support mechanisms for schools, [and] libraries . . . for the purposes of subsection [254] (h)."[1447] Section 254(h)(2) states that "[t]he Commission shall establish competitively neutral rules to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and non-profit elementary and secondary school classrooms . . . and libraries."[1448]

442. Congress recognized the importance of telecommunications and related services to schools and libraries when it enacted the 1996 Act:

> The provisions of subsection [254] (h) will help open new worlds of knowledge, learning and education to all Americans - rich and poor, rural and urban. They are intended, for example, to provide the ability to browse library collections, review the collections of museums, or find new information on the treatment of illness, to Americans everywhere via schools and libraries. This universal access will assure that no one is barred from benefiting from the power of the Information Age.[1449]

443. In terms of specific services that Congress anticipated would be included in the definition of section 254(h)(2) "advanced telecommunications and information services," Congress enumerated the following possibilities:

> For example, the Commission could determine that telecommunications and information services that constitute universal service for classrooms and libraries shall include dedicated data links and the ability to obtain access to educational materials, research information, statistics, information on Government services, reports developed by Federal, State, and local governments, and *information services which can be carried over the Internet.*[1450]

444. Congress also provided in section 254(c)(2) that "[t]he Joint Board may, from time to time, recommend to the Commission modifications in the definition of the

[1447] 47 U.S.C. § 254(c)(3).

[1448] 47 U.S.C. § 254(h)(2)(A).

[1449] Joint Explanatory Statement at 132-33.

[1450] *Id. at* 133 (emphasis added).

services that are supported by Federal universal service support mechanisms."[1451] Congress anticipated that the definition of universal service would develop over time when it described universal service as an "evolving" concept.[1452] Congress specifically gave the Commission the authority to "alter the definition from time to time, and to provide a different definition for schools, [and] libraries."[1453] Moreover, in its consideration of "additional" services under section 254(c)(3), Congress authorized the Commission to specify a distinct definition of universal service that would apply only to public institutional telecommunications users.[1454] The conferees stated that they expected "the Commission and the Joint Board to take into account the particular needs of . . . K-12 schools and libraries."[1455]

445. In the NPRM, the Commission sought comment on services to be included within the section 254(c)(1) definition of "core" telecommunications services.[1456] The NPRM proposed incorporating the "core" services included in the general definition of universal service under section 254(c)(1), as well as "any other services designated for support pursuant to section 254(c)(3)," in the category of services eligible for a discount for schools and libraries.[1457] Further, the NPRM sought comment and Joint Board recommendation on how the definition of universal service for schools and libraries should reflect the section 254(c)(1) mandate to consider future "advances in telecommunications and information technologies and services."[1458] In the Public Notice, the Common Carrier Bureau sought further comment on whether the services and functionalities eligible for discount should be specifically limited or identified, or whether the discount should apply to all available services.[1459]

446. The Commission asked commenters to identify what "additional" services carriers must make available to schools and libraries pursuant to section 254(c)(3) and what

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[1451] 47 U.S.C. § 254(c)(2). *See also* 47 U.S.C. § 254(a)(2) (providing that "the Commission shall complete any proceeding to implement subsequent recommendations from any Joint Board on universal service within one year after receiving such recommendations").

[1452] 47 U.S.C. § 254(c)(1).

[1453] Joint Explanatory Statement at 131.

[1454] *Id.* at 133.

[1455] *Id.*

[1456] NPRM at para. 77. *See supra* section IV for a discussion of core services.

[1457] NPRM at para. 77.

[1458] NPRM at para. 81.

[1459] Public Notice.

services must be provided at a discount pursuant to section 254(h)(1)(B).[1460] The NPRM also sought comment on what functionalities should be supported through universal service mechanisms for schools and libraries, as well as what facilities are required to provide those functionalities.[1461] The NPRM noted that different kinds of services may require different capacity and different speed links. For example, schools and libraries requiring video links to permit teleconferencing may require T-1 links,[1462] while schools and libraries wishing to provide high quality, full-motion video may require a DS-3 link.[1463] The NPRM also sought comment on whether wireless technologies could provide a more efficient way of delivering any of the services designated for universal service support.[1464]

447. In the NPRM, the Commission asked commenters to identify which services would qualify as "advanced telecommunications and information services" pursuant to section 254(h)(2).[1465] The NPRM also sought comment on the features and functionalities necessary to give classrooms, libraries, and health care providers access to those services.[1466] The NPRM asked whether the "advanced telecommunications and information "services identified pursuant to section 254(h)(2) should be broader, narrower, or identical to the services supported under sections 254(c)(3) and (h)(1).[1467] In addition, the NPRM asked how the Commission should assess whether specific services providing access to advanced telecommunications and information services are "technically feasible and economically reasonable."[1468]

2. Comments

448. In General. Some commenters assert that universal service support should be provided only for the "core" telecommunications services provided under section 254(c)(1)

[1460] NPRM at paras. 78 and 80.

[1461] NPRM at para. 80.

[1462] A T-1 line is equivalent to 24 voice channels, or 1.544 Mbps.

[1463] NPRM at para. 80 n.174. A DS-3 link, also known as a T-3 line, is equivalent to 672 voice channels, or 44.736 Mbps.

[1464] NPRM at para. 81.

[1465] NPRM at para. 109.

[1466] NPRM at para. 109.

[1467] NPRM at para. 109.

[1468] NPRM at para. 110.

and that were proposed for rural, insular, and high cost areas.[1469] TCI, for example, contends that requiring carriers to provide services beyond the "core" services would impose costs on the carriers, thereby limiting and delaying the ability of new entrants to enter the local telephone market.[1470] Ameritech adds that additional federal mandates regarding which specific services and technologies should be deployed for schools and libraries would be inadvisable in light of the "bold initiatives [that] are already underway in various states to bring telecommunications services and technology into various states."[1471]

449. Other commenters contend that universal service support should be provided for "core" services plus some complement of supplementary services.[1472] Some commenters, for example, identify specific sets of functionalities that they would like to see funded as either "additional" or "advanced" services. NSBA I, which filed comments in conjunction with 23 other schools and libraries groups, asserts that internal connections should be included in the definition of services eligible for universal service support.[1473] West Virginia Consumer Advocate "recommends that carriers be required to provide at least one 56 kbps dedicated line to each school in their geographic service territory at a discount."[1474] Florida PSC recommends that the Commission initially establish a dollar limit on expenditures that reflects the connection charge of a 56 kilobits per second (kbps) digital service and the monthly service charge of ISDN-BRI.[1475] Louisiana PSC advocates support for ISDN and T-1 service,[1476] Missouri PSC supports inclusion of interactive video,[1477] and North of Boston Library Exchange suggests that T-3 lines should be funded.[1478] U S West states that

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[1469] *See, e.g.,* Cincinnati Bell comments at 14; TCI comments at 18-23; Ameritech reply comments at 18.

[1470] TCI comments at 19-20.

