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# CRS Report for Congress

## Broadband Internet Access and the Digital Divide: Federal Assistance Programs

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# Broadband Internet Access and the Digital Divide: Federal Assistance Programs

## Summary

The "digital divide" is a term that has been used to characterize a gap between "information haves and have-nots," or in other words, between those Americans who use or have access to telecommunications technologies (e.g., telephones, computers, the Internet) and those who do not. One important subset of the digital divide debate concerns high-speed Internet access, also known as *broadband.* Broadband is provided by a series of technologies (e.g. cable, telephone wire, satellite, wireless) that give users the ability to send and receive data at volumes and speeds far greater than current Internet access over traditional telephone lines.

Broadband technologies are currently being deployed by the private sector throughout the United States. While the numbers of new broadband subscribers continue to grow, studies conducted by the Federal Communications Commission (FCC), the Department of Commerce (DOC), and the Department of Agriculture (USDA) suggest that the rate of broadband deployment in urban and high income areas may be outpacing deployment in rural and low-income areas.

Some policymakers, believing that disparities in broadband access across American society could have adverse economic and social consequences on those left behind, assert that the federal government should play a more active role to avoid a "digital divide" in broadband access. One approach is for the federal government to provide financial assistance to support broadband deployment in underserved areas. The Clinton Administration proposed several broadband-related initiatives, many requiring an expansion in scope and size of existing federal telecommunications development programs such as the universal service program at the FCC, Rural Utilities Service loan programs at the USDA, and the Technology Opportunities Program at the DOC. Others, however, believe that federal assistance for broadband deployment is not appropriate. Some opponents question the reality of the "digital divide," and argue that federal intervention in the broadband marketplace would be premature and, in some cases, counterproductive.

Legislation introduced into the 106th Congress sought to provide federal financial assistance for broadband deployment in the form of grants, loans, subsidies, and tax credits. Similar legislation has been introduced into the 107th Congress. In assessing this legislation, several policy issues arise. For example, is the current status of broadband deployment data an adequate basis on which to base policy decisions? Given the early stages of broadband deployment, is federal assistance premature, or do the risks of delaying assistance to underserved areas outweigh the benefits of avoiding federal intervention in the marketplace? And finally, if one assumes that governmental action is necessary to spur broadband deployment in underserved areas, which specific approaches, either separately or in combination, are likely to be most effective?

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## Background

The "digital divide" is a term used to describe a perceived gap between perceived "information haves and have-nots," or in other words, between those Americans who use or have access to telecommunications technologies (e.g., telephones, computers, the Internet) and those who do not.[1] A widely cited series of reports issued by the Department of Commerce[2] argue that a "digital divide" exists, with many rural citizens, certain minority groups, and low-income Americans tending to have less access to telecommunications technology than other Americans.[3]

Whether or not individuals or communities fall into the "information haves" category depends on a number of factors, ranging from the presence of computers in the home, to training and education, to the availability of affordable Internet access. One important subset of the digital divide debate concerns high speed Internet access, also known as *broadband.* Broadband is provided by a series of technologies (e.g. cable, telephone wire, satellite, wireless) that give users the ability to send and receive data at volumes and speeds far greater than current Internet access over traditional telephone lines.[4] In addition to offering speed, broadband access provides a continuous, "always on" connection (no need to dial-up) and a "two-way" capability, that is, the ability to both receive (download) and transmit (upload) data at high speeds.

Broadband technologies are currently being deployed by the private sector throughout the United States. According to a survey conducted by the Federal Communications Commission (FCC), as of June 30, 2000 there were 2.8 million broadband lines in the United States.[5] According to a survey conducted by the

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[1]The term "digital divide" can also refer to international disparities in access to information technology. This report focuses on domestic issues only.

[2]For the latest in a series of four reports, see: U.S. Department of Commerce, *Falling Through the Net: Toward Digital Inclusion*, released October 2000, available at: [http://www.esa.doc.gov/fttn00.pdf]

[3]Not all observers agree that a "digital divide" exists. See, for example: Thierer, Adam D., *Divided Over the Digital Divide*, Heritage Foundation, March 1, 2000. [http://www.heritage.org/views/2000/ed030100.html]

[4]For further information on different types of broadband technologies, including their respective strengths and limitations, see: CRS Issue Brief IB10045, *Broadband Internet Access: Background and Issues.*

[5]Federal Communications Commission, *High-Speed Services for Internet Access:*

(continued...)

Department of Commerce, as of August 2000, 10.7% of online households (about 4.5% of all U.S. households) had broadband access.[6] More specific data exist for subscriptions over telephone lines and cable, currently the two principal competing broadband technologies. According to Kinetic Strategies Inc., a broadband research firm, an estimated 4.8 million households in the North America subscribed to cable modem[7] services by the end of December 2000, with service potentially available to an estimated 64 million households.[8] Kinetic Strategies projects 20 million installed cable modem customers in North America by the end of 2004. Meanwhile, according to TeleChoice Inc., a telecommunications consulting firm, 2.4 million digital subscriber lines (DSL)[9] were in service in the United States by the end of December 2000.[10] TeleChoice estimates that the number of DSL lines in service in the United States will grow to 5.7 million by the end of 2001, with further growth to 17.4 million DSL lines by the end of 2004.

