe that the same pricing rules that apply to interconnection and unbundled network elements should apply to collocation as required under section 251(c)(6). We seek comment on this issue. In particular, we seek comment on whether the absence of any pricing rule for collocation in section 252 has any legal significance with regard to our authority to specify rules for pricing of collocation services. Alternatively, should collocation be considered a subset of interconnection services, pursuant to sections 251(c)(2) and 252(d)(1) for purposes of the statutory pricing principle?

(3) Rate Levels

123. As previously set forth, section 252(d)(1) provides that state determinations of just and reasonable rates for interconnection and providing network elements shall be "based on the cost (determined without reference to a rate-of-return or other rate-based proceeding)," "nondiscriminatory," and "may include a reasonable profit."¹⁶² We tentatively conclude that this language precludes states from setting rates by use of traditional cost-of-service regulation, with its detailed examination of historical carrier costs and rate bases. Instead, the statute appears to contemplate the use of other forms of cost-based price regulation, such as price cap regulation that is indirectly based on costs, or the setting of prices based on a forward-looking cost methodology that does not involve the use of an embedded rate base, such as long-run incremental cost (LRIC).¹⁶³ We seek comment on this view of the meaning of section 252(d)(1).

124. Economists generally agree that rates based on LRIC give appropriate signals to producers and consumers and ensure efficient entry and utilization of the telecommunications infrastructure. They further agree that competitive markets, over the long run, tend to force

¹⁶¹ 1996 Act, sec. 101, § 252(d)(1).

¹⁶² 1996 Act, sec. 101, § 252(d)(1).

¹⁶³ For possible definitions of LRIC, see *infra* paras. 126-33.

prices toward LRIC.¹⁶⁴ A broad range of parties appears to agree that rates for interconnection and unbundled elements should be based on some type of LRIC methodology, such as, for example, using what some parties refer to as a "total service long-run incremental cost" (TSLRIC) approach.¹⁶⁵ In the following section, we consider whether we should adopt a LRIC-based pricing methodology for states to use to set interconnection and unbundled element rates under the 1996 Act. Under such an approach, if voluntary negotiations between parties were unsuccessful, the state commissions would conduct arbitration proceedings under section 252 in order to develop the specific factual information required to specify the actual rates in accordance with the national policy. As discussed at greater length below, however, there appear to be considerable differences of opinion as to the precise form of the LRIC methodology that should be used.¹⁶⁶ Further, while pricing based on LRIC may be the theoretical ideal, significant practical and administrative problems are likely to arise in determining the LRIC of specific services and facilities for particular incumbent LECs, especially in the short term, given the contentious and often time-consuming proceedings that may be necessary to resolve the complex issues raised by incremental cost studies. We explore these and other issues concerning the use of a LRIC-based pricing methodology in the following section.

125. As an alternative to our specifying a methodology for states to follow in setting prices under section 252(d)(1), we could establish outer boundaries for rates for interconnection and unbundled network elements, within which states would have a range of flexibility to select a cost-based method of determining interconnection and unbundled element rates. In particular, we could establish an administratively simple methodology that is relatively easy to apply, potentially using proxies for cost-based rates, to set rate ceilings or upper bounds on the range of state ratemaking flexibility. The use of a proxy to set the ceiling would reduce the administrative burden that is inherent in the application of a LRIC-based methodology, and thus may be especially attractive in the near term. We discuss this proxy-based ceiling approach in detail below. We also discuss below the extent to which embedded- (or historical) costs are relevant to the pricing rule for interconnection and unbundled network elements in the 1996 Act, the relationships between this pricing rule and policies on universal service and access charge reform, and whether certain methodologies are so fundamentally inconsistent with the 1996 Act that the statute precludes states from using such methodologies.

(a) LRIC-Based Pricing Methodology

126. As noted above, most economists -- and a broad range of parties that have

¹⁶⁴ See generally Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions* 69 (1988). 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). See also *Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket No. 95-185, Notice of Proposed Rulemaking, FCC No. 95-505 at para. 47 (rel. Jan. 11, 1996) (*CMRS Notice*).