[1471] Ameritech reply comments at 19. Ameritech outlines the investments it has made in educational infrastructure and classroom solutions, as well as recent pilot projects and programs, in its five-state area. *See* Ameritech reply comments, Att. A.

[1472] Florida Cable comments at 13; NCTA comments at 17; West Virginia Consumer Advocate comments at 10-11.

[1473] NSBA I comments at 7, 14. *See infra* section X.C. for a discussion of internal connections.

[1474] West Virginia Consumer Advocate comments at 10-11.

[1475] Florida PSC reply comments at 2-3, 6-7. ISDN (basic rate), or ISDN-BRI, is equivalent to two 64 kbps voice channels plus one 16 kbps signaling channel, or 144 kbps. ISDN (primary rate) is equivalent to 1.5 mbps.

[1476] Louisiana PSC comments at 5-6.

[1477] Missouri PSC comments at 14.

[1478] North of Boston Library Exchange comments at 1.

additional services for schools and libraries should consist of a 56/64 kbps access line, and favors limiting services in order to minimize the size of the universal service fund and to maximize the available discount for schools and libraries.[1479] Mass Library asserts that discounts should be applied to maintenance of lines providing telecommunications services to schools and libraries.[1480]

450. Numerous commenters assert that any telecommunications service available in the marketplace should be funded for schools and libraries through universal service support mechanisms.[1481] NTIA's proposal, which incorporates a more narrowly defined package of free services, would permit schools and libraries to apply the value of that package to any other telecommunications services.[1482] NTIA asserts that "[a]ll schools and libraries must have flexibility in procuring needed telecommunications and information services."[1483] These commenters argue that schools and libraries should be encouraged to purchase the services that best match their needs, and that limiting the services available for discounts would place artificial constraints on their choices. This limitation may lead to less useful purchases. Many commenters contend that the Commission should not specify services that must be made available and funded through universal service support mechanisms.[1484] Washington Library contends that to "describe either 'core' or 'advanced' services in terms of a service or technology would be difficult at least, and quickly obsolete at best."[1485] Alliance for Public Technology maintains that "no one technology or type of electronic service can address

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[1479] U S West comments at 20-22. *See also* Lincoln reply comments at 7 (stating that "only *access* to services, except for core universal services, should be subsidized for [schools and libraries]").

[1480] Mass Library comments at 3.

[1481] *See, e.g.,* ALA comments at 1; Alaska Library comments at 6; Ameritech comments at 15; Guam comments at 14; NSBA I comments at 13-17; NYNEX comments at 18-21; Pennsylvania Library Ass'n reply comments at 6; Union City Board of Education reply comments at 6; Colorado Library further comments at 6; EDLINC further comments at 8-10. Under Bell Atlantic's revised universal service proposal, schools and libraries would have the right to use universal service funds for any available telecommunications service obtained from any carrier. *See* Bell Atlantic further comments at 3 and Att. B.

[1482] Letter from Richard W. Riley, Secretary of Education, Daniel R. Glickman, Secretary of Agriculture, and Michael Kantor, Secretary of Commerce to Reed E. Hundt, Chairman, Federal Communications Commission, transmitting NTIA further comments at 9, 13-15 (Oct. 10, 1996) (NTIA submission).

[1483] NTIA submission at 7, 14-15.

[1484] *See, e.g.,* Ameritech comments at 15; Citizens Utilities comments at 20; Idaho PUC comments at 10; Sprint comments at 23; Union City Board of Education reply comments at 6.

[1485] Washington Library comments at 9 (suggesting that the best way to determine what services to support is to articulate desired results and aggregate an overall inventory of technologies needed).

adequately the complex and emerging needs of schools and libraries."[1486] Union City Board of Education emphasizes that the services available at a discount to schools and libraries should "evolve over time, so that they keep pace with the developments in communications and information technology."[1487]

451. Several commenters argue that the Commission should not be involved with defining services eligible for support for schools and libraries. For example, PacTel supports deferring to the states to determine what services their schools and libraries need, provided certain guidelines are met.[1488] PacTel notes that "the needs of educational institutions may vary from state to state and a definition of what advanced service is needed for education in one state may not be appropriate in another."[1489] Benton supports allowing educational professionals, rather than regulators, to determine the services and functionalities they need.[1490]

452. Several commenters note that wireless services, if they are available for schools and libraries, should be eligible for federal universal service support.[1491] New York Regents contends that "[i]t may not be as important to consider whether wireless technologies are more or less efficient for the delivery of service as it is to consider how these technologies will complement the others currently in use."[1492] Apple recommends that a mix of wireless and wireline options be provided to maximize efficiency and minimize costs.[1493] Metricom states that wireless, unlicensed, and other services providing alternatives to traditional wireline services, should be eligible for universal service support because "[a]ny subsidy program must present to these users a range of choices and incentives that replicates those in the competitive

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[1486] Alliance for Public Technology comments at 16.

[1487] Union City Board of Education reply comments at 6.

[1488] PacTel comments at 4.

[1489] PacTel comments at 4. *See also Promoting Educational Infrastructure and the Role of the Florida Public Service Commission* at 33-34 (May 1996) (including a study of 17 states indicating those states have employed approximately a dozen different plans to discount telecommunications services for schools).

[1490] Benton further comments at 3. *See also* West Virginia Consumer Advocate reply comments at 5 (stating that "schools and libraries themselves should decide which services they need most"); CFA further comments at 1 (stating that institutional users should determine what services they need).

[1491] *See, e.g.,* ALA comments at 12; Apple comments at 3; Merit comments at 2; Missouri Library comments at 3.

[1492] New York Regents comments at 8.

[1493] Apple comments at 3.

marketplace."[1494] Michigan Library Ass'n asserts that since wireless technologies, personal communications service, and satellite technology may provide services more efficiently, those technologies should be eligible for universal service support.[1495] ALA notes that wireless technologies may be particularly useful in older schools and libraries where asbestos removal may make the cost of inside wiring prohibitive.[1496] Iowa Communications Network, on the other hand, recommends that the Commission adopt rules that discourage the use of wireless technologies as a delivery platform because "wireless technology offers difficulties in both the ability to equip advanced services with multiple channels, and also, in the ability to acquire frequency licensing in some areas."[1497]

453. Numerous commenters address the question of what services and functionalities should be included under the category of "advanced" services.[1498] Some commenters advocate the inclusion of specific services or functionalities, including broadband services,[1499] interactive services,[1500] voice messaging,[1501] video conferencing and teleconferencing capabilities,[1502] and high-speed data transmission.[1503] United States Secretary of Education Richard Riley states that the Commission should adopt a broad definition of services that

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[1494] Metricom comments at 6-8. *See also* ACE comments at 14 (stating that, in the interest of competition, "it is not appropriate for the Commission to make any special provision or discount to either encourage or discourage development of wireless technologies").

[1495] Michigan Library comments at 12. *See also* Washington Library comments at 12 (citing the state of Alaska as a wireless success story and the Fort Vancouver Regional Library in Washington State as a less-than-successful story).

