technical feasibility of interconnection or access at substantially similar points. Finally, we conclude that incumbent LECs must prove to the appropriate state commission that a particular interconnection or access point is not technically feasibile.

199. We find that the 1996 Act bars consideration of costs in determining "technically feasible" points of interconnection or access. In the 1996 Act, Congress distinguished "technical" considerations from economic concerns. Section 251(f), for example, exempts certain rural LECs from "unduly economically burdensome" obligations imposed by section 251(c) even where satisfaction of such obligations is "technically feasible."[423] Similarly, section 254(h)(2)(A) treats "technically feasible" and "economically reasonable" as separate requirements.[424] Finally, we note that the House committee that considered H.R. 1555 (which was combined with Senate Bill S.652 to form the 1996 Act) dropped the term "economically reasonable" from its unbundling provision. The House committee explicitly addressed this substantive change, reporting that "this requirement could result in certain unbundled . . . elements . . . not being made available."[425] Thus, the deliberate and explained substantive omission of explicit economic requirements in sections 251(c)(2) and 251(c)(3) cannot be undone through an interpretation that such considerations are implicit in the term "technically feasible." Of course, a requesting carrier that wishes a "technically feasible" but expensive interconnection would, pursuant to section 252(d)(1), be required to bear the cost of that interconnection, including a reasonable profit.[426]

200. USTA and SBC cite the Commission's *900 Service* order[427] as support for the contention that costs must be considered in a technical feasibility analysis.[428] In that order, the Commission concluded that "[i]n defining 'technically feasible,' we balance both technical and economic considerations with a view toward providing [900] blocking capability to consumers without imposing undue economic burdens on LECs."[429] Our *900 Service* order, however, has little bearing on our interpretation of the term "technically feasible" in the 1996 Act. As stated

---

[423] 47 U.S.C. § 251(f)(1)(A).

[424] 47 U.S.C. § 254(h)(2)(A).

[425] H. Rep. 104-204, 71 (1995).

[426] *See* 47 U.S.C. § 252(d)(1); *see also infra*, Section VII (concluding that requesting carriers must pay incumbent LECs the cost of interconnection or unbundling).

[427] *Policies and Rules Concerning Interstate 900 Telecommunications Services*, Report and Order, 6 FCC Rcd 6166, 6174 (1991) *(900 Service)*.

[428] USTA comments at 12 n.16; SBC reply at 16.

[429] *900 Service* at 6174.

above, the 1996 Act distinguishes technical considerations from the "undue economic burdens" considered in the *900 Service* order. Indeed, Congress used virtually the same language—"unduly economically burdensome"—in drawing the distinction.[430] If, as SBC contends, we are to presume that Congress was aware of the Commission's analysis of the technical feasibility of 900 call blocking,[431] the 1996 Act appears squarely to reject that view of technical feasibility. Moreover, unlike the costs of providing 900 call blocking, which we imposed largely on LECs in the *900 Service* order, as noted above, to the extent incumbent LECs incur costs to provide interconnection or access under sections 251(c)(2) or 251(c)(3), incumbent LECs may recover such costs from requesting carriers.

201. In addition to economic considerations, section 251(c)(6) distinguishes considerations of "space limitations" from those of "technical reasons," and thus, in general, we believe existing space or site restrictions should not be included within a technical feasibility analysis.[432] Of course, under section 251(c)(6) "space" restrictions are expressly considered along with "technical" considerations in determining whether an incumbent LEC must provide for physical collocation. Where physical collocation is not practical because of "space limitations," however, incumbent LECs must provide for virtual collocation.[433] Section 251 is silent as to whether an incumbent LEC's duty to provide for virtual collocation or other methods of interconnection or access to unbundled elements is dependent on space constraints. We conclude, as a practical matter, that space limitations at a particular network site, without any possibility of expansion, may render interconnection or access at that point infeasible, technically or otherwise. Where such expansion is possible, however, we conclude that, in light of the distinction drawn in section 251(c)(6), site restrictions do not represent a "technical" obstacle. Again, however, the requesting party would bear the cost of any necessary expansion. Nor do we believe the term "technical," when interpreted in accordance with its ordinary meaning as referring to engineering and operational concerns in the context of sections 251(c)(2) and 251(c)(3),[434] includes consideration of accounting or billing restrictions.

202. Several parties also attempt to draw a distinction between what is "feasible" under the terms of the statute, and what is "possible." The words "feasible" and "possible," however, are used synonymously. Feasible is defined as "capable of being accomplished or brought about;

---

[430] *See* 47 U.S.C. § 251(f)(1)(A).

[431] SBC reply at 16 ("Presumably Congress was aware of this FCC definition of the term "technically feasible" when Congress chose to use it in the 1996 Act.").

[432] 47 U.S.C. § 251(c)(6).

[433] *Id.*

[434] *See* Random House College Dictionary at 1349 ("6. pertaining to or connected with the mechanical or industrial arts and the applied sciences").

possible."[435] The statute itself provides a more meaningful distinction. Unlike the "technically *feasible*" terminology included in sections 251(c)(2) and 251(c)(3), section 251(c)(6) uses the term "*practical* for technical reasons" in determining the scope of an incumbent LEC's obligation to provide for physical collocation.[436] "Practical" is defined as "manifested in practice or action . . . not theoretical or ideal"[437] or "adapted or designed for actual use; useful," and connotes similarity to ordinary usage.[438] Thus, it is reasonable to interpret Congress's use of the term "feasible" in sections 251(c)(2) and 251(c)(3) as encompassing more than what is merely "practical" or similar to what is ordinarily done. That is, use of the term "feasible" implies that interconnecting or providing access to a LEC network element may be feasible at a particular point even if such interconnection or access requires a novel use of, or some modification to, incumbent LEC equipment. This interpretation is consistent with the fact that incumbent LEC networks were not designed to accommodate third-party interconnection or use of network elements at all or even most points within the network. If incumbent LECs were not required, at least to some extent, to adapt their facilities to interconnection or use by other carriers, the purposes of sections 251(c)(2) and 251(c)(3) would often be frustrated. For example, Congress intended to obligate the incumbent to accommodate the new entrant's network architecture by requiring the incumbent to provide interconnection "for the facilities and equipment" of the new entrant. Consistent with that intent, the incumbent must accept the novel use of, and modification to, its network facilities to accommodate the interconnector or to provide access to unbundled elements.

203. We also conclude, however, that legitimate threats to network reliability and security must be considered in evaluating the technical feasibility of interconnection or access to incumbent LEC networks. Negative network reliability effects are necessarily contrary to a finding of technical feasibility. Each carrier must be able to retain responsibility for the management, control, and performance of its own network. Thus, with regard to network reliability and security, to justify a refusal to provide interconnection or access at a point requested by another carrier, incumbent LECs must prove to the state commission, with clear and convincing evidence, that specific and significant adverse impacts would result from the requested interconnection or access. The reports of the Commission's Network Reliability Council discuss network reliability considerations, and establish templates that list activities that

---

[435] The American Heritage College Dictionary 499 (1993). Webster's Ninth New Collegiate Dictionary 453 (1989). Both "feasible" and "possible" refer to that which is "capable of being realized" *Id.* at 918.

[436] 47 U.S.C. § 251(c)(6) (emphasis added).

[437] Webster's at 923.