¹⁶⁵ See Ameritech's March 25, 1996 submission at 1, 9-10; ALTS Handbook at 16; CompTel's March 29, 1996 submission at 22; NCTA submission at 2; AT&T submission at 39, 45-52.

¹⁶⁶ See, e.g., Ameritech's March 25, 1996 submission at 9-10 (TSLRIC, joint and common costs, and residual costs to the extent they reflect forward-looking costs should be used to determine the pricing standard for interconnection and unbundled network elements); AT&T Submission at 47 (TSLRIC of a network element includes both the fixed equipment costs associated with the element and the normal competitive return to the capital that must be invested in order to supply that element). For a discussion of the precise definitions of the terms LRIC and TSLRIC, see *infra* paras. 126-33. The term "long-run service incremental cost" (LRSIC), used by some states and parties, appears to be synonymous with the term TSLRIC.

submitted materials related to this proceeding -- appear to agree that rates for interconnection and unbundled elements ideally should be based on a LRIC-type methodology. The economists and parties, however, do not appear to agree on the specifics of a LRIC or TSLRIC methodology. Parties sometimes assign different meanings to the same terms. We therefore ask commenters advocating this approach to define with specificity the costing methodology that they support. In particular, we seek comment on precise definitions for the following terms: LRIC, TSLRIC, forward-looking costs, joint costs, common costs, shared costs, and stand-alone costs.¹⁶⁷ We also seek comment on the definition of the following related terms: embedded costs, fully distributed costs (FDC), overheads, contribution, and residual costs. For example, many years ago the Commission defined LRIC 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," and 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."¹⁶⁸ Does this continue to be an appropriate definition of LRIC? In what respects, if at all, does a TSLRIC analysis differ from a LRIC analysis? Commenters should explain how any methodology they support should be calculated, and how such an approach differs from other possible costing methodologies.

127. We note that some states already have adopted LRIC-based pricing methodologies to set rates for interconnection services and unbundled network elements that new entrants purchase from incumbent LECs. For example, the Illinois Commerce Commission has promulgated detailed rules regarding the use of TSLRIC studies to derive the rates for specified services offered by incumbent LECs.¹⁶⁹ Michigan law provides that incumbent LECs' rates for interconnection will be set at TSLRIC levels until January 1, 1997.¹⁷⁰ The California Public Utilities Commission has set prices for unbundled elements based on a forward-looking calculation of TSLRIC, which excludes shared and common costs.¹⁷¹ The New York Public Service Commission has allowed incumbent LECs to establish tariffed rates for interconnection offerings with rates based on incremental cost plus, where appropriate, offsets to account for contribution loss and the impacts of "stranded plant."¹⁷² Finally, the Local Competition Work Group of the NARUC Staff Subcommittee on Communications has recommended that network component prices should recover at least TSLRIC and, subject to state commission oversight and review, may include "a markup over TSLRIC to reflect a reasonable allocation of joint and common costs."¹⁷³

¹⁶⁷ See, e.g., AT&T submission at 46 (defining TSLRIC); ALTS Handbook at 15 (defining LRIC); Ameritech's March 25, 1996 submission at 3-6 (defining TSLRIC and other types of costs).

¹⁶⁸ *American Telephone & Telegraph Co.*, 55 FCC 2d 224, 231 n.18 (1975) (citing *American Telephone & Telegraph Co.*, 18 FCC 2d 761, 766 (1969)).

¹⁶⁹ Ill. Admin. Code, tit. 83, § 791.

¹⁷⁰ 1995 Mich. Pub. Acts 216, Sec. 352(1).

¹⁷¹ "Competition - The State Experience," Responses to FCC 3/1/96 Questions, NARUC (March 8, 1996) at 3 (NARUC Handbook).

¹⁷² NARUC Handbook at 80.