[1496] ALA comments at 13. *See also* Missouri Library comments at 3 (noting that in addition to solving problems related to inside wiring, wireless connections may be an economical alternative for schools with multiple buildings).

[1497] Iowa Communications Network comments at 2.

[1498] *See, e.g.,* MCI comments at 22-23; Michigan Library Ass'n comments at 12; Missouri PSC comments at 14; Oakland School District comments at 7-8; Libraries for the Future reply comments at 1-3.

[1499] *See, e.g.,* Ohio Consumers' Council comments at 15; Libraries for the Future reply comments at 3.

[1500] *See, e.g.,* CWA comments at 12-13; Iowa Communications Network comments at 2; Michigan Library Ass'n comments at 12; Missouri PSC comments at 14.

[1501] *See* New York Regents comments at 8.

[1502] *See* New York Regents comments at 10.

[1503] *See, e.g.,* CWA comments at 12-13; Iowa Communications Network comments at 2; Ohio Consumers' Council comments at 15.

would include advanced services.[1504] Some parties contend that specific services should not be mandated if the market is adequately providing advanced services or until a needs assessment is conducted.[1505] Missouri PSC asserts that states should be able to include additional services, as well as additional subsidies, if they believe that is necessary.[1506] Information Renaissance, Georgia Tech Research Institute, and Morris Brown Research Institute ask that funding also be provided for telecommunications consulting services.[1507]

454. Internet Access. Numerous commenters maintain that Internet access is a service that should be eligible for universal service support for schools and libraries.[1508] Oklahoma Libraries, for example, states that "the Internet is the emerging network of the future," and maintains that rural libraries would particularly benefit from flat-rate pricing for connection to an Internet provider.[1509] NTIA states that "a recent survey of educators regarding the scope of universal service found that respondents overwhelmingly view connectivity (98 percent) and Internet data services (94 percent) as their most important service and educational need, respectively."[1510] Florida PSC believes that the Commission should establish a nationwide minimum standard for "special" services that consists of Internet access by means of a computer lab.[1511] New York DOE supports Internet access via local loop interconnection to an Internet service provider, so that schools and libraries would not

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[1504] Richard Riley, Secretary of Education comments at 5. *See also* Libraries for the Future reply comments at 1 (stating that "[r]ather than begin with a limited definition of Universal Service, the FCC should begin with the broadest definition possible and restrict it only in cases where absolutely necessary").

[1505] *See, e.g.,* CCV comments at 5; Florida Cable comments at 13, 16-17; NCTA comments at 23.

[1506] Missouri PSC comments at 14-15.

[1507] *See* Information Renaissance supplemental further comments at 3 (Oct. 17, 1996); ex *parte* presentation by Jeffrey Evans, Georgia Tech Research Institute, Roosevelt Thomas, Jr., Morris Brown Research Institute, and Christopher Evans, OutSource Integration, Inc., to Mark Nadel, Federal Communications Commission (Sept. 6, 1996); Letter from Timothy F. Coen, King and Spalding, to Georgia Tech Research Institute, Morris Brown Research Institute, and Christopher Evans (Sept. 17, 1996). For a further discussion of the parties' proposals, *see infra* section X.E.

[1508] *See, e.g.,* ALA comments at 9; Lincoln Trail Libraries comments at 1-2; Merit comments at 2; Michigan Library comments at 12; Missouri PSC comments at 14; New Jersey Advocate comments at 21; New York DOE comments at 8; Oakland School District comments at 7; Oklahoma Libraries comments at 1-2; Pennsylvania Library Ass'n reply comments at 6.

[1509] Oklahoma Libraries comments at 1-2.

[1510] NTIA submission at 10.

[1511] Florida PSC reply comments at 2-3, 6-7.

have to incur long distance charges for gaining access.[1512] Michigan Library Ass'n states that "direct Internet access" should be eligible for universal service support.[1513] MCI supports providing Internet access at or below cost to schools and libraries,[1514] and NTIA proposes providing schools and libraries with free Internet service.[1515]

455. Several commenters assert that Internet access should be included within the category of "advanced" services.[1516] Netscape argues that since "the 1996 Act does not repeal, and in fact codifies the Commission's longstanding Computer II distinction between basic telecommunications and 'enhanced' information services, . . . Internet access is assuredly an 'information' service, not a 'telecommunications' service."[1517] As such, Netscape contends, Internet access may be encouraged through the rules adopted pursuant to section 254(h)(2), but not supported under section 254(h)(1).[1518] PacTel subscribes to a similar interpretation.[1519]

456. Other commenters oppose the inclusion of Internet access among the services eligible for universal service support.[1520] ITA/EMA, for example, maintains that Internet access is an unregulated information service and is thus not eligible for universal service support.[1521] They further contend that Internet access includes protocol conversion and information storage, both of which are unregulated enhanced services. In addition, ITA/EMA asserts that providing universal service support to Internet access would run counter to the

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[1512] New York DOE comments at 8. *See also* Oakland School District comments at 7 (supporting dial-up service); Syracuse University comments at 9 (supporting dial-up Internet access points within the local area); U S West comments at 20-22 (supporting toll free dial-up access to an Internet Service Provider).

[1513] Michigan Library comments at 12. *See also* Lincoln Trail Libraries comments at 1 (stating that "each library needs a direct connection to an Internet provider").

[1514] *Connecting Schools and Libraries to the Internet: An MCI Proposal* (June 27, 1996).

[1515] NTIA submission at 9-10.

[1516] *See, e.g.,* Michigan Library Ass'n comments at 12; Missouri PSC comments at 14; New York Regents comments at 8; Oakland School District comments at 7-8; Syracuse University comments at 9-10; U S West comments at 22; Washington SPI comments at 2.

[1517] Netscape further comments at 3 (*citing* Netscape comments at 14-17).

[1518] Netscape further comments at 3.

[1519] PacTel further comments at 14-15.

[1520] *See, e.g.,* CompuServe comments at 9-11; Interactive Service Ass'n comments at 6, 8-13; ITA/EMA reply comments at 5-11.

[1521] ITA/EMA reply comments at 5-11.

intent of the 1996 Act, and that the 1996 Act "does not authorize the Commission to define universal service so as to include information services."[1522] Interactive Services Ass'n adds that "a decision by the FCC that . . . Internet access services are subject to the new universal service surcharge on the theory that they are telecommunications services would undermine the longstanding regulatory distinction made by the Commission between 'basic service' and 'enhanced service.'"[1523]

457. Netscape describes the Internet as an unregulated, non-governmental and self-administered network for global information exchange.[1524] More specifically, Netscape characterizes the Internet as a complex global network consisting of thousands of independent computer networks run by private businesses, government agencies, and educational and research institutions. Netscape states that the Internet is a set of standards or protocols that enable various types of networks to communicate. The protocol, Transmission Control Protocol/Internet Protocol (TCP/IP) enables communications between private and public networks running over any medium and over any kind of computer.[1525]

3. Discussion

458. Telecommunications Services. We recommend that the Commission adopt a rule that provides schools and libraries with the maximum flexibility to purchase whatever package of telecommunications services they believe will meet their telecommunications service needs most effectively and efficiently. We conclude that maximum flexibility will satisfy the goals of section 254, given the varying needs and preferences of different schools and libraries. We also find that allowing schools and libraries to choose appropriate services will maximize the value generated by universal service support and minimize inefficient uses of services. Empowering schools and libraries to choose the services best suited for their needs is critical to achievement of the important universal services goal of pervasive technology deployment and use in all schools and libraries, regardless of wealth and location.