[438] Random House College Dictionary 1040 (rev. ed. 1984).

need to occur when service providers connect their networks pursuant to defined interconnection specifications or when they are attempting to define a new network interface specification.[439]

204. We further conclude that successful interconnection or access to an unbundled element at a particular point in a network, using particular facilities, is substantial evidence that interconnection or access is technically feasible at that point, or at substantially similar points in networks employing substantially similar facilities. In comparing networks for this purpose, the substantial similarity of network facilities may be evidenced, for example, by their adherence to the same interface or protocol standards. We also conclude that previous successful interconnection at a particular point in a network at a particular level of quality constitutes substantial evidence that interconnection is technically feasible at that point, or at substantially similar points, at that level of quality. Although most parties agree with this conclusion, some LECs contend that such comparisons are all but impossible because of alleged variability in network technologies, even where the ultimate services offered by separate networks are the same. We believe that, if the facilities are substantially similar, the LECs' contention is adequately addressed.

205. Finally, because sections 251(c)(2) and 251(c)(3) impose duties upon incumbent LECs, we conclude that incumbent LECs must prove to the appropriate state commission that interconnection or access at a point is not technically feasible. Incumbent LECs possess the information necessary to assess the technical feasibility of interconnecting to particular LEC facilities. Further, incumbent LECs have a duty to make available to requesting carriers general information indicating the location and technical characteristics of incumbent LEC network facilities. Without access to such information, competing carriers would be unable to make rational network deployment decisions and could be forced to make inefficient use of their own and incumbent LEC facilities, with anticompetitive effects.

206. We have considered the economic impact of our rules in this section on small incumbent LECs. For example, the Rural Telephone Coalition argues that the Commission should set interconnection points in a flexible manner to recognize the differences between carriers and regions. We do not adopt the Rural Telephone Coalition's position because we believe that, in general, the Act does not permit incumbent LECs to deny interconnection or access to unbundled elements for any reason other than a showing that it is not technically feasible. We believe that this interpretation will advance the procompetitive goals of the statute. We also note, however, that section 251(f) of the 1996 Act provides relief to certain small LECs from our regulations implementing section 251.

F. Technically Feasible Points of Interconnection

[439] *Network Reliability: A Report to the Nation* (1993, National Engineering Consortium); *Network Reliability: The Path Forward* (1996, Internet: http://www.fcc.gov/oet/nrc).

1. Background

207. In the NPRM, we requested comment on which points within an incumbent LEC's network constitute "technically feasible" points for purposes of section 251(c)(2).[440] Having defined the phrase "technically feasible" above, we now determine a minimum set of technically feasible points of interconnection.

2. Comments

208. Incumbent LECs claim that the specific points of interconnection should either be left to the negotiation process, or that the Commission should require interconnection only at core points, and leave all other points to the negotiation process.[441] For example, Ameritech claims that it is only technically feasible for competitors to interconnect at its end or tandem offices.[442] Bell Atlantic asserts that the trunk- and loop-side of the local switch, transport facilities, tandem facilities, and the signal transfer points (STPs) are the only technically feasible points for interconnection.[443] Potential competitors, on the other hand, argue that interconnection is technically feasible, and should be mandated by the Commission, at numerous points in the incumbent LEC's network.[444] AT&T, for example, argues that interconnection is technically feasible: (1) at the loop concentrator; (2) between the loop feeder element and the competitive provider's switch; (3) between the incumbent LEC's switch and the competitive provider's operator systems; (4) between a competitive provider's switch and a LEC's signaling A link; (5) between a competitive provider's signaling A link and an incumbent LEC's STP; (6) between a competitive provider's dedicated transport and an incumbent LEC's office; and, (7) between incumbent LEC and non-incumbent LEC STPs.[445] MFS argues that, regardless of the specific

---

[440] NPRM at paras. 56-59.

[441] *See, e.g.*, USTA comments at 10-11; BellSouth comments at 15-19; NYNEX comments at 65 (points of interconnection should be left to negotiation); Ameritech comments at 13-14; PacTel comments at 21-22; Oregon Commission comments at 25-26.

[442] Ameritech comments at 13-14; Ohio Commission comments at 24.

[443] Bell Atlantic comments at 20-21; Lincoln Tel. comments at 5.

[444] ALTS comments at 18 (interconnection should be available at any technically feasible point regardless of the technical fabric of the network at the requested point); MCI comments at 12-13 (technically feasible points may be either physical, for facilities and equipment, or logical, for software and databases); Time Warner reply at 15 (interconnection should not be limited to "core requirements" because the statute mandates interconnection at any technically feasible point).

[445] Letter from Bruce Cox and Betsy Brady, AT&T, to Regina M. Keeney, Common Carrier Bureau, FCC, March 21, 1996, at 29-32 (AT&T March 21 Letter).

points listed by the Commission, states should be able to expand the list of technically feasible points.[446]

3. Discussion

209. We conclude that we should identify a minimum list of technically feasible points of interconnection that are critical to facilitating entry by competing local service providers. Section 251(c)(2) gives competing carriers the right to deliver traffic terminating on an incumbent LEC's network at any technically feasible point on that network, rather than obligating such carriers to transport traffic to less convenient or efficient interconnection points. Section 251(c)(2) lowers barriers to competitive entry for carriers that have not deployed ubiquitous networks by permitting them to select the points in an incumbent LEC's network at which they wish to deliver traffic. Moreover, because competing carriers must usually compensate incumbent LECs for the additional costs incurred by providing interconnection, competitors have an incentive to make economically efficient decisions about where to interconnect.[447]

210. We conclude that, at a minimum, incumbent LECs must provide interconnection at the line-side of a local switch (at, for example, the main distribution frame), the trunk-side of a local switch; the trunk interconnection points for a tandem switch; and central office cross-connect points in general. This requirement includes interconnection at those out-of-band signaling transfer points necessary to exchange traffic and access call related databases. All of these points of interconnection are used today by competing carriers, noncompeting carriers, or LECs themselves for the exchange of traffic, and thus we conclude that interconnection at such points is technically feasible.

211. A varied group of commenters, including Bell Atlantic and AT&T, agree that interconnection at the line-side of the switch is technically feasible.[448] Interconnection at this point is currently provided to some commercial mobile radio service (CMRS) carriers[449] and may be necessary for other competitors that have their own distribution plant, but seek to interconnect to the incumbent's switch. We also agree with numerous commenters that claim that interconnection at the trunk-side of a switch is technically feasible and should be available upon

---

[446] MFS comments at 14.

[447] *See* Robert S. Pendyck and Daniel L. Rubinfeld, Microeconomics (2nd ed. 1992).

[448] *See, e.g.*, Bell Atlantic comments at 20-21; NYNEX comments at 65; BellSouth reply at 23; AT&T March 21 Letter at 30.

[449] AT&T comments in CC Docket No. 95-185 at 6 n.6 (Mar. 4, 1996).

request.[450] Interconnection at this point is currently used by competing carriers to exchange traffic with incumbent LECs. Interconnection to tandem switching facilities is also currently used by IXCs and competing access providers, and is thus technically feasible. Finally, central office cross-connect points, which are designed to facilitate interconnection, are natural points of technically feasible interconnection to, for example, interoffice transmission facilities. There may be rare circumstances where there are true technical barriers to interconnection at the line- or trunk-side of the switch or at central office cross-connect points, however, the parties have not presented us with any such circumstances. Thus, incumbent LECs must prove to the state commissions that such points are not technically feasible interconnection points.

212. We also note that the points of access to unbundled elements discussed below may also serve as points of interconnection (*i.e.*, points in the network that may serve as places where potential competitors may wish to exchange traffic with the incumbent LEC other than for purposes of gaining access to unbundled elements), and thus we incorporate those points by reference here. Finally, as noted above, we have identified a minimum list of technically feasible interconnection points: (1) the line-side of a local switch; (2) the trunk-side of a local switch; (3) the trunk interconnection points for a tandem switch; (4) central office cross-connect points; (5) out-of-band signaling transfer points; and (6) the points of access to unbundled elements. In addition, we anticipate and encourage parties and the states, through negotiation and arbitration, to identify additional points of technically feasible interconnection. We believe that the experience of the parties and the states will benefit our ongoing review of interconnection.