¹⁷³ NARUC Staff Subcommittee on Communications, Local Competition Work Group Summary Report, February 1996 at 35 (NARUC Subcommittee Report).

128. We invite parties to comment on the costing methodologies used by these and other states, and on the extent to which these approaches are consistent with the pricing principles and goals of the 1996 Act. We also seek comment on whether the approach taken by any state regarding pricing interconnection, collocation, and unbundled network elements can be used as a model for a federal policy for these services and facilities. Are the existing state standards substantially the same or materially different? If there are significant differences, what are the costs and benefits of such variation to economic efficiency and a national, pro-competitive communications policy? We note that, while several states have identified specific costing methodologies and have ordered incumbent LECs to offer unbundled network elements at rates based on LRIC, most states have not yet acted in this area.

129. We can consider a number of different approaches if we were to require a LRIC-based methodology for states to follow. For example, we could require that prices be set based on a narrowly defined LRIC of interconnection service and unbundled network elements, with no allowance for joint or common costs, overheads, or any other added increment. There may, however, be a problem with basing rates on LRIC alone if there are significant joint and common costs among network elements, even if such costs are determined on a forward-looking basis. As a second option, we could require prices to be based on the LRIC of the applicable service or unbundled element plus a reasonable allocation of forward-looking joint and common costs.¹⁷⁴ Even then, however, under some LRIC methodologies, the sum of all LRIC-based service and element pricing may not cover all of the firm's forward-looking costs. Finally, Ameritech has suggested a LRIC-based methodology that includes, in addition to TSLRIC, an allocation of joint (or shared) costs, common costs (or overhead), and residual costs.¹⁷⁵ We seek comment on these alternative approaches, or variations, in terms of their compliance with the statute, including the statutory provision that rates "may include a reasonable profit," and their respective advantages and disadvantages.

130. We also seek comment on how, if rates are to be set above LRIC, to deal with the problems inherent in allocating common costs and any other overheads. First, it may be possible to minimize the costs to be allocated as joint and common by identifying a substantial portion of costs as incremental to a particular service or element.¹⁷⁶ The feasibility of minimizing the costs to be allocated as joint and common may depend, in part, on the degree to which unbundled elements are disaggregated.¹⁷⁷ Alternatively, joint and common costs could be minimized by establishing a pricing standard at a higher level of aggregation than individually unbundled subelements.¹⁷⁸ A second approach would be to allocate common costs and overhead among services in an inverse relationship to the sensitivity of demand for each of the services. This

¹⁷⁴ See, e.g., AT&T submission at 39; NARUC Subcommittee Report at 35 (recommending that, subject to state commission oversight and review, network component prices should be permitted to include "a markup over TSLRIC to reflect a reasonable allocation of joint and common costs").

¹⁷⁵ See Ameritech's March 25, 1996 submission at 1.

¹⁷⁶ See, e.g., *Telephone Company-Cable Television Cross-Ownership Rules, Sections 63.54-63.58*, CC Docket No. 87-266, Memorandum Opinion and Order on Reconsideration and Third Further Notice of Proposed Rulemaking, 10 FCC Rcd 244, 343-346 (1994) (*Video Dialtone Reconsideration Order*), appeal pending *sub nom. Mankato Citizens Tel. Co. v. FCC*, No. 92-1404 (D.C. Cir. Sept. 9, 1992).

¹⁷⁷ See discussion in Section II.B.2.c.

¹⁷⁸ For instance, the pricing standard could apply to loops, even though there may be sub-loop unbundling. See *supra* Section II.B.2.c.(3)(a).