459. Some commenters ask the Commission to limit discounts to only the "core" telecommunications services identified pursuant to section 254(c)(1).[1526] We reject that position based on a careful reading of the statute and its legislative history. We find that Congress clearly desired to permit schools and libraries to have access to and use of services

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[1522] ITA/EMA reply comments at 5-11.

[1523] Interactive Service Ass'n comments at 12.

[1524] Netscape comments at 2, 11.

[1525] Netscape comments at 2, 11.

[1526] *See, e.g.,* Cincinnati Bell comments at 14; TCI comments at 18-23; Ameritech reply comments at 18.

beyond those designated for support under section 254(c)(1). Section 254(c)(3) states that "in addition to the services included in the definition of universal service under paragraph [c] (1), the Commission may designate additional services for such support mechanisms for schools, [and] libraries . . . for the purposes of subsection [254] (h)."[1527] Congress explained this sentence in stating that it expected the Commission and Joint Board to take into account the particular needs of K-12 schools and libraries.[1528] Thus, the Commission should not limit schools and libraries to services to be supported by the universal service mechanism under section 254(c)(1), i.e., to basic voice grade lines, when higher speed capabilities may be a more effective and efficient means of implementing telecommunications technology and applications within their respective activities.

460. A number of commenters recommend that we select a specific limited package of services that would be available at a discount.[1529] Other commenters suggest different sets of services. For example, 17 states that were surveyed by the Florida PSC on this issue selected more than a dozen different sets of services for discounts.[1530] We recommend that the Commission permit different schools and libraries the flexibility to address their needs in the best way they see fit. We further recommend that the Commission adopt a rule that makes available discounts on all telecommunications services pursuant to sections 254(h)(1)(B) and 254(h)(2)(A). Section 254(h)(2)(A) provides a broader framework for facilitating deployment of services to schools and libraries because the competitively neutral rules contemplated under that section are applicable to all service providers.[1531] The discounts mandated under section 254(h)(1)(B), in contrast, are limited to the provision of services by telecommunications carriers.[1532] The discounting of telecommunications services under section 254(h)(2)(A) will enable schools and libraries to have access to the broadest array of services possible. This approach is also most consistent with the evolving competitive telecommunications market.

461. Permitting schools and libraries full flexibility among telecommunications services also eliminates the potential impediment that new technologies will not be available

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[1527] 47 U.S.C. § 254(c)(3).

[1528] Joint Explanatory Statement, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 132-33 (1996).

[1529] *See, e.g.,* Missouri PSC comments at 14; NSBA I comments at 7, 14; U S West comments at 20-22; West Virginia Consumer Advocate comments at 10-11.

[1530] Florida PSC, *Promoting Educational Infrastructure and the Role of the Florida Public Service Commission* at 33-34 (1996).

[1531] *See* 47 U.S.C. § 254(h)(2)(A).

[1532] *See* 47 U.S.C. § 254(h)(1)(B).

to schools and libraries until the Commission has had the opportunity to conduct a proceeding to review evolving technological needs. Thus, schools and libraries will be able to use and teach students to use state of the art telecommunications technologies as they arrive on the commercial market. This flexibility should encourage schools and libraries to use both the most efficient services and the most efficient technologies, including wireless and other emerging new media. We decline to recommend the suggestion of the Iowa Communications Network that the Commission discourage the use of wireless because of any disadvantages that may be inherent in the current version of that technology.[1533] We recognize that all technologies have their advantages and disadvantages and conclude that it would be best to permit individual schools and libraries to evaluate those relative costs and benefits with respect to their individual needs and circumstances.

462. Internet Access. We recommend that the Commission adopt a rule providing that discounts for Internet access, as defined below, shall be available to schools and libraries pursuant to section 254(h)(2)(A). As explained by Netscape, Internet Service Providers (ISPs) and online service providers that also offer Internet access "rely to a large degree on existing telecommunications carriers for the underlying transport facilities that constitute the Internet's backbone, as well as for local loop connections to individual Internet servers and users."[1534] Any attempt to disaggregate the network transmission component of Internet access from the information service component could serve to undermine the competitive forces that currently characterize the Internet access market at this time. By adopting a rule that allows Internet access costs to be eligible for discounts under section 254(h)(2)(A), we find that schools and libraries will be afforded the flexibility they may need to procure whatever Internet access arrangements they determine to be cost-effective.

463. As stated above, we recommend that the Commission provide discounts for Internet access pursuant to section 254(h)(2). This discount would apply to basic conduit, i.e., non-content, access from the school or library to the backbone Internet network. This access would include the communications link to the ISP, whether through dial-up access or via a leased line, and the subscription fee paid to the ISP, if applicable. The discount would also apply to electronic mail. We find that such access would enable schools and libraries to retrieve all free information available on world wide web sites. Schools and libraries that choose to pay subscription or other fees to receive additional information services could access such information via this connection, but any charges for such content services would not be subject to the discount discussed herein. Schools and libraries, however, would be permitted to apply the discount to the entire "basic" charge by an ISP that bundled access to some minimal amount of content, but only under those circumstances in which the ISP basic subscription charge represented the most cost-effective method for the school or library to

[1533] Iowa Communications Network comments at 2.

[1534] Netscape comments at 8.

secure non-content conduit access to the Internet.

464. Parties raise one other Internet access issue concerning the pricing of access to an ISP. In areas where local dial-up access to the Internet is not available, carriers would likely offer customers either a private line, foreign exchange (FX) line, or possibly even flat-rate toll-free service. Comments of the potential users reflect their desire that these or related services be available at ordinary local calling rates.[1535] This suggestion would require universal service support mechanisms to fund 100 percent of the difference between the pre-discount price for the appropriate service and the cost of an ordinary local calling link. As we explained above, we are not inclined to recommend, at this time, that the Commission single out the transmission component of Internet access from the information service component. We find that it is neither necessary nor appropriate to make findings regarding the regulatory treatment or classification of Internet access within this proceeding.