G. Just, Reasonable, and Nondiscriminatory Rates, Terms, and Conditions of Interconnection

1. Background

213. Section 251(c)(2)(D) requires that incumbent LECs provide interconnection "on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[451] In the NPRM, we sought comment on whether we should adopt national requirements governing the terms and conditions of providing interconnection. We also sought comment on how we should determine whether the terms and conditions for interconnection arrangements are just, reasonable, and nondiscriminatory, and how we should enforce such rules. In particular, we sought comment on whether we should adopt national guidelines governing installation, service, maintenance, and repair of the incumbent LEC's portion of interconnection facilities.[452]

---

[450] *See, e.g.*, Bell Atlantic comments at 20-21; BellSouth reply at 23; NYNEX comments at 65; Lincoln Tel. comments at 5.

[451] 47 U.S.C. §§ 251(c)(2)(D), 251(c)(3).

[452] We discuss the rates for interconnection below in Section VII.

2. Comments

214. MCI argues that incumbent LECs should not be permitted to set restrictions on the type of traffic that can be combined on a single trunk group unless signaling requirements dictate the need for separate trunk groups. Rather, MCI argues that incumbent LECs should be required to accept one-way and two-way trunk groups.[453] MCI also urges the Commission to require incumbents and competitors to select one point of interconnection (POI) on the other carrier's network at which to exchange traffic. MCI further requests that this POI be the location where the costs and responsibilities of the transporting carrier ends and the terminating carrier begins.[454] NEXTLINK argues that incumbent LECs should only be permitted to require earnest fees of new entrants if such fees are required of other incumbent LEC customers.[455]

215. Many incumbent LECs, state commissions, and others oppose explicit national rules regarding standards for just, reasonable, and nondiscriminatory terms of interconnection and claim that these issues are best resolved through negotiation and arbitration.[456] Several commenters urge the Commission to adopt a rule that only requires that terms and conditions for interconnection points be nondiscriminatory.[457] BellSouth argues that longstanding nondiscrimination reporting requirements have never revealed a problem in the area of installation, maintenance, and repair.[458] Bell Atlantic contends that all arrangements provided by

---

[453] MCI comments at 40-41.

[454] Under MCI's proposal, new entrants would be considered co-carriers with incumbent LECs, and each carrier that seeks to interconnect with an incumbent LEC would be required to designate, for each local calling area, at least one point of interconnection (POI) on the other carrier's network. A carrier could designate more than one POI but could not be required to do so. Interconnection would result in the termination of a competing carrier's traffic at at least the same level of service quality that the incumbent LEC provides for terminating its own traffic, without any additional charge to the competing carrier to obtain that level of service. MCI comments at 40-46.

[455] NEXTLINK comments at 19.

[456] *See, e.g.*, Ameritech comments at 16-17; BellSouth comments at 20; USTA comments at 18; GTE comments at 21; SNET comments at 14; Alabama Commission comments at 15; California Commission comments at 20; Oregon Commission comments at 26-27; GVNW comments at 15; MECA comments at 25; Ohio Consumers' Counsel comments at 12 (an effective complaint procedure should be adopted rather than overly specific guidelines). The Ohio Commission and PacTel state that performance standards governing installation, maintenance and repair are unnecessary. PacTel contends that states and industry fora such as the Ordering and Billing Forum (OBF) can establish the necessary rules without Commission intervention. PacTel comments at 29; Ohio Commission comments at 26.

[457] *See, e.g.*, Bell Atlantic comments at 31; BellSouth comments at 20-21; SBC comments at 37; GTE reply at 11; California Commission comments at 20; District of Columbia Commission comments at 18-19; Ohio Consumers' Counsel comments at 12.

[458] BellSouth comments at 20-21; *see also* Bell Atlantic comments at 31 (provisioning interconnection and unbundled elements for new entrants is complicated and requires more work than provisioning simple dial tone; the Commission should not mandate that LECs provide interconnection and unbundled elements using the appropriate

the incumbent LEC for a competitor should be made reciprocal, because new business buildings or residential developments may have only facilities owned by a new entrant. Absent a reciprocity requirement, Bell Atlantic contends that incumbent LECs could be at a competitive disadvantage in competing for those customers. Bell Atlantic also argues that reciprocal interconnection will put a check on potentially unrealistic unbundling requests.[459]

3. Discussion

216. We conclude that minimum national standards for just, reasonable, and nondiscriminatory terms and conditions of interconnection will be in the public interest and will provide guidance to the parties and the states in the arbitration process and thereafter. We believe that national standards will tend to offset the imbalance in bargaining power between incumbent LECs and competitors and encourage fair agreements in the marketplace between parties by setting minimum requirements that new entrants are guaranteed in arbitrations. Negotiations between an incumbent and a new entrant differ from commercial negotiations in a competitive market because new entrants are dependent solely on the incumbent for interconnection.

217. Section 202(a) of the Act states that "[i]t shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, . . . facilities, or services for or in connection with like communication service . . . by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person."[460] By comparison, section 251(c)(2) creates a duty for incumbent LECs "to provide . . . any requesting telecommunications carrier, interconnection with a LEC's network on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[461] The nondiscrimination requirement in section 251(c)(2) is not qualified by the "unjust or unreasonable" language of section 202(a). We therefore conclude that Congress did not intend that the term "nondiscriminatory" in the 1996 Act be synonymous with "unjust and unreasonable discrimination" used in the 1934 Act, but rather, intended a more stringent standard.

218. Given that the incumbent LEC will be providing interconnection to its competitors pursuant to the purpose of the 1996 Act, the LEC has the incentive to discriminate against its

---

installation, service, and maintenance intervals that apply to LEC customers and services); Rural Tel. Coalition comments at 32-33 (service intervals for small and rural LECs with respect to provision of interconnection should only be equal to those which the LEC achieves for itself).

[459] Bell Atlantic comments at 32.

[460] 47 U.S.C. § 202(a).

[461] 47 U.S.C. § 251(c)(2)(D).

competitors by providing them less favorable terms and conditions of interconnection than it provides itself. Permitting such circumstances is inconsistent with the procompetitive purpose of the Act. Therefore, we reject for purposes of section 251, our historical interpretation of "nondiscriminatory," which we interpreted to mean a comparison between what the incumbent LEC provided other parties in a regulated monopoly environment. We believe that the term "nondiscriminatory," as used throughout section 251, applies to the terms and conditions an incumbent LEC imposes on third parties as well as on itself. In any event, by providing interconnection to a competitor in a manner less efficient than an incumbent LEC provides itself, the incumbent LEC violates the duty to be "just" and "reasonable" under section 251(c)(2)(D). Also, incumbent LECs may not discriminate against parties based upon the identity of the carrier (*i.e.*, whether the carrier is a CMRS provider, a CAP, or a competitive LEC). As long as a carrier meets the statutory requirements, as discussed in this section, it has a right to obtain interconnection with the incumbent LEC pursuant to section 251(c)(2).

219. We identify below specific terms and conditions for interconnection in discussing physical or virtual collocation (*i.e.*, two methods of interconnection).[462] We conclude here, however, that where a carrier requesting interconnection pursuant to section 251(c)(2) does not carry a sufficient amount of traffic to justify separate one-way trunks, an incumbent LEC must accommodate two-way trunking upon request where technically feasible. Refusing to provide two-way trunking would raise costs for new entrants and create a barrier to entry. Thus, we conclude that if two-way trunking is technically feasible, it would not be just, reasonable, and nondiscriminatory for the incumbent LEC to refuse to provide it.