**Broadband in Rural and Low-Income Areas.** While the number of new broadband subscribers continues to grow, the rate of broadband deployment in urban and high income areas appears to be outpacing deployment in rural and low-income areas. In response to a request by ten Senators, the Departments of Commerce and Agriculture released a report on April 26, 2000, concluding that rural areas lag behind urban areas in access to broadband technology. The report found that less than 5% of towns of 10,000 or less have access to broadband, while broadband over cable has been deployed in more than 65% of all cities with populations over 250,000, and broadband over the telephone network has been deployed in 56% of all cities with populations over 100,000.[11]

Similarly, in August 2000, the FCC found that while broadband is being deployed throughout the United States in a reasonable and timely fashion overall, certain groups of consumers are particularly vulnerable to not receiving service in a timely fashion. According to the FCC, those groups are: rural Americans, particularly those outside of population centers; inner city consumers; low-income consumers; minority consumers; tribal areas; and consumers in U.S. territories.[12]

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[5](...continued)
*Subscribership as of June 30, 2000*, October 2000, see: [http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd1000.pdf]

[6] *Falling Through the Net: Toward Digital Inclusion*, p. 23.

[7]A cable modem is a device connected to the cable television system which allows high-speed Internet access.

[8]See: [http://www.cabledatacomnews.com/cmic/cmic16.html]

[9]DSL is a technology that provides broadband access over traditional telephone lines.

[10]See: [http://www.xdsl.com/content/resources/deployment_info.asp]

[11]See: U.S. Depts. of Commerce and Agriculture, *Advanced Telecommunications in Rural America: The Challenge of Bringing Broadband Service to All Americans*, April 2000, 80 pages. Available at: [http://www.ntia.doc.gov/reports/ruralbb42600.pdf]

[12]Federal Communications Commission, *Deployment of Advanced Telecommunications* (continued...)

Specifically regarding rural areas, the FCC report stated, "we reach the troubling conclusion that, in all likelihood, market forces alone will not guarantee that many rural Americans will have access to advanced services."[13] Similarly, the FCC survey data lead to "the disquieting conclusion that the market may not guarantee low income consumers affordable access to high-speed services."[14] Finally, the FCC concluded that "minority customers are vulnerable to not having access to advanced services in as timely a fashion as most other Americans."[15]

Finally, the October 2000 digital divide report from the Department of Commerce, *Falling Through the Net: Toward Digital Inclusion,* presents data which show levels of high-speed Internet access as a percentage of total U.S. online households by geography, region, income, race, and other factors. Because broadband deployment is in its early stages (i.e. the overwhelming majority of Americans still use narrowband "dial-up" access), all of these percentages are relatively low. The DOC report data are summarized in Table 1.

**Table 1. High Speed Internet Access as a Percentage of Total U.S. Online Households**

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|---|---|
| By geography | Urban: 11.8%<br>Rural: 7.3% |
| By region | West: 11.9%<br>Northeast: 11.0%<br>South: 10.7%<br>Midwest: 9.2% |
| By income | More than $75K: 13.8%<br>Less than $15K: 7.7% |
| By race | Asian American & Pacific Islander: 11.7%<br>White: 10.8%<br>African American: 9.8%<br>Hispanic: 8.9% |

Source: Department of Commerce, *Falling Through the Net: Toward Digital Inclusion,* October 2000. Based on an August 2000 Census Bureau survey of 48,000 online households.

Policymakers believe that disparities in broadband access across American society could have adverse consequences on those left behind. While relatively few

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[12](...continued)
*Capability: Second Report,* August 2000, p. 6. Available at: [http://www.fcc.gov/Bureaus/Common_Carrier/Orders/2000/fcc00290.pdf]

[13]Ibid., p. 87.

[14]Ibid., p. 92.

[15]Ibid., p. 94.

American homes today subscribe to broadband, many believe that advanced Internet applications of the future – high quality video, for example – and the resulting ability for businesses and consumers to engage in e-commerce, may increasingly depend on high speed broadband connections to the Internet. Thus, some say, communities and individuals without access to broadband could be at risk to the extent that e-commerce becomes a critical factor in determining future economic development and prosperity.

**Federal Role.** The Telecommunications Act of 1996 (P.L. 104-104) addresses the issue of whether the federal government should intervene to prevent a "digital divide" in broadband access. Section 706 requires the FCC to determine whether "advanced telecommunications capability [i.e., broadband or high-speed access] is being deployed to all Americans in a reasonable and timely fashion." If this is not the case, the Act directs the FCC to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."

On January 28, 1999, the FCC adopted its first report (FCC 99-5) pursuant to Section 706. The report concluded that "the consumer broadband market is in the early stages of development, and that, while it is too early to reach definitive conclusions, aggregate data suggests that broadband is being deployed in a reasonable and timely fashion."[16] The FCC announced that it would continue to monitor closely the deployment of broadband capability in annual reports and that, where necessary, it would "not hesitate to reduce barriers to competition and infrastructure investment to ensure that market conditions are conducive to investment, innovation, and meeting the needs of all consumers."