465. We also do not recommend that a discount mechanism for other information services be established at this time. By establishing a discount mechanism for telecommunications services and Internet access, we conclude that the intent of Congress will be met, and it is not necessary to support the full panoply of information services at this time. The Joint Statement of Managers stated that:

> For example, the Commission could determine that telecommunications and information services that constitute universal service for classrooms and libraries shall include dedicated data links and the ability to obtain access to educational materials, research information, statistics, information on government services, reports developed by Federal, State and local governments, and information services which can be carried over the Internet.[1536]

The legislative history articulates the congressional intent to enable schools and libraries to:

> browse library collections, review the collections of museums, or find new information on the treatment of illness. to Americans everywhere via schools and libraries. This universal access will assure that no one is barred from benefiting from the power of the Information Age.[1537]

[1535] *See, e.g.,* New York DOE comments at 8; Oakland School District comments at 7; Syracuse University comments at 9.

[1536] Joint Explanatory Statement at 133.

[1537] *Id. at* 132-33.

By providing for discounts on all telecommunications services, as well as discounted Internet access, we find that schools and libraries will have access to the wealth of information available on the Internet, and, therefore, will have access to advanced telecommunications and information services, in compliance with section 254(h)(2)(A).

C. Intra-School and Intra-Library Connections

1. Background

466. Sections 254(b)(6) and 254(h)(2)(A) specifically refer to the provision of telecommunications and other services directly to classrooms. Section 254(b)(6) states that "elementary and secondary school *classrooms* should have *access* to advanced telecommunications services."[1538] Further, section 254(h)(2) provides that "[t]he Commission shall establish competitively neutral rules . . . to enhance, to the extent technically feasible and economically reasonable, *access* to advanced telecommunications and information services for all public and non-profit elementary and secondary school *classrooms*. . . and libraries."[1539] Congress explained that "[n]ew subsection (h) of Section 254 is intended to ensure that . . . elementary and secondary school *classrooms* and libraries have affordable *access* to modern telecommunications services."[1540] Congress further stated that "[t]he ability of K-12 [kindergarten to 12th grade] *classrooms*, [and] libraries . . . to obtain *access* to advanced telecommunications services is critical to ensuring that these services are available on a universal basis."[1541] In the floor debate, Senators Snowe and Rockefeller noted that, while thirty-five percent of schools have access to the Internet, only three percent of classrooms are connected to the Internet.[1542] Senator Rockefeller noted that cost was a significant factor when he stated that internal connections are an expensive facet of Internet access,[1543] and he specifically referred to getting schools "wired up."[1544]

467. The NPRM noted that only nine percent of all instructional rooms, including classrooms, labs, and library media centers, are currently connected to the Internet, and that

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[1538] 47 U.S.C. § 254(b)(6) (emphasis added).

[1539] 47 U.S.C. § 254(h)(2) (emphasis added).

[1540] Joint Explanatory Statement at 132 (emphasis added).

[1541] *Id.* at 132-33 (emphasis added).

[1542] 141 Cong. Rec. S7978, S7981 (daily ed. June 8, 1995).

[1543] 141 Cong. Rec. S7978, S7981 (daily ed. June 8, 1995).

[1544] 141 Cong. Rec. S7978 (daily ed. June 8, 1995).

"[s]chools with large proportions of students from poor families are half as likely to provide Internet access as schools with small proportions of such students."[1545] The NPRM also stated that the most frequently cited barriers to the provision of such services are "funding and inadequate telecommunications links."[1546] The NPRM sought comment on what functionalities and services providing access to advanced telecommunications services for elementary and secondary schools and classrooms and libraries should be supported through universal service mechanisms.[1547] The NPRM also asked what facilities would be required to support those functionalities.[1548] The Public Notice asked the explicit question of whether section 254(h) contemplates that "inside wiring or other internal connections to classrooms may be eligible for universal service support of telecommunications services provided to schools and libraries."[1549] In addition, the Public Notice sought comment on the estimated cost of inside wiring and other internal connections.[1550]

2. Comments

468. Numerous commenters assert that intra-school and intra-library connections should be eligible for federal universal service support.[1551] Some parties find support for funding internal connections in both the 1996 Act and the legislative history. EDLINC, for example, asserts that support can be found in both section 254(c)(3) and section 254(h), contending that "the Commission has broad authority to determine what services constitute 'special services' under [s]ection 254(c), and in defining those services, the Commission is to

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[1545] NPRM at para. 79 (*citing* National Ctr. for Educ. Statistics, U.S. Dep't of Ed., *Advanced Telecommunications in U.S. Public Elementary and Secondary Schools 1995* (Feb. 1996)).

[1546] NPRM at para. 79 (*citing* National Ctr. for Educ. Statistics, U.S. Dep't of Ed., *Advanced Telecommunications in U.S. Public Elementary and Secondary Schools 1995* (Feb. 1996)).

[1547] NPRM at para. 80.

[1548] NPRM at para. 80.

[1549] Public Notice at question 7.

[1550] Public Notice at question 7.

[1551] *See, e.g.,* Mass Library comments at 2-3; NSBA I comments at 7; West Virginia Consumer Advocate reply comments at 5-7; ALA further comments at 3-4; Apple further comments at 2-3; Benton further comments at 3-4; EDLINC further comments at 11-13; Great City Schools further comments at 3; Maine PUC further comments at 3-5; NCLIS further comments at 3; NYNEX further comments at 6-7; Union City further comments at 2; U.S. Distance Learning Ass'n further comments at 4; Vanguard further comments at 5-6; NTIA submission at 10.

consider the *purposes* of [s]ection 254(h)."[1552] EDLINC further states that both the statutory and congressional references to "classrooms" support the legislative intent to include internal connections within the definition of "special services" under section 254(c)(3).[1553] Benton contends that, considering the explicit mention of "classrooms" found in both the statutory language and the legislative history, "it is the plain intent of Congress to connect classrooms, not just to reach the school house door."[1554] Benton also asserts that if inside wiring or internal connections are not contemplated by section 254(h), that provision "will be little more than an empty promise to the nation's public institutions."[1555] Great City Schools asserts that "[u]niversal service and access are not realities if they stop at the street."[1556] In a letter to the Joint Board, a group of 26 Senators that includes the co-authors of section 254(h), states that "we believe that connecting the classrooms is necessary to truly enhance education so connectivity should be defined to include *internal connections*, in ways that are technology neutral."[1557] NTIA also supports discounts for internal connections.[1558]

469. Some commenters address the cost of intra-school and intra-library connections.[1559] NYNEX, for example, relies on estimates provided by McKinsey and Company when it states undiscounted figures of $5.025 billion in initial costs for schools, and $410 million per year for ongoing costs, based on deployment of the "partial classroom"

[1552] EDLINC further comments at 10.

[1553] EDLINC further comments at 10-11. *See also* NYNEX further comments at 6-7 (*citing* section 254(c)(3) and section 254(h)(2), NYNEX states that "the Commission should define universal service to include the inside wiring and other internal connections needed to ensure that telecommunications and information services are delivered to the classroom"); Union City Board of Education further comments at 2 (stating that "[s]ection 254 specifically states that not just schools but *classrooms* should have access to advanced telecommunications services, and therefore inside wiring and internal networks should be considered as eligible for universal service support, because they are necessary if advanced services are to be accessible to individual school classrooms").