220. Finally, as discussed below,[463] we reject Bell Atlantic's suggestion that we impose reciprocal terms and conditions on incumbent LECs and requesting carriers pursuant to section 251(c)(2). Section 251(c)(2) does not impose on non-incumbent LECs the duty to provide interconnection. The obligations of LECs that are not incumbent LECs are generally governed by sections 251(a) and (b), not section 251(c). Also, the statute itself imposes different obligations on incumbent LECs and other LECs (*i.e.*, section 251(b) imposes obligations on all LECs while section 251(c) obligations are imposed only on incumbent LECs). We do note, however, that 251(c)(1) imposes upon a requesting telecommunications carrier a duty to negotiate the terms and conditions of interconnection agreements in good faith. We also conclude that MCI's POI proposal, permitting interconnecting carriers, both competitors and incumbent LECs, to designate points of interconnection on each other's networks, is at this time best addressed in negotiations and arbitrations between parties.[464] We believe that the record on

[462] *See infra,* Section VI.

[463] *See infra,* Section XI.A.

[464] Of course, requesting carriers have the right to select points of interconnection at which to exchange traffic with an incumbent LEC under section 251(c)(2).

this issue is not sufficiently persuasive to justify Commission action at this time. As market conditions evolve, we will continue to review and revise our rules as necessary.

H. Interconnection that is Equal in Quality

1. Background

221. Section 251(c)(2)(C) requires that the interconnection provided by an incumbent LEC be "at least equal in quality to that provided by the [incumbent LEC] to itself or to any subsidiary, affiliate, or any other party to which the carrier provides interconnection."[465] In the NPRM, we sought comment on how to determine whether interconnection is "equal in quality."

2. Comments

222. MFS claims that the incumbent LEC should provide to everyone the highest grade service it makes available to anyone, including neighboring non-competing LECs.[466] MFS also claims that traffic exchange facilities between incumbent LECs and competitors should be designed to meet at least the same technical criteria and grade of service standards (*e.g.*, probability of blocking in peak hours and transmission standards) as used by the incumbent for the inter-office trunks used in its network.[467] Other parties claim that any criteria established by the Commission should not be overly detailed and quantitative or microscopic.[468] The Pennsylvania Commission suggests that "equal in quality" should mean interconnection that is virtually identical to that received by the incumbent LEC itself or its affiliate with no noticeable differences between the two to the end-user.[469] Nortel claims that the definition of "equal in quality" should recognize differences across technologies.[470]

---

[465] 47 U.S.C. § 251(c)(2)(C).

[466] MFS comments at 17 (even if higher grade service is offered to a non-competing LEC, the incumbent LEC must offer this service to competitors); Intermedia comments at 4.

[467] MFS comments at 17.

[468] *See, e.g.*, Ameritech comments at 17; Pennsylvania Commission comments at 21; Ohio Consumers' Counsel comments at 13.

[469] Pennsylvania Commission comments at 21.

[470] Nortel comments at 9.

223. Some parties argue that no national standards for "equal in quality" are necessary, and that this determination is best left to a case-by-case determination.[471] GTE claims that it should be acceptable for states to define equal in quality in terms of perception by the end user.[472]

3. Discussion

224. We conclude that the equal in quality standard of section 251(c)(2)(C) requires an incumbent LEC to provide interconnection between its network and that of a requesting carrier at a level of quality that is at least indistinguishable from that which the incumbent provides itself, a subsidiary, an affiliate, or any other party. We agree with MFS that this duty requires incumbent LECs to design interconnection facilities to meet the same technical criteria and service standards, such as probability of blocking in peak hours and transmission standards, that are used within their own networks. Contrary to the view of some commenters, we further conclude that the equal in quality obligation imposed by section 251(c)(2) is not limited to the quality perceived by end users. The statutory language contains no such limitation, and creating such a limitation may allow incumbent LECs to discriminate against competitors in a manner imperceptible to end users, but which still provides incumbent LECs with advantages in the marketplace (*e.g.*, the imposition of disparate conditions between carriers on the pricing and ordering of services).

225. We also note that section 251(c)(2) requires interconnection that is "at least" equal in quality to that enjoyed by the incumbent LEC itself. This is a minimum requirement. Moreover, to the extent a carrier requests interconnection of superior or lesser quality than an incumbent LEC currently provides, the incumbent LEC is obligated to provide the requested interconnection arrangement if technically feasible. Requiring incumbent LECs to provide upon request higher quality interconnection than they provide themselves, subsidiaries, or affiliates will permit new entrants to compete with incumbent LECs by offering novel services that require superior interconnection quality. We also conclude that, as long as new entrants compensate incumbent LECs for the economic cost of the higher quality interconnection,[473] competition will be promoted.[474]

---

[471] *See, e.g.*, BellSouth comments at 22; USTA comments at 18; GTE comments at 22; Citizens Utilities comments at 11; Alabama Commission comments at 16; Ohio Consumers' Counsel comments at 13 (dispute resolution process should ultimately decide the success or failure of quality-oriented requirements).

[472] GTE comments at 22.

[473] *See infra*, Section VII.

[474] *See also* Section VII.E. (discussion of accommodation of interconnection).

V. ACCESS TO UNBUNDLED NETWORK ELEMENTS

A. Commission Authority to Identify Unbundled Network Elements

1. Background

226. Section 251(c)(3) imposes a duty on 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."[475] This section also requires incumbent LECs to provide these elements "in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service."[476]

227. Section 251(d)(1) provides that "the Commission shall complete all actions necessary to establish regulations to implement the requirements of" section 251 by August 8, 1996.[477] Section 251(d)(2) further provides that, "[i]n determining what network elements should be made available for purposes of subsection (c)(3), the Commission 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."[478]

228. In the NPRM, we sought comment on our tentative conclusion that the 1996 Act requires the Commission to identify network elements that incumbent LECs are required to make available to requesting carriers on an unbundled basis under section 251(c)(3).[479]

2. Comments

229. The majority of parties who commented on this issue, including IXCs, potential local competitors, the Department of Justice, state commissions, incumbent LECs, cable interests, and NARUC, agree with our tentative conclusion that sections 251(d)(1) and 251(d)(2)

---

[475] 47 U.S.C. § 251(c)(3).

[476] *Id.*

[477] *Id.* at § 251(d)(1).

[478] *Id.* at § 251(d)(2).

[479] NPRM at para. 77.

obligate the Commission to identify network elements for purposes of subsection (c)(3).[480] BellSouth, in contrast, interprets section 251(c)(3) as requiring the Commission to identify network elements only when a state commission has failed to carry out its responsibilities under section 252, and the Commission assumes those responsibilities under section 252(e)(5).[481]

3. Discussion

230. We affirm our tentative conclusion in the NPRM that the 1996 Act requires the Commission to identify network elements that incumbent LECs must offer requesting carriers on an unbundled basis under section 251(c)(3). Section 251(d)(1) directs the Commission to establish rules implementing the requirements of section 251(c)(3). Further, section 251(d)(2) contemplates that, pursuant to this direction, the Commission will identify unbundled network elements. We conclude that neither the language in section 251(d), nor any other part of the 1996 Act, is reasonably susceptible to the interpretation advanced by BellSouth that our obligation to identify unbundled network elements arises only when we act under section 252(e)(5).