"Ramsey" approach, in theory, minimizes reductions in consumer welfare due to prices above LRIC.¹⁷⁹ On the other hand, Ramsey pricing principles were developed in the context of regulated monopolies, and may not be desirable for markets in which competition is developing.¹⁸⁰ A third approach would be to allocate common costs and overheads among all services based on some specified allocator. For example, shared costs and overheads could be allocated among services in proportion to each service's LRIC or direct costs, or could be apportioned based on some measure of usage.¹⁸¹ We seek comment on these approaches, and on the expected magnitude of forward-looking costs under each approach that cannot be attributed to specific services or elements. We also seek comment on whether, regardless of the method of allocating common costs, we should limit rates to levels that do not exceed stand-alone costs.¹⁸²

131. Parties should specify their reasons for supporting or objecting to a particular costing model, and on what types of LRIC-based pricing methodology would be consistent with the 1996 Act. Parties that favor a particular methodology should explain how their proposals satisfy the statutory requirement that cost-based rates be determined "without reference to a rate-of-return or other rate-based proceeding."¹⁸³ They should also address how their methodologies would comply with the statutory requirement that rates for interconnection and unbundled elements "may include a reasonable profit."¹⁸⁴ We also seek comment on whether the "reasonable profit" provision should be interpreted to mean that rates should yield reasonable levels of return on capital (including assessment of risk). Parties are encouraged to provide examples of states that have used the particular methodology that they support, or other illustrative evidence to indicate how such a standard would be applied. Should the LRIC-based methodology that any particular state has used be adopted as a national policy for interconnection and unbundled elements, or should a number of existing state approaches be identified as acceptable options? We invite parties to propose other approaches, and to delineate with particularity how their proposal differs from the approaches described above. Parties should also

¹⁷⁹ 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). 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.

¹⁸⁰ 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."); see also *CMRS Notice* at para. 51.

¹⁸¹ See United Kingdom Office of Telecommunications, *A Framework for Effective Competition: A Consultative Document on the Future of Interconnection and Related Issues*, para. 4.32 (Dec. 1994).

¹⁸² A stand-alone cost test would require that the consumer of a service be charged a price no higher than that at which it could be offered by a specialized competitive supplier. William J. Baumol and Robert D. Willig, Verified Statement before the Interstate Commerce Commission, *Ex Parte* no. 347 (sub-No. 1), *Coal Rate Guidelines: Nationwide* at 7 (July 28, 1983); see also William J. Baumol, John C. Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industry Structure* (352-352) (Harcourt Bruce Jovanovich, Inc. 1982).

¹⁸³ 1996 Act, sec. 101, § 252(d)(1)(A)(i).

¹⁸⁴ 1996 Act, sec. 101, § 252(d)(1)(B).

address the practicality of such approaches in a state arbitration setting, including the extent to which they would be clear and relatively easy to derive with a minimum of controversy and delay, and the administrative burdens associated with such approaches.

132. We also seek comment on a transitional pricing mechanism during an interim time period. Should we adopt an easily implementable interim approach that would address concerns about unequal bargaining power in negotiations, followed by some sort of transition mechanism to a more permanent set of pricing principles? One possible approach would be to require that during an interim period, rates be set at short-run marginal cost. Such an approach might give incumbent LECs an incentive to reach a rapid agreement.

133. We seek comment on whether interconnection and unbundled element rates should be set on a geographically- and class-of-service-averaged basis for each incumbent LEC, or whether some form of disaggregation would be desirable.¹⁸⁵ On the one hand, averaged rates would be simpler to derive and administer, and would minimize the possibility of unreasonable or unlawfully discriminatory rate differences. On the other hand, averaged rates might be above the cost of service in relatively dense areas, and below cost in less dense areas. This could create uneconomic incentives for competitive entrants to use incumbent LECs' unbundled network elements rather than deploying their own facilities in high cost areas, even if their costs are lower than those of the incumbent LEC. Conversely, it might create incentives for competitive entrants to deploy their own more costly facilities, rather than using unbundled network elements provided by incumbent LECs, in low cost areas. This problem may be exacerbated if the incumbent LECs' local exchange or exchange access services are priced on a geographically averaged basis. If interconnection and unbundled element rates should be disaggregated, what level of disaggregation would be appropriate -- by density pricing zone,¹⁸⁶ LATA, exchange, or some other unit? What types of class-of-service disaggregation are appropriate? For example, should incumbent LECs be permitted to charge different rates for unbundled business and residential loops, or for unbundled loops using different technologies? What rate differentials would be reasonable? We further seek comment on whether some cost index or price cap system would be appropriate to ensure that rates reflect expected changes in unit costs over time.