[1554] Benton further comments at 3-4.

[1555] Benton further comments at 3.

[1556] Great City Schools further comments at 3.

[1557] Letter from 26 Senators to Members of the Joint Board (Sept. 26, 1996) (emphasis added).

[1558] NTIA submission at 10.

[1559] *See, e.g.,* Ameritech further comments at attachments A through C (schools); Bell Atlantic further comments at 3 (schools); EDLINC further comments at 13 (schools); Great City Schools further comments at 3 (schools); NYNEX further comments at 7 (schools); U.S. Libraries further comments at 3 (libraries); Washington UTC further comments at 8 (schools).

model over five years.[1560] NYNEX notes that those figures would have to be adjusted to include private schools.[1561] EDLINC relies on the KickStart Report when it cites initial undiscounted costs for schools of up to $6.11 billion, and undiscounted annual operation and maintenance costs of $560 million, based on deployment of the McKinsey "full classroom" model over ten years.[1562] NCLIS, the only party to address the cost of internal connections for libraries, estimates that each public library spends between $12,625.00 and $168,220.00 on annual ongoing costs to provide public terminals for accessing advanced telecommunications and information services. NCLIS further estimates that the cost of inside wiring and other internal connections would amount to between 20 percent and 35 percent of those libraries' initial costs.[1563]

470. Numerous other commenters maintain that intra-school and intra-library connections should not be eligible for universal service support.[1564] First, several commenters contend that inside wiring is not a telecommunications service as defined in the 1996 Act, and therefore, cannot be eligible for universal service support.[1565] BellSouth, for example, asserts

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[1560] NYNEX further comments at 7. The McKinsey "partial classroom" model assumes one computer for every five students in half of the classrooms and a T-1 connection. *See* McKinsey and Company, *Connecting K-12 Schools to the Information Superhighway* at 21 (1995).

[1561] NYNEX further comments at 7. NYNEX Education Plan assumes a five-year deployment with a 75 percent discount for initial costs and a 50 percent discount for ongoing costs. *See* Ameritech further comments at Att. A through C.

[1562] EDLINC further comments at 13. *See also* Great City Schools further comments at 3 (citing an "overall cost" for internal connections within schools of approximately $6 billion). The McKinsey "full classroom" model assumes one computer for every five students in all classrooms, with a T-1 connection. *See* McKinsey and Company, *Connecting K-12 Schools to the Information Superhighway* at 21 (1995).

[1563] NCLIS further comments at 3.

[1564] *See, e.g.,* AT&T comments at 19-20; AT&T reply comments at 21-22; ALTS further comments at 5; AirTouch further comments at 9-11; Alaska Tel. further comments at 7; Ameritech further comments at 13,14; BellSouth further comments at 11-15; Bell Atlantic further comments at 3; CFA further comments at 5-6; Century further comments at 11; Citizens Utilities further comments at 6; GCI further comments at 4; GTE further comments at 11-13; Information Renaissance further comments at 5; MCI further comments at 4-5; NCTA further comments at 3; NECA further comments at 7; Netscape further comments at 4-7; New York DOE further comments at 6; Oakland School District further comments at 3; PacTel further comments at 15; RTC further comments at 11; SWBT further comments at 9; Sprint further comments at 4; TCI further comments at 12-13; USTA further comments at 9-10; U S West further comments at 6-7; Vitelco further comments at 5; Washington UTC further comments at 8-9; Letter from United States Representative Jack Fields to Sharon Nelson, Chairperson, Washington Utilities and Transportation Commission (Oct. 17, 1996).

[1565] *See, e.g.,* AT&T reply comments at 21-22; Ameritech further comments at 13-14; BellSouth further comments at 11-15; GTE further comments at 13-15; MCI further comments at 4-5; Sprint further comments at 4; USTA further comments at 9-10; U S West further comments at 6-7. The definition of "telecommunications

that since section 254(h) is entitled "Telecommunications Services for Certain Providers," the only services covered by the subsection are telecommunications services.[1566] Sprint maintains that even qualifying simply as a "service" under section 254(h)(1)(B) would not be sufficient to make inside wiring eligible for universal service support, since section 254(c)(3) defines "universal service" as "an evolving level of telecommunications service."[1567] MCI points out that internal connections refer to facilities and do not fit into a service classification.[1568] United States Representative Jack Fields objects to providing universal service support for internal connections when he states:

> Another example of well-intentioned suggestions is that federal universal service must be used to wire the interiors of schools, hospitals, and libraries. The letter of the law is clear that the federal universal service fund can only support subsidies for *services*, not plant and equipment.[1569]

471. Second, a number of parties assert that, because inside wiring is not a regulated service, it is not eligible for universal service support.[1570] For example, PacTel states that including inside wiring in the definition of universal service would require all inside wire vendors to be subject to universal service obligations,[1571] while Bell Atlantic contends that non-carrier providers of inside wire would be ineligible to participate since only carriers are entitled to receive universal service funds under the 1996 Act.[1572] SWBT maintains that it

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service" can be found at 47 U.S.C. §153(46).

[1566] BellSouth further comments at 11.

[1567] Sprint further comments at 4.

[1568] MCI further comments at 4-5.

[1569] Letter from United States Representative Jack Fields to Sharon Nelson, Chairperson, Washington Utilities and Transportation Commission and all members of the Federal-State Joint Board on Universal Service (Oct. 17, 1996).

[1570] *See, e.g.,* Bell Atlantic further comments at 3; Century further comments at 11; PacTel further comments at 15; RTC further comments at 11; USTA further comments at 9-10.

[1571] PacTel further comments at 16.

[1572] Bell Atlantic further comments at 3. *See also* SWBT further comments at 9-10 (asserting that "[s]ince the Act is clear that only telecommunications providers are eligible to receive universal service funding, the multitude of providers who specialize in inside wiring and internal connections (*e.g.,* electricians, LAN providers) would be at a competitive disadvantage because they would be ineligible to participate in a universal service fund under Section 254"); TCI further comments at 13 (stating that "given the Commission's long-standing policy of deregulated inside-wiring, this market is comprised of literally thousands of small companies

would not be practical, given regulatory, legal, and collections issues, to include inside wire vendors as participants in the process.[1573] CFA notes that including internal connections within the definition of universal service would be in direct conflict with the Commission position that wire inside the home or premises is "the property and responsibility of the property owner."[1574] USTA states that the provision of internal connections is highly competitive and non-regulated.[1575] Bell Atlantic asserts that, since state regulation of inside wiring has not been preempted, states should be free to decide whether to support inside wiring for schools and libraries as part of their universal service support mechanisms.[1576]

472. Third, some parties contend that if it had intended that inside wiring be included in the definition of universal service, Congress would have explicitly expressed that intent.[1577] AirTouch asserts that, while the legislative history contains a "laundry list" of possible elements to be included in universal service, that list does not contain internal connections.[1578] Ameritech notes that sections 706 and 708 are the only statutory provisions in the 1996 Act that specifically address the issue of inside wiring.[1579] Moreover, AirTouch asserts that the costs of inside wiring are incremental costs and, because its provision is open to competition, it may already be sold at close to incremental cost. AirTouch maintains, therefore, that providing discounts for the provision of inside wiring may place a heavy financial burden on telecommunications users.[1580]

3. Discussion

473. In General. We recommend that the Commission expressly acknowledge that schools and libraries may receive discounts on charges for internal connections, as well as for all commercially available telecommunications services and Internet access and other information services, as discussed above. We find that the applicable statutory provisions and

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whose business could be dramatically affected by the adoption of a subsidy program").