B. National Requirements for Unbundled Network Elements

1. Background

231. In the NPRM, we noted Congress's view that, when new entrants begin providing services in local telephone markets, it is unlikely they will own network facilities that completely duplicate those of incumbent LECs because of the significant investment and time required to build such facilities.[482] The statutory requirement imposed on incumbent LECs to provide access to unbundled network elements will permit new entrants to offer competing local services by purchasing from incumbents, at cost-based prices, access to elements which they do not already possess, unbundled from those elements that they do not need.[483]

232. It is possible that there will be sufficient demand in some local telephone markets to support the construction of competing local exchange facilities that duplicate most or even all of

---

[480] *See, e.g.*, AT&T comments at 3-16, reply at 16; MFS comments at 36; USTA comments at 20-22; Sprint comments at 21-22; Cable & Wireless comments at 17-19; Ameritech comments at 34; District of Columbia Commission comments at 21-22; ALTS comments at 24-26; NCTA comments at 35-40; DoJ comments at 8-15; TDS comments at 5-6; TCC comments at 11-13; Hyperion reply at 5; Minnesota Commission reply at 8; *accord* GTE comments at 24; NARUC comments at 32.

[481] BellSouth comments at 26-30.

[482] NPRM at para. 75 n.103 *citing* (Joint Explanatory Statement at 148).

[483] NPRM at paras. 75-76.

the elements of an incumbent LEC's network. In these markets new entrants will be able to use unbundled elements from the incumbent LEC to provide services until such time as they complete the construction of their own networks, and thus, no longer need to rely on the facilities of an incumbent to provide local exchange and exchange access services. It is also possible, however, that other local markets, now and even into the future, may not efficiently support duplication of all, or even some, of an incumbent LEC's facilities. Access to unbundled elements in these markets will promote efficient competition for local exchange services because, under the scheme set out in the 1996 Act, such access will allow new entrants to enter local markets by leasing the incumbent LECs' facilities at prices that reflect the incumbents' economies of scale and scope.[484]

233. In the NPRM, we tentatively concluded that the Commission should identify a minimum number of elements that incumbent LECs must make available to requesting carriers on an unbundled basis.[485] We further tentatively concluded that section 252(e)(3) preserves a state's authority, during arbitration, to impose additional unbundling requirements beyond those we specify, as long as such requirements are consistent with the 1996 Act and our regulations.[486] Finally, we tentatively concluded that we have authority to identify additional or different unbundling requirements in the future, as we learn about changes in technology, the innovation of new services, and the necessities of competition.[487]

2. Comments

234. A majority of the commenters addressing this issue support our tentative conclusion that we should identify a minimum list of network elements that incumbent LECs must offer

[484] For a further discussion of the differences between entry into local markets through access to unbundled elements and resale, *see infra,* Section V.H.

[485] NPRM at para. 77.

[486] NPRM at para. 78 and nn.105 & 106. Section 252(e) discusses a state commission's obligations regarding the approval or rejection of agreements between incumbent LECs and requesting telecommunications carriers for interconnection, services or network elements. Subparagraph (3) of this section specifically provides that a state commission is not prohibited "from establishing or enforcing other requirements of State law in its review of an agreement," as long as such requirements do not violate the terms of the statute. 47 U.S.C. § 252(e)(3). We further note that under section 252(f)(2) states may impose additional unbundling requirements during review of BOC statements of generally available terms and conditions. Section 252(f)(2) states that "(e)xcept as provided in section 253, nothing in this section shall prohibit a State commission from establishing or enforcing other requirements of State law in its review of such statement . . ." 47 U.S.C. § 252(f)(2).

[487] NPRM at para. 77.

upon request.[488] These commenters argue that, absent national rules, negotiations conducted under section 252 will not proceed as Congress intended, because incumbent LECs have no incentive to provide new entrants with facilities that will be used to compete against them.[489] They contend that a national list of required unbundled elements will hasten the development of local competition and decrease the costs of entry into local telephone markets.[490] For example, they argue that national unbundling requirements will allow carriers entering local markets on a regional or national scale to take advantage of economies of scale in network design,[491] diminish the likelihood of litigation over section 251(c)(3)'s requirements,[492] and provide the financial

[488] *See, e.g.*, AT&T comments at 3-18; MFS comments at 36; Sprint comments at 21-22; Time Warner comments at 44-45; Cable & Wireless comments at 17-19; MCI comments at 12-20; Continental comments at 16; Comcast comments at 5-9, 20-21; SCG comments at 1-4; NCTA comments at 35-39; LDDS comments at 16; TCC comments at 27; Frontier comments at 13; American Mobile Telecomm. Ass'n comments at 1-8; Omnipoint comments at 17-18; SBC comments at 4; NYNEX comments at 61-64; Ameritech comments at 34; U S West comments at 43-50; Ericsson comments at 2-3; District of Columbia Commission comments at 21; Connecticut Commission comments at 9; Ad Hoc Telecommunications Users Committee comments at 13-14; Citizens Utilities comments at 12; Missouri Commission comments at 7; Nortel comments at 9-11; Cincinnati Bell comments at 15; Ohio Consumers' Counsel comments at 17; North Carolina Commission comments at 21; Illinois Commission comments at 35-36; Washington Commission comments at 19; Municipal Utilities reply at 3-6; Joint Consumer Advocates reply at 7; Attorneys General reply at 6; ATSI reply at 8-9; *accord* Wyoming Commission reply at 23-25 (urging the Commission not to adopt a required list of unbundled elements more detailed than that adopted in Wyoming); *see also* Jones Intercable reply at 4-6 (the Commission should include in its national unbundling requirements a waiver procedure whereby incumbent LECs can demonstrate, in state mediations and arbitrations, their inability to meet a particular requirement in a particular situation); SBA comments at 14-15 (unbundling must go beyond three or four basic elements to maximize the ability of small competitors to fashion a competitive service offering); Hyperion comments at 7-8 (if we do not adopt national rules for unbundled elements small competitors could be hurt because they have fewer resources to negotiate agreements than incumbent LECs); TCA comments at 5-6 (rural incumbent LECs should only be required to offer four essential elements to requesting carriers because of differences between rural and urban areas, and in adopting unbundling requirements the Commission should ensure that rural LECs can meet their universal service obligations).

[489] AT&T comments at 3-12, reply at 9; Teleport comments at 5-10; DoJ comments at 8-15; Ad Hoc Telecommunications Users Committee comments at 17-21; Frontier comments at 14; TCC comments at 7-13; ACSI reply at 7 (if private negotiations were adequate there would be no need to create a statutory duty); *accord* PageNet reply at 5-6; Competition Policy Institute reply at 4-9; *see also* IDCMA reply at 8 (national unbundling requirements will facilitate the ability of new entrants to offer innovative services that would not be possible in the context of differing state requirements).

[490] *See, e.g.*, Continental comments at 16; Comcast comments at 20-22; DoJ comments at 8-15; Cable & Wireless comments at 17-19; TCC comments at 7-13; AT&T comments at 3-12; MCI comments at 4-6; Omnipoint comments at 17-18; ITIC comments at 2-5; Ind. Cable & Telecomm. Ass'n reply at 13; GST reply at 3-6; LDDS comments at 28; *accord, e.g.*, Ohio Commission comments at 31.

[491] *See, e.g.*, NCTA comments at 35-39; DoJ comments at 8-15; AT&T comments at 3-18; MCI comments at 4-6; MCI reply at 32; SCG comments at 1-4; Comcast comments at 6; MFS comments at 36; Cable & Wireless comments at 17-19; Continental comments at 16; Omnipoint comments at 17-18; American Mobile Telcomm. Ass'n comments at 1-5; Ohio Commission comments at 30-31; Nortel comments at 9-11; IDCMA reply at 6-7; Attorneys General reply at 6.