(b) Proxy-Based Outer Bounds for Reasonable Rates

134. We also seek comment on the benefits, if any, of adopting a national policy of outer boundaries for reasonable rates instead of specifying a particular pricing methodology. For example, rate ceilings could define the maximum end of the reasonable range within which state commissions could establish rates for interconnection and unbundled elements in the arbitration process pursuant to sections 252(b)-(e). Properly set rate ceilings would prevent incumbent LECs from setting rates at levels so high as to prevent efficient competitive entry or to allow

¹⁸⁵ Unlike with respect to interexchange telephone services, Congress did not address the question of whether interconnection and unbundled element rates should be geographically averaged. With respect to interexchange services, section 254(g) of 1996 Act directs the Commission to adopt rules to require that "rates charged by providers of interexchange telecommunications services to subscribers in rural and high cost areas shall be no higher than the rates charged by each such provider to subscribers in urban areas." *See Policy and Rules Concerning the Interstate, Interexchange Marketplace; Implementation of Section 254(g) of the Communications Act of 1934, as amended*, CC Docket No. 96-61, Notice of Proposed Rulemaking, FCC 96-123 (rel. March 25, 1996).

¹⁸⁶ *See Expanded Interconnection with Local Telephone Company Facilities*, Report and Order and NPRM 7 FCC Rcd 7369, 7451-57, paras. 172-84 (1992).

them to extract monopoly rents, and would ensure that rate levels bear some relationship to costs. If rates are too high, use of unbundled elements will be deterred and therefore competitive entry will take place only if competitors either resell incumbent LECs' existing offerings (using few or none of their own facilities) or use their own facilities to bypass the incumbent LEC network completely. Consequently, setting rates too high would contravene Congress's desire to allow new entrants to compete by purchasing, at cost-based rates, unbundled elements or services of the incumbent LEC network. We therefore seek comment on whether a ceiling to protect against excessive rates for unbundled elements and services would be the best means of furthering the pro-competitive goals of the 1996 Act.

135. We believe that, to be consistent with the pricing principles of the 1996 Act, any mechanism used to set rate ceilings for interconnection services and unbundled elements should: (1) make it possible for competitors efficiently to enter the local exchange market, even if all elements are priced at the rate ceiling; (2) constrain incumbent LECs' ability to preclude efficient entry, for example, by manipulating overheads and the allocation of common costs between services; and (3) be as simple to administer as possible. We seek comment on this approach, and request parties that favor a particular approach to explain how that approach is consistent with these principles.

136. Rate ceilings could be derived using a proxy or surrogate for cost-based rates that does not require use of a cost study. Such a proxy could approximate a rate derived through a detailed cost study, and could establish a level above which rates set by states would be too high to allow efficient entry by competitors. Such an approach might well be simpler and speedier to implement than a LRIC-based methodology. A proxy also might reduce or eliminate the need for recordkeeping and examinations of carrier rate bases, consistent with the deregulatory thrust of the 1996 Act. A proxy also would address the concern that incumbents, which have the best information about their own costs, might withhold or otherwise restrict access to those data. Finally, carriers may have an incentive to manipulate their costs and thus their rates. Using a methodology not directly related to costs could remove this incentive. We seek comment on the use of a proxy for a cost-based rate ceiling. Would setting a ceiling based on a proxy fulfill the statutory mandate of section 252(d)(1) and the obligation under section 251 to ensure that rates are just and reasonable? We also seek comment on other possible approaches that would satisfy the requirements of the statute.