[1573] SWBT further comments at 9-10.

[1574] CFA further comments at 5-6.

[1575] USTA further comments at 9-10.

[1576] Bell Atlantic further comments at 3.

[1577] *See, e.g.,* Citizens Utilities further comments at 6; Washington UTC further comments at 8.

[1578] AirTouch further comments at 10.

[1579] Ameritech further comments at 13,14.

[1580] AirTouch further comments at 10-11.

the legislative history evidence that Congress gave the Commission the discretion to provide support to allow schools and libraries to obtain these internal connections at a discount. We also find that Congress recognized that such connections are a critical element for achieving the congressional purpose of section 254(h), and thus contemplated that schools and libraries receive universal service support for internal connections.

474. Installation and Maintenance of Internal Connections is a Service. Some parties argue that the physical facilities that provide intraschool and intralibrary connections are "goods" or "facilities" rather than (c)(3) "services" and thus that they are not eligible for universal service support under section 254(h)(1)(B), which only provides support for services.[1581] We find, however, that the *installation and maintenance* of such facilities are services. In fact, the cost of the actual facilities may be relatively small compared to the cost of labor involved in providing internal connections.[1582] The D.C. Circuit agrees, as it repeatedly refers to the installation and maintenance of inside wiring as services in its review of the Commission's inside wiring detariffing decision.[1583]

475. Moreover, the attempted distinction between facility and service in describing the fundamental nature of internal connections is not practical. CFA contends that the wire inside the home or premises is "the property and responsibility of the property owner," and thus different from outside wiring.[1584] It concludes that universal service funding cannot be

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[1581] *See, e.g.,* AT&T reply comments at 21-22; GTE further comments at 13-15; Sprint further comments at 4; USTA further comments at 9-10; U S West further comments at 6-7. The definition of "telecommunications service" can be found at 47 U.S.C. §153(46).

[1582] Union City Board of Education further comments at 6 n.3. On the other hand, the cost of routers, hubs, and network file servers may be significant.

[1583] *NARUC v. FCC*, 880 F.2d 422, 430 (D.C. Cir. 1989) (stating that "charges for *inside wiring services* are separated from charges for basic transmission service") (emphasis added); *id.* (stating that "the Commission may properly proscribe state tariffs that would result in the subsidization of the installation and maintenance of inside wiring by the general ratepayers because it would allow telephone companies to undercut alternative providers of *inside wiring services.*") (emphasis added); *id.* at 430-31 (asserting that states maintain "that they should be able to require local telephone companies to serve as providers of last resort of *installation and maintenance services.*") (emphasis added). In contrast, the court refers to CPE as "equipment." *Id.* at 431. Similarly, the Commission has repeatedly characterized the installation and maintenance of inside wiring as services. *See, e.g., Revision of Filing Requirements*, Notice of Proposed Rulemaking, CC Docket No. 96-23, FCC 96-64, 1996 WL 80021, ¶¶ 13-14, (released Feb. 27, 1996) (regarding LEC reports on "inside wiring services"); *Telecommunications Services Inside Wiring,* Notice of Proposed Rulemaking, 11 FCC Rcd 2747, 2760 (1996) (stating that "[t]his standardization . . . promotes competition for *inside wiring services* and telephone customer premises equipment.") (emphasis added).

[1584] CFA further comments at 5-6.

used to aid customers seeking to purchase and install the inside wiring.[1585] This rationale, however, implies that when a carrier owns a facility, and sells others the opportunity to use it, then those who use the facility are purchasing a service, but when a school buys a facility directly, its use of the facility is not a service. While this reasoning is logical, it is somewhat strained. Under this rationale, the use of inside wiring would be a service if a school did not own the facilities itself, but rather sold the facilities to a non-school party and then leased them back.

476. Internal Connections Enhance Access to Advanced Telecommunications and Information Services. We recommend that the Commission adopt rules providing discounts for internal connections under the authority of section 254(h)(2)(A), which states that "[t]he Commission shall establish competitively neutral rules . . . to *enhance* . . . *access* to advanced telecommunications and information services for all public and nonprofit elementary and secondary school *classrooms* . . . and libraries."[1586] The provision of services by computer over the Internet appears to fall squarely within the phrase "advanced telecommunications and information services." A primary way for "classrooms" to have *access* to such services is for computers in each classroom to be connected to a telecommunications network.

477. Furthermore, given that many schools have already secured internal connections, we conclude that the provision of such connections is both technically feasible and economically reasonable. Consistent with our recommendation to establish a competitively neutral program for discounting all telecommunications services and Internet access under section 254(h)(2)(A), we recommend that internal connections, which may include such items as routers, hubs, network file servers, and wireless LANs, but specifically excluding personal computers, be included within the section 254(h) discount program.

478. In addition to the statutory support discussed above, the legislative history also supports finding internal connections eligible for support. We note that, in its Joint Explanatory Statement, Congress makes three explicit references to "classrooms."[1587] We conclude that these references to providing access to "classrooms" rather than simply schools indicate congressional intent to assure that classrooms and libraries will benefit from the availability of discounted services.

479. In addition, while some commenters contend that if Congress had intended to

[1585] CFA further comments at 5-6.

[1586] 47 U.S.C. § 254(h)(2)(A).

[1587] *See* Joint Explanatory Statement, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 132-33 (1996).

include inside wiring in the definition of universal service, it would have stated so explicitly,[1588] we note that Congress did not identify in section 254 any specific services or functionalities that should be supported. Thus, while the legislation does not specifically identify internal connections as eligible for universal service support, neither does it explicitly cover 56 kbps service, T-1 service, wireless service, coaxial cable service, or any other comparable service. AirTouch argues that the legislative history includes a list of possible elements to be included in universal service,[1589] but that the list does not include internal connections. The excerpt from the legislative history to which AirTouch refers states:

> *For example*, the Commission could determine that telecommunications and information services that constitute universal service for schools and libraries shall include dedicated data links and the ability to gain access to educational materials, research information, statistics, information on Government services, reports developed by Federal, State, and local governments, and information services which can be carried over the Internet.[1590]

We note that the list is not exhaustive because it is preceded by the phrase "for example." We further note that internal connections to the classroom facilitate access to the reference materials. Discounting of internal connections will facilitate schools' and libraries' ability to connect to these services.