[492] *See, e.g.*, DoJ comments at 8-15; MCI comments at 4-6; AT&T comments at 3-12; *accord* IDCMA reply at 4-6.

community with greater certainty as it assesses new entrants' business plans, thus enhancing the ability of new entrants to raise capital at affordable rates.[493]

235. Some commenters suggest that we interpret section 251(c)(3) in a way that maximizes unbundling by requiring incumbent LECs to provide all elements for which unbundling is technically feasible.[494] R. Koch argues that a detailed list of unbundled network elements will enable small entities to obtain the right combination of elements to allow them to offer specialized services.[495] Others suggest that we adopt national rules from which the states could deviate to address state-specific concerns. Parties contend that adopting such an approach (variously titled "safe harbors" or "preferred outcomes") would overcome the disincentives of incumbent LECs to provide network elements to competitors, and would allow states to pursue policies that promote competition more aggressively than the 1996 Act requires.[496] NTIA argues that minimum unbundling requirements would be underinclusive, but detailed unbundling rules would provide insufficient flexibility to the states. NTIA thus recommends that the Commission require incumbent LECs to unbundle five different network elements, and mandate that the states require further unbundling consistent with local conditions.[497]

236. BellSouth, U S West, SNET and COMAV argue against the Commission's identification of a minimum list of required unbundled network elements. These parties contend that the provision of unbundled elements should be left entirely to parties in voluntary negotiations in order to accommodate state variations and to avoid requests for elements that competitors do not need, but nevertheless request in an effort to raise incumbent LECs' costs. These parties contend that national unbundling requirements would: dampen technological

---

[493] MCI comments at 4-6; Continental comments at 16; ITIC comments at 2-5.

[494] DoJ comments at 19-20; *accord* Nextel comments at 9; Ad Hoc Telecommunications Users Committee reply at 6; ACTA comments at 18-19 (arguing that the Commission should require incumbent LECs to unbundle all network elements with exceptions handled through a waiver procedure if the LEC can show that such unbundling is anticompetitive or otherwise not in the public interest); *see also* ASCI comments at 32 (incumbent LECs should be required to provide elements that are not required by the Commission or the States).

[495] R. Koch comments at 2.

[496] *See, e.g.*, Teleport comments at 5-10, 33-34; ALTS comments at 2-4; PacTel comments at 40-44 (the Commission should identify a list of unbundled network elements that are sufficient but not mandatory to comply with section 251); PacTel reply at 2; TRACER reply at 5-6; *see also* Texas Commission comments at 14; Florida Commission comments at 16-17 (the Commission should identify categories rather than specific elements); Pennsylvania Commission reply at 8-21 (the Commission should adopt minimum requirements only where necessary; such requirements should be broad enough to accommodate variations among states because of local technical, demographic and geographic differences); Colorado Commission comments at 25 (the Commission should adopt recommendations for required network elements, and allow the states to identify them and experiment); Rural Tel. Coalition reply at 5 (the Commission should provide guidance to the states rather than imposing detailed unbundling requirements, which would not be consistent with the deregulatory objectives of the 1996 Act); Competition Policy Institute reply at 9; Alaska Tel. Ass'n comments 2-3.

[497] NTIA reply at 7-14.

development because minimum requirements would be set at the lowest common denominator, retard the development of competition by complicating the regulatory review process, and curtail the incentives of incumbent LECs to develop new technologies and services.[498] Maine Commission, *et al.*, Colorado Independent Telephone Association, Home Telephone Company, the Rural Telephone Coalition, and Illinois Independent Telephone Association argue that national unbundling requirements would be unworkable because of technological, demographic and geographic variations among states. They contend that such rules would be particularly harmful to rural areas, and rural incumbent LECs, and that states must have flexibility to determine unbundling requirements that address state-specific concerns.[499]

237. GVNW and the Minnesota Independent Coalition argue that national unbundling requirements imposed on small incumbent LECs should differ from those imposed on large, urban incumbent LECs because of differences in networks and operational procedures.[500] The Rural Telephone Coalition contends that unbundling requirements for small and rural LECs should be limited "to those instances where it is technically feasible, specifically needed by a competitor and economically reasonable."[501]

238. A broad range of parties support our tentative conclusion that states may impose additional unbundling requirements beyond those we specify as long as such requirements are consistent with the 1996 Act and our regulations.[502] A number of parties, including IXCs, state commissions, cable operators, CAPs, and new entrants, support our tentative conclusion that the Commission can establish additional or different unbundling requirements in the future as

---

[498] BellSouth comments at 16-19, 30-34; SNET comments at 18-24; U S West comments, Harris/Yao Report at 17; *see also* USTA reply at 10-13 (to encourage facilities-based competition the Commission should implement section 251(c)(3) in a way that provides parties with maximum flexibility); COMAV comments at 20 (because there is no clear definition of a network element, parties should be left to negotiate for what they want).

[499] Maine Commission, *et al.* comments at 2-10; Colorado Ind. Tel. Ass'n comments at 2; Home Tel. comments at 1-2; Illinois Ind. Tel. Ass'n comments at 1-2; *accord* Pennsylvania Commission reply at 15-16; Rural Tel. Coalition comments at 31-33.

[500] GVNW comments at 4-15; Minn. Ind. Coalition comments at 6-7.

[501] Rural Tel. Coalition comments at 31-33; *see also* GVNW comments at 21.

[502] *See, e.g.*, TCC comments at 11-13, 34; NARUC comments at 32; Texas Commission comments at 15-16; Cable & Wireless comments at 17-19; MCI comments at 12-20; AT&T comments at 12-18; District of Columbia Commission comments at 21; ALTS comments at 24-26; USTA comments at 23; Colorado Commission comments at 24; Sprint comments at 21-22; ACSI comments at 32-34; CompTel comments at 32; Alabama Commission comments at 18; Oregon Commission comments at 24; LDDS comments at 28; GCI comments at 11; Municipal Utilities comments at 28; Ohio Consumers' Counsel comments at 17; Telecommunications Resellers Ass'n comments at 32; TIA comments at 9; TDS comments at 13-14; California Commission comments at 26; Illinois Commission comments at 35-36; Washington Commission comments at 19; Citizens Utilities comments at 12; Nortel comments at 10; Wyoming Commission comments at 23-25; *accord* Ohio Commission comments at 30-31 (it must be clear in whatever forum a BOC request for interexchange authority is reviewed that BOCs must comply with the state unbundling requirements).

services, technology, and the needs of competing carriers evolve.[503] The Connecticut and Wyoming Commissions, in contrast, oppose this tentative conclusion. They argue that states should consider future unbundling requirements because they are more familiar with local networks and thus, will be able to address feasibility issues more efficiently.[504]

239. Yet another group of commenters, including incumbent LECs and state commissions, contend that future unbundling requirements should be determined by parties through voluntary negotiations.[505] Some argue that such negotiations should proceed under a Commission-mandated bona fide request (BFR) process.[506] USTA suggests that this process should include, for example, requirements regarding the timeliness of LEC responses to requests, and commitments by requesting carriers to purchase requested elements and bear the cost of developmental efforts.[507] Bell Atlantic and SBC argue that a BFR process would clarify the duties of incumbent LECs and requesting carriers so that neither engage in gamesmanship,[508] prohibit sham requests intended to delay BOC entry into the in-region, interLATA market,[509] assist arbitrations by requiring the development of a record before the arbitrations commence,[510]

---

[503] AT&T comments at 15-18; Texas Commission comments at 14-15; MCI comments at 12-20; Continental comments at 19; ALTS comments at 24-26; Pennsylvania Commission comments at 23; LDDS comments at 28; North Carolina Commission comments at 22; SBC comments at 4, 31; Oregon Commission comments at 2; Cable & Wireless comments at 17-19; Comcast comments at 19-21; *accord* CompTel comments at 40 (Commission should establish expedited procedures to permit carriers to request that the Commission identify additional elements); Sprint comments at 21-22 (future unbundling requirements can be identified both by the Commission and the states); NCTA comments at 37-38 (Commission should not leave to negotiations the identification of additional unbundled elements); TCC comments at 34 (unless the Commission states that it can adopt further unbundling requirements in the future, incumbent LECs will claim they need only provide the elements originally identified by the Commission).