137. One method for establishing proxies as a ceiling would be to use generic or averaged cost data. For example, some measure of nationally-averaged costs could be used in lieu of the actual costs of each incumbent LEC. Alternatively, a generic cost study could be used. For example, we could use the Benchmark Cost Model submitted by MCI, Sprint, NYNEX, and US WEST in the record of CC Docket No. 80-286, or the Hatfield study submitted by MCI.¹⁸⁷ We seek comment on whether this or other cost studies would serve as an appropriate proxy for constraining rates that states may set for interconnection and unbundled network elements. We also seek comment on the extent to which any study we rely on in establishing proxies should reflect geographically divergent factors such as population density.

138. A second method for establishing proxies would be to use rates in existing interconnection and unbundling arrangements between incumbent LECs and other providers of local service, such as neighboring incumbent LECs, CMRS providers, or other new entrants in the same service area. Possible disadvantages of using existing interconnection arrangements,

¹⁸⁷ Benchmark Cost Model: A Joint Submission by MCI Communications, Inc., NYNEX Corporation, Sprint Corporation, US WEST, Inc., CC Docket No. 80-286 (1995); Hatfield Associates, Inc., *The Cost of Basic Network Elements: Theory, Modeling and Policy Implications* (March 1996).

however, are that they may reflect various historical public policy influences that resulted in prices that do not reflect underlying costs, and that they may reflect arrangements between parties with unequal bargaining power. In addition, these arrangements may not include rates for interconnection services or network elements that are comparable with the services and elements to be used by competitive entrants.

139. A third possible method for establishing a ceiling for the pricing of certain unbundled network elements could be a subset of the incumbent LECs' existing interstate access rates, charged for interconnection with IXCs and other access customers, or an intrastate equivalent. This method would have the advantage of setting ceilings that could be relatively easier to derive than ceilings based on cost studies. We would, however, want to be sure that any such ceilings would not effectively become the price targets for interconnection. These tariffs (and intrastate tariffs in many states), first, include flat rates for special access and dedicated transport that we have concluded, in general, are reasonably cost based.¹⁸⁸ These rates could serve as the upper limit for rates for unbundled network elements consisting of transmission facilities between networks or between central offices in the incumbent LEC's network. Second, for the unbundled network elements corresponding to local switching, a ceiling could be the lower of interstate or intrastate local switching access charges -- excluding part or all of the transport interconnection charge (TIC) and the carrier common line charge (CCLC), or their intrastate equivalents. Exclusion of the TIC and CCLC would reduce the effective per-minute local switching charges substantially, and intrastate charges could be lower.¹⁸⁹ The use of access charges as a proxy for cost-based rates to derive price ceilings may be reasonable, because interstate access charges were initially derived based on the accounting costs of incumbent LEC networks after various regulatory allocations, and, for the larger incumbent LECs, these charges have been subject to price cap regulation for five years. Thus, although access charges were not derived based on forward-looking costs, a subset of these charges might provide an appropriate and easily-implemented ceiling. We seek comment on this analysis. We also seek comment on whether this subset of access charges, or some other proxy, could be used on an interim basis, with some transition mechanism to move towards rate ceilings based on economic costs.

140. We seek comment on whether all or part of the CCLC and TIC should be excluded from any ceilings applicable to unbundled local switching or transport elements. The TIC was originally set at a residual level to recover costs not accounted for in our interim restructuring of local transport rates. To the extent that the costs in the TIC may be unrelated to the provision of local switching, a ceiling that included the entire TIC would exceed the incremental cost of those network elements.¹⁹⁰ The CCLC arguably should be excluded from the ceiling because it

¹⁸⁸ See *Transport Rate Structure and Pricing*, CC Docket No. 91-213, 7 FCC Rcd 7006 (1992); *first recon.*, 8 FCC Rcd 5370 (1993), *second recon.*, 8 FCC Rcd 6233 (1993), *third recon.*, 10 FCC Rcd 3030 (1994), *fourth recon.*, 10 FCC Rcd 12979 (1995), *pets. for review pending*. See also *Local Exchange Carrier Switched Local Transport Restructure Tariffs*, 9 FCC Rcd 400 (Com. Car. Bur. 1993).