480. As further evidence that Congress intended that internal connections may be eligible for universal service support, we note that during Senate consideration of this provision, Senators Snowe and Rockefeller emphasized the fact that thirty-five percent of public schools have access to the Internet, but only three percent of classrooms are connected to the Internet.[1591] Senator Rockefeller cited the lack of funds to buy computer equipment as one reason, and stated:

> But another reason, which becomes more serious as schools do scrape together the money for the one-time expense of buying equipment, is their inability to pay excessive rates to hook into those services. It is one thing to have the computer on the table or the desk. It is another to have that hooked up to the wall *and*

[1588] Citizens Utilities further comments at 6; Washington UTC further comments at 8.

[1589] AirTouch further comments at 9-11.

[1590] AirTouch further comments at 9-11 (emphasis added).

[1591] 141 Cong. Rec. S7978, S7981 (daily ed. June 8, 1995).

> *then through that wall to the other wall.* That is expensive.[1592]

481. In addition, in the September 26, 1996 letter from 26 Senators, including the four sponsors of the Snowe-Rockefeller-Exon-Kerrey amendment, the Senators state their intent clearly and directly:

> For schools, we believe that connecting the *classrooms* is necessary to truly enhance education so connectivity should be defined to include *internal connections* in ways that are technology neutral.[1593]

On the other hand, we note the sentiments of United States House of Representatives Telecommunications and Finance Subcommittee Chairman Jack Fields, who objects to the provision of universal service support for internal connections because he believes that "[t]he letter of the law is clear that the federal universal service fund can only support subsidies for *services*, not plant and equipment."[1594]

482. Finding internal connections ineligible for support would create an anomaly. Congress clearly intended to encourage competition among technologies, including competition between wireline and wireless technologies. Moreover, the McKinsey Report found that wireless connections would be the more efficient alternative for connecting schools to telephone carrier offices for more than 25 percent of public schools.[1595] No parties dispute that the wireless services that such schools purchase are services eligible for support. It would seem to follow that those wireless services would still represent services if school personnel also used them for communications between classrooms within a school rather than between schools and outside parties. There is nothing on the record or in the statute that would suggest any reason that such services are not eligible for universal service support. Yet if wireless intraschool connections are services eligible for a discount and Congress sought to ensure technological neutrality rather than favoring wireless services, it follows that schools purchasing wireline intraschool connections should also be permitted to apply discounts to those services.

483. We note that AirTouch makes a policy argument opposing the provision of universal service support for internal connections. AirTouch asserts that, because internal

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[1592] 141 Cong. Rec. at S7981 (daily ed. June 8, 1995) (emphasis added).

[1593] Letter from 26 Senators to Members of the Joint Board at 1 (Sept. 26, 1996) (emphasis added).

[1594] Letter from United States Representative Jack Fields to Sharon Nelson, Chairperson, Washington Utilities and Transportation Commission and all members of the Federal-State Joint Board on Universal Service (Oct. 17, 1996).

[1595] McKinsey and Company, *Connecting K-12 Schools to the Information Superhighway* at 58 (1995).

connections are likely available at incremental cost today, due to competitive forces, it would be impossible to provide significant discounts to schools and libraries without permitting them to pay less than the long run incremental cost of the service. AirTouch contends that permitting services to be available at such low rates would heavily burden providers of support and distort other telecommunications markets.[1596] We find, however, that section 254 directs the Commission to employ such support mechanisms to achieve the important social benefits designated by Congress. Moreover, we would expect that the support mechanism adopted by the Commission will permit many disadvantaged schools and libraries to pay below-cost rates for telecommunications services.

484. Finally, we recommend that, just as with other eligible services, the Commission permit schools and libraries to secure internal connections under the discount structure discussed further below. To the extent that the Commission exercises authority under section 254(h)(2), we recommend, as we did with respect to Internet Service Providers, that the Commission establish "competitively neutral rules" which provide support to any provider of internal connections that the school or library selects. As we explained above, we conclude that section 254(h)(2) requires competitively neutral rules,[1597] rather than limits on support to providers that meet the statutory definition of "telecommunications carrier."[1598]

D. Discount Methodology

1. Background

485. Section 254(b)(5) establishes the principle that "there should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service."[1599] Section 254(b)(1) states that "[q]uality services should be available at just, reasonable, and affordable rates."[1600] Furthermore, section 254(e) directs that any universal service support "should be explicit and sufficient to achieve the purposes of" section 254.[1601] These obligations extend to the mechanism to support discounts on eligible services for schools and libraries. Moreover, section 254(h)(1)(B) states:

[1596] AirTouch further comments at 10-11.

[1597] 47 U.S.C. § 254(h)(2).

[1598] *See* 47 U.S.C. § 153(44).

[1599] 47 U.S.C. § 254(b)(5).

[1600] 47 U.S.C. § 254(b)(1).

[1601] 47 U.S.C. § 254(e).

> All telecommunications carriers serving a geographic area shall, upon a bona fide request for any of its services that are within the definition of universal service under subsection (c)(3), provide such services to elementary schools, secondary schools and libraries for educational purposes at *rates less than the amounts charged for similar services to other parties.* The *discount* shall be an amount that the Commission, with respect to interstate services, and the States, with respect to intrastate services, determine is *appropriate and necessary to ensure affordable access to and use of such services by such entities.*[1602]

486. Section 254(d) provides that "[e]very telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service."[1603] Section 254(h)(1)(B) requires "telecommunications carriers serving a geographic area" to provide services included within the definition of universal service to schools and libraries "at rates less than the amounts charged for similar services to other parties."[1604]

487. Congress emphasized affordability in the Joint Explanatory Statement when it stated that "[n]ew subsection (h) of section 254 is intended to ensure that . . . elementary and secondary schools classrooms, and libraries have affordable access to modern telecommunications services that will enable them to provide . . . educational services to all parts of the Nation."[1605] In addition, in the floor debates on the Snowe-Rockefeller-Exon-Kerrey amendment, Senator Snowe stated that, under section 254(h)(1)(B), "[b]y changing the basis for the discount from incremental cost to an amount necessary to ensure an affordable rate, the Federal-State joint board in conjunction with the FCC and the States have some flexibility to target discounts *based on a community's ability to pay*."[1606]

488. In the NPRM, the Commission proposed to interpret section 254(h)(1)(B) to entitle schools and libraries to receive discounts on all services falling either within the list of subsection (c)(1) "core" telecommunications services or the list of subsection (c)(3)

[1602] 47 U.S.C. § 254(h)(1)(B) (emphasis added).

[1603] 47 U.S.C. § 254(d).

[1604] 47 U.S.C. § 254(h)(1)(B).

[1605] Joint Explanatory Statement, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 132 (1996).

[1606] 141 Cong. Rec. S7984 (June 8, 1995) (emphasis added).