[504] Connecticut Commission comments at 9; Wyoming Commission comments at 23-25.

[505] *See, e.g.*, Ameritech comments at 34-35; NYNEX comments at 61-64; Bell Atlantic comments at 15-20; ACSI comments at 33; USTA comments at ii; Ohio Commission comments at 32; GTE comments at 28 (impossible to determine in advance every element for which it is technically feasible to unbundle because such a determination must consider the service for which the element will be used and other issues); SBC reply at 18-19; New Hampshire Commission, *et al.* reply at 23.

[506] *See, e.g.*, Ameritech comments at 34-35; ASCI comments at 33; Ohio Commission comments at 32; SBC reply at 18-19.

[507] USTA comments at 14-16.

[508] Both Bell Atlantic and SBC assert that they have developed items for carriers that were never actually ordered. Bell Atlantic comments at 17-20; SBC reply at 18-19.

[509] Bell Atlantic comments at 17-20.

[510] Bell Atlantic comments at 17-20; Bell Atlantic reply at 7.

and eliminate waste caused by regulatory requirements to unbundle "theoretical network components."[511]

240. A number of potential local competitors oppose identification of unbundled elements in the future by means of voluntary negotiations and a BFR process. In addition, they oppose the criteria offered by a number of incumbent LECs that would be used to identify future unbundling requirements in the context of the BFR process.[512] For example, AT&T argues that the factors in the BFR process proposed by USTA would impose anticompetitive reciprocity requirements and delays.[513] MCI and Sprint oppose USTA's proposal because it would require new entrants to commit to purchasing elements before they know the terms, including prices, under which the LEC will provide such elements.[514] MCI contends that, in a BFR process, LECs should be required to provide an up-to-date inventory of facilities with all information necessary to determine technical feasibility. Conversely, Sprint argues that it is reasonable to ask new entrants to provide technical information and projected demand quantities.[515]

3. Discussion

241. We adopt our tentative conclusion and identify a minimum list of unbundled network elements that incumbent LECs must make available to new entrants upon request. We believe the procompetitive goals of section 251(c)(3) will best be achieved through the adoption of such a list. As discussed above,[516] we believe that negotiations and arbitrations will best promote efficient, rapid, and widespread new entry if we establish certain minimum national unbundling requirements. As the Department of Justice argues, there is "no basis in economic theory or in experience to expect incumbent monopolists to quickly negotiate arrangements to facilitate disciplining entry by would-be competitors, absent clear legal requirements to do so."[517] Ad Hoc Telecommunications Users Committee notes that "[h]istorically, the [incumbent LECs]

---

[511] Bell Atlantic comments at 17-20; Bell Atlantic reply at 7.

[512] CompTel comments at 41; AT&T reply at 16; MCI reply at 23-30; LDDS reply at 11-12; ALTS reply at 32-34; Sprint reply at 18; Hyperion reply at 5-6; *see also* CFA/CU reply at 22.

[513] AT&T reply at 16.

[514] MCI reply at 23-30; Sprint reply at 18.

[515] MCI reply at 23-30; Sprint reply at 18.

[516] *See supra,* Section V.B.

[517] DoJ comments at 8-15; *accord* Ad Hoc Telecommunications Users Committee comments at 17-21 (incumbent monopolists in the telecommunications industry have a long history of resisting the facilitation of competition, noting experiences with customer premises equipment (CPE) interconnection, local exchange access for long distance carriers, and the FCC's *Computer II* and *Computer III* proceedings).

have had strong incentives to resist, and have actively resisted, efforts to open their networks to users, competitors, or new technology-driven applications of network technology."[518]

242. National requirements for unbundled elements will allow new entrants, including small entities, seeking to enter local markets on a national or regional scale to take advantage of economies of scale in network design. If fifty states were to establish different unbundling requirements, new entrants, including small entities, could be denied the benefits of scale economies in obtaining access to unbundled elements. National requirements will also: reduce the number of issues states must consider in arbitrations, thereby facilitating the states' ability to conduct such proceedings; reduce the likelihood of litigation regarding the requirements of section 251(c)(3) and the costs associated with such litigation; and provide financial markets with greater certainty in assessing new entrants' business plans, thus enhancing the ability of new entrants, including small entities, to raise capital. In addition, to the extent the Commission assumes a state's arbitration authority under section 252(e)(5) of the 1996 Act, national requirements for unbundled elements will help the Commission to conclude such proceedings expeditiously.[519]

243. We reject the alternative option of developing an exhaustive list of required unbundled elements, to which states could not add additional elements, on the grounds that such a list would not necessarily accommodate changes in technology, and it would not provide states the flexibility they need to deal with local conditions.

244. We also reject the proposal advanced by several parties that we should adopt non-binding national guidelines for unbundled elements that states would not be required to enforce. The parties asserting that differences between incumbent LEC networks militate against the adoption of national standards provide few, if any, specific examples of what those differences are. In addition, they fail to articulate persuasively why those differences are significant enough to weigh against the adoption of national requirements.[520] Accordingly, and as previously

---

[518] Ad Hoc Telecommunications Users Committee comments at 17; *see also infra,* Section VII.

[519] *See supra,* Sections II.A, II.B.

[520] The Florida Commission argues that we should not require incumbent LECs to offer a 4-wire ISDN loop as an unbundled element because some incumbents in Florida do not offer ISDN. Florida Commission comments at 16-17. Our rules accommodate the concern raised by the Florida Commission because they require requesting carriers to pay for the costs of obtaining access to unbundled network elements. Accordingly, if a requesting carrier seeks a 4-wire ISDN loop from an incumbent LEC that does not employ such an element, the requesting carrier will have to pay for it pursuant to our pricing rules. *See infra,* Section VII. Maine Commission *et. al.* argues generally that embedded networks have evolved over time and most network architectures are different. *See* Maine Commission *et. al.* comments at 2-4. They do not explain, however, why national rules could not accommodate such differences. PacTel argues that local loops may be made of copper or fiber optics, or they may be digital or analog, and thus, the Commission cannot determine the elements that should be unbundled without dictating network technologies. PacTel comments at 42-44. We do not believe that the adoption of national rules identifying a minimum list of unbundled network elements will lead

discussed,[521] we conclude that any differences that may exist among states are not sufficiently great to overcome the procompetitive benefits that would result from establishing a minimum set of binding national rules.[522] Moreover, we believe the authority granted the states in section 252(e)(3), as well as our existing rules which set forth a process by which incumbent LECs can request a waiver of the requirements we adopt here, will provide the necessary flexibility in our rules to permit states and parties to accommodate any truly unique state conditions that might exist.[523] Accordingly, we adopt our tentative conclusion that states may impose additional unbundling requirements pursuant to section 252(e)(3), as long as such requirements are consistent with the 1996 Act and our regulations. This conclusion is consistent with the statement in section 252(e)(3) that "nothing in this section shall prohibit a State commission from establishing or enforcing other requirements of State law in its review of an agreement."[524]

245. We find the arguments presented by parties opposing national rules for unbundled elements unpersuasive especially in light of the 1996 Act's strong procompetitive goals. For example, in light of the incumbent LECs' disincentives to negotiate with potential competitors, we believe national rules will promote competition by making the bargaining strength of potential competitors, including small entities, more equal. We are not persuaded that national rules will discourage incumbent LECs from developing new technologies and services; to the contrary, based on our experience in other telecommunications markets, we believe that competition will stimulate innovation by incumbent LECs. We also believe that any failure of incumbent LECs to develop new technologies or services would have a less significant adverse effect on competition in local exchange markets than a failure to adopt national rules. Nor is it likely that new entrants will seek unnecessary elements merely to raise incumbents' costs because such new entrants must pay the costs associated with unbundling. In addition, the pricing standard we implement pursuant to section 252(d)(1)(B), which allows incumbent LECs to

---

to regulation determining network architectures. To the contrary, our rules will provide new entrants with the opportunity to obtain access to a number of different variants of a particular element, and thus they will facilitate the ability of the market to dictate network architectures. For example, in this order we identify a number of different types of local loops as network elements. *See infra*, Section V.J. Incumbent LECs will be required to provision such elements only if they are requested by new entrants. It is unlikely that new entrants will request and pay for elements unless they believe that there is likely to be some market demand for the services that can be provided over such elements.