¹⁸⁹ See *CMRS Notice* at n.83.

¹⁹⁰ See, e.g., *Ameritech Operating Companies Petition for a Declaratory Ruling and Related Waivers to Establish a New Regulatory Model for the Ameritech Region*, Order, FCC 96-58 (rel. Feb. 15, 1996) (*Ameritech Customers First Order*); *The NYNEX Tel. Cos. Petition for Waiver, Transition Plan to Preserve Universal Service in a Competitive Environment*, Memorandum Opinion and Order, 10 FCC Rcd 7445 (1995), *reconsideration pending* (*NYNEX USPP Order*).

recovers local loop costs, rather than switching and transport costs.¹⁹¹ In the *ONA* proceeding,¹⁹² certain interstate prices were established for unbundled features and functions of the local switch. We seek comment on the possible use of these prices as ceilings for the same unbundled elements under section 251.

141. Deriving an appropriate ceiling for unbundled local loops using a method not requiring cost studies clearly raises its own set of difficulties. Using existing interstate access charges is problematic because interstate access charges were designed to recover only 25% of incumbent LECs' unseparated local loop costs, because the interstate access charge regime currently includes two different types of rate elements to recover loop costs -- the CCLC and the subscriber line charge (SLC) -- that are assessed in different ways to different categories of customers, and because the CCLC is a per-minute charge recovering costs that do not vary with usage.¹⁹³ To address the first issue, we seek comment on whether a ceiling for unbundled loop rates could be based on the sum of the following: (1) the existing SLC, (2) an imputed flat-rate charge based on the CCLC paid by a customer with average usage, such as that we permitted Rochester Telephone to implement last year,¹⁹⁴ and (3) some subset of intrastate local exchange rates. We solicit comment on how such a ceiling could be implemented. We recognize that, while using some subset of existing prices as a ceiling may be administratively simple, that ceiling may not tightly correlate with a TSLRIC definition of costs, and thus we seek comment more broadly on other possible administratively simple methods for setting a ceiling for the price of an unbundled loop to be applied by the states in an arbitration under sections 251 and 252. We note that we have referred to a Federal-State Joint Board established under section 254 the question of whether and how the existing subsidy to reduce the level of the SLC should be changed,¹⁹⁵ and we seek comment on how the current system for separating and recovering common line costs, as well as various pending proposals before the Joint Board, should affect our analysis.

142. Using any of the above proxy methodologies, the proxy rate may be usage-sensitive, while a service or element is sold on a flat-rated basis, or vice versa. In those situations the applicable ceiling could be derived through a conversion factor, such as average

¹⁹¹ See *Universal Service NPRM* at paras. 112-115 (seeking comment on reducing or eliminating implicit universal service support flows in CCLC).

¹⁹² *Amendments of Section 64.702 of the Commission's Rules and Regulations*, Report and Order, CC Docket No. 85-229, 104 FCC 2d 958, 1063-64 (1986); *recon.*, 2 FCC Rcd 3035 (1987), *further recon.*, 3 FCC Rcd 1135 (1988), *second further recon.*, 4 FCC Rcd 5927 (1989), *Amendments of Sections 64.702 of the Commission's Rules and Regulations*, Report and Order, CC Docket No. 85-229, 2 FCC Rcd 3072 (1988), *recon.*, 3 FCC Rcd 1150, *vacated sub nom. California v. FCC*, 905 F.2d 1217 (9th Cir. 1990) (*Computer III Inquiry*); *Amendments to Part 69 of the Commission's Rules Relating to the Creation of Access Charge Subelements for Open Network Architecture*, CC Docket No. 89-79, Report and Order, Order on Reconsideration, and Supplemental Notice of Proposed Rulemaking, 6 FCC Rcd 4524 (1991), *modified on recon* 7 FCC Rcd 5235 (1992), *further modified on recon.* 8 FCC Rcd 3114 (1993) (*ONA Proceeding*).

¹⁹³ See *Ameritech Customers First Order* at paras. 5-10 for a discussion of the current system for recovery of interstate separated common line costs.

¹⁹⁴ See *Rochester Telephone Corporation Petition for Waivers to Implement Its Open Market Plan*, Order, 10 FCC Rcd 6776 (1995).

¹⁹⁵ See *Universal Service NPRM* at paras. 112-115

usage.¹⁹⁶ We seek comment on whether such an average usage factor, a geographically disaggregated usage factor, or some alternative methodology, would be appropriate for converting per-minute rates to flat rates, or vice versa. We also seek comment on how such a proxy-based ceiling could be applied on a service-by-service or element-by-element basis if services are unbundled in different configurations from the methods set forth in the proxy.

143. As the counterpart to ceilings, we seek comment on whether it is necessary or appropriate for us to establish floors for interconnection and unbundled element prices, *i.e.*, the lower end of a reasonable range within which state commissions could establish rate levels. What would be the potential competitive benefits or detriments of setting a floor for interconnection, collocation, and unbundled element rates? Are they needed to protect incumbent LECs from confiscatory regulatory action? If they are needed, how should they be calculated? Below, we discuss a possible pricing rule under which the sum of the prices of unbundled services cannot exceed the retail price for those services if sold on a bundled basis.¹⁹⁷ Under such a rule, if retail rates are below cost-based levels due to universal service or other implicit subsidies, it may be necessary to price some or all of the unbundled services below LRIC in order for their sum not to exceed the subsidized retail rate.¹⁹⁸ How would this affect the implementation of price floors, or the desirability of such floors?

(c) Other Issues

144. We seek comment on the extent to which embedded or historical costs should be relevant, if at all, to the determination of cost-based rates under section 252(d)(1). Setting rates based on a detailed rate base examination of the incumbent LEC's book costs, with an allocation of residual costs among elements and services, would violate the requirement of section 252(d)(1)(A)(i) that rates for interconnection and network elements be "based on cost (determined without reference to a rate-of-return or other rate-based proceeding)."¹⁹⁹ In economic terms, prices in competitive markets are based on firms' forward-looking costs rather than historic (sunk) costs.²⁰⁰ We note however, since the statutory language precludes only use of costs determined on the basis of a "rate-based proceeding," it may be permissible to take some account of an incumbent LEC's embedded costs. Given that incumbent LECs provide services over shared facilities and that technological developments are consistently reducing the costs of

¹⁹⁶ By usage sensitive, we mean that costs vary by some measure of usage, such as the number of messages or minutes of use. By flat-rated, we mean costs that vary by capacity rather than usage. To convert a per-minute interstate local switching rate to a ceiling for a flat-rate "switch platform" charge, the rate could be multiplied by the average total number of minutes through a local switch per month.

¹⁹⁷ The Illinois Commerce Commission refers to this as the "imputation rule." See *Illinois Bell Telephone Company Proposed Introduction of a Trial of Ameritech's Customer First Plan in Illinois*, nos. 94-0096, 94-0117, 94-0146, 94-0301 consolidated, (Ill. Comm. Comm'n. Apr. 7, 1995). See *infra* Section II.B.3.c.(3).

¹⁹⁸ See *infra* Section II.B.3.c.(3).

¹⁹⁹ See *Southwestern Bell Telephone Company's Tariff Sheets Designed to Structure Local Transport Rates*, Case No. TR-85-342, Report and Order at 8 (Mo. Pub. Serv. Comm. Mar. 6, 1996) (rejecting residual local transport interconnection charge tariff as not "cost-based" and therefore violative of the 1996 Act); Memorandum In Support of Motion to Dismiss on Behalf of the Louisiana Public Service Commission, Docket No. U-21474 at 6 (Louisiana Public Service Commission staff brief arguing that local residual interconnection charge is not based on cost and therefore violative of the 1996 Act).

²⁰⁰ See Alfred E. Kahn, *The Economics of Regulation Principle and Institutions* 70 (1988).