[521] *See supra*, Sections II.A & II.B.

[522] *See* DoJ comments at 8-15 (the differences between states are not significant enough to "militate against" national requirements); AT&T comments at 14-18 (there are no conditions unique to one state, hence, all variations can be accommodated in national rules that include a waiver process for unusual conditions.)

[523] We further observed in the NPRM that under the voluntary negotiation paradigm set out in section 252, parties to such negotiations can agree to provide unbundled network elements that differ from those identified by the Commission. *See* NPRM at para. 78 (*citing* 47 U.S.C. § 252(a)).

[524] 47 U.S.C. § 252(e)(3).

receive not only their costs but also a reasonable profit on the provision of unbundled elements, should further alleviate concerns regarding sham requests.[525]

246. We adopt our tentative conclusion that, in addition to identifying unbundled network elements that incumbent LECs must make available now, we have authority to identify additional, or perhaps different, unbundling requirements that would apply to incumbent LECs in the future. The rapid pace and ever changing nature of technological advancement in the telecommunications industry makes it essential that we retain the ability to revise our rules as circumstances change.[526] Otherwise, our rules might impede technological change and frustrate the 1996 Act's overriding goal of bringing the benefits of competition to consumers of local phone services. For the same reasons we believe we should adopt national unbundling requirements, as discussed above,[527] we reject the proposal that future unbundling requirements should be determined solely by the parties to voluntary negotiations.

247. Finally, we have considered the economic impact of our rules in this section on small incumbent LECs. For example, we have considered the argument advanced by the Rural Telephone Coalition that national unbundling requirements would be unworkable because of technological, demographic and geographic variations between states. We do not adopt the Rural Telephone Coalition's position, however, because we believe that the minimum list we adopt can be applied to a broad range of networks across geographic regions and any differences between incumbent LEC networks in different states are not sufficiently great to overcome the procompetitive benefits of a minimum list of required unbundled network elements. We have also considered the argument advanced by GVNW that unbundling requirements imposed on small incumbent LECs should differ from those imposed on large, urban incumbent LECs because of differences in networks and operational procedures. We reject GVNW's proposal for two reasons. First, some small incumbent LECs may not experience any problems complying with our unbundling rules. Second, we note that section 251(f) of the 1996 Act provides relief to certain small LECs from our regulations implementing section 251.

248. Although we have concluded in this proceeding that we can best achieve the procompetitive aims of the 1996 Act by adopting minimum national unbundling requirements for arbitrated agreements, the 1996 Act envisions that the states will administer those requirements through approval of negotiated agreements and arbitrations.[528] Through arbitrations and review of negotiated agreements the states will add to their significant expertise on issues relating to the

---

[525] *See infra*, Section VII.

[526] *See* 47 U.S.C. § 254(c)(1).

[527] *See also supra*, Sections II.A, II.B.

[528] 47 U.S.C. § 252.

provision of access to unbundled network elements. We encourage state commissions to take an active role in evaluating the success or difficulties in implementing any of our requirements. The Commission intends to draw on the expertise developed by the states when we review and revise our rules as necessary.

C. Network Elements

1. Background

249. Section 3(29) of the Communications Act defines the term "network element" to mean both "a facility or equipment used in the provision of a telecommunications service" and "features, functions, and capabilities that are provided by means of such facility or equipment."[529] Such features, functions, and capabilities include "subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing or other provision of a telecommunications service."[530] The Joint Explanatory Statement explains that "[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 local exchange carrier must provide for certain purposes under other sections of the conference agreement."[531]

250. In the NPRM, we noted that we could identify "network elements" in two ways. First, we could identify a single "network element," and then further subdivide it into additional "elements." Alternatively, we could provide that, once we identify a particular "network element," it cannot be further subdivided. In the NPRM, we asked for comment on these two approaches.[532]

251. We observed in the NPRM that the statutory definition of a "network element" draws a distinction between a "facility or equipment used in the provision of a telecommunications service," and the "service" itself.[533] We asked for comment on the meaning of this distinction in general, with respect to requirements for unbundling, and in connection with specific unbundled elements. We noted that the definition of a network element, *i.e.*, a facility, function, or capability, is not dependent on the particular types of services that are provided by

---

[529] 47 U.S.C. § 153(29).

[530] *Id.*

[531] Joint Explanatory Statement at 116.

[532] NPRM at para. 83.

[533] NPRM at para. 51, (*citing* 47 U.S.C. § 153(29)).

means of the element (*e.g.*, interstate access, intrastate local exchange), and asked whether a carrier purchasing access to an element is obligated, pursuant to the definition, to provide all services typically carried or provided by that element.[534]

2. Comments

252. A number of parties, including potential local competitors and state commissions, support the adoption of a flexible method for identifying network elements. They argue that a flexible method is necessary to accommodate future changes in technology.[535] NYNEX, the Texas Public Utility Counsel, and GVNW contend that, to accommodate such changes, we should not define elements in rigid terms, or by specific technologies, but rather by general function.[536]

253. In contrast, PacTel argues that the Commission should not require the unbundling of elements beyond those noted in other parts of the statute, and thus we need not develop a flexible method for identifying network elements.[537] BellSouth contends that, while flexibility is preferable, parties should be able to decide "whatever level of granularity makes sense for them" in voluntary negotiations.[538]

254. A number of parties assert that we should define a network element by its functionality and capabilities, and not as separate services.[539] MCI asserts that elements can be used to provide a number of different services and thus are not service-specific. MCI further

---

[534] NPRM at para. 84.

[535] District of Columbia Commission comments at 21-22; MFS comments at 36; Cable & Wireless comments at 17-19; Ericsson comments at 3; Alabama Commission comments at 19; ACSI comments at 30; Ohio Commission comments at 33; Florida Commission comments at 18; Hyperion comments at 18; GST comments at 16; LDDS comments at 29; Ohio Consumers' Counsel comments at 18; Nextel comments at 8; Time Warner comments at 44-45 (the Commission should identify elements in a way that gives parties maximum flexibility); *but see* Ad Hoc Telecommunications Users Committee comments at 15-16 (define elements narrowly to give maximum flexibility to offer innovative services).

[536] NYNEX comments at 61-64; GVNW comments at 17-18; Texas Public Utility Counsel comments at 8-9.

[537] PacTel comments at 44-45; *see also* MECA comments at 28 (the Commission should not define network elements flexibly); COMAV comments at 20 (because a network element cannot be defined, the parties should decide what facilities they want during negotiations).

[538] BellSouth comments at 30-31.

[539] BellSouth comments at 30-31,62; MFS comments at 36-37, 65-66; Cable & Wireless comments at 26-27; MCI comments at 27-28; Lincoln Tel. comments at 7; GST comments at 6; Sprint comments at 22-23; Illinois Commission comments at 36-37; *see also* Intermedia comments at 12-13 (the Commission should not draw artificial distinctions between facilities and services as an unbundled element is not useful if it cannot support an end-to-end service).