The FCC's second Section 706 report was adopted on August 3, 2000. Based on more extensive data than the first report, the FCC similarly concluded that notwithstanding risks faced by some vulnerable populations, broadband is being deployed in a reasonable and timely fashion overall:

> Recognizing that the development of advanced services infrastructure remains in its early stages, we conclude that, overall, deployment of advanced telecommunications capability is proceeding in a reasonable and timely fashion. Specifically, competition is emerging, rapid build-out of necessary infrastructure continues, and extensive investment is pouring into this segment of the economy.[17]

Thus, while the FCC is currently implementing or actively considering some regulatory activities related to broadband,[18] no major regulatory intervention pursuant to Section 706 of the Telecommunications Act of 1996 has been deemed necessary by the FCC at this time.

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[16]FCC News Release, "FCC Issues Report on the Deployment of Advanced Telecommunications Capability to All Americans," January 28, 1999. [http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/1999/nrcc9004.html]

[17]*Deployment of Advanced Telecommunications Capability: Second Report*, p. 6.

[18]See Section VI of the Second Report, "Actions to Accelerate the Deployment of Advanced Telecommunications," pp. 94-104.

Meanwhile, some policymakers in Congress assert that the federal government should play a more active role to avoid a "digital divide" in broadband access, and that legislation is necessary to ensure fair competition and timely broadband deployment. To accomplish this goal, the 106th Congress considered a number of legislative approaches, which fall into two general categories. First, Congress considered a regulatory/deregulatory approach encompassing two specific proposals: 1) compelling cable companies to provide "open access" to competing Internet Service Providers, and 2) easing certain legal restrictions and requirements, imposed by the Telecommunications Act of 1996, on incumbent telephone companies that provide high-speed data (broadband) access. For more information on these proposals, see CRS Issue Brief IB10045, *Broadband Internet Access: Background and Issues.*

The other approach involves federal assistance to support broadband deployment in underserved areas. The Clinton Administration proposed several broadband-related initiatives, while legislation was introduced into the 106th Congress that sought to provide federal financial assistance for broadband deployment in the form of grants, loans, subsidies, and tax credits. Similar legislation has been introduced into the 107th Congress.

## Federal Telecommunications Development Programs

The Clinton Administration proposed several broadband-related initiatives, many requiring an expansion in scope and size of existing federal telecommunications development programs such as the universal service program at the FCC, Rural Utilities Service loan programs at the USDA, and the Technology Opportunities Program in the National Telecommunications and Information Administration (NTIA) at DOC. These are discussed below.

In addition, Table 2 (at the end of this report) shows selected federal domestic assistance programs throughout the federal government that can be associated with telecommunications development. Many (if not most) of these programs can be related, if not necessarily to the deployment of broadband technologies in particular, then to the "digital divide" issue generally.

**The Universal Service Concept and the FCC[19].** Since its creation in 1934 the Federal Communications Commission (FCC) has been tasked with "... mak[ing] available, so far as possible, to all the people of the United States, ... a rapid, efficient, Nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges...."[20] This mandate led to the development of what has come to be known as the universal service concept.

The universal service concept, as originally designed, called for the establishment of policies to ensure that telecommunications services are available to all Americans,

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[19]The section on universal service was prepared by Angele Gilroy, Specialist in Telecommunications Policy, Resources, Science and Industry Division.

[20]Communications Act of 1934, As Amended, Title I sec.1[47 U.S.C. 151].

including those in rural, insular and high cost areas, by ensuring that rates remain affordable. Over the years this concept fostered the development of various FCC policies and programs to meet this goal. The FCC offers universal service support through a number of direct mechanisms that target both providers of and subscribers to telecommunications services.[21]

The development of the federal universal service high cost fund is an example of provider-targeted support. Under the high cost fund, eligible telecommunications carriers, usually those serving rural, insular and high cost areas, are able to obtain funds to help offset the higher than average costs of providing telephone service.[22] This mechanism has been particularly important to rural America where the lack of subscriber density leads to significant costs. FCC universal service policies have also been expanded to target individual users. Such federal programs include two income-based programs, Link Up and Lifeline, established in the mid-1980s to assist economically needy individuals. The Link Up program assists low-income subscribers pay the costs associated with the initiation of telephone service and the Lifeline program assists low-income subscribers pay the recurring monthly service charges. Funding to assist carriers providing service to individuals with speech and/or hearing disabilities is also provided through the Telecommunications Relay Service Fund. Effective January 1, 1998, schools, libraries, and rural health care providers also qualified for universal service support.

***Universal Service and the Telecommunications Act of 1996.*** Passage of the Telecommunications Act of 1996 (P.L.104-104) codified the long-standing commitment by U.S. policymakers to ensure universal service in the provision of telecommunications services.

*The Schools and Libraries, and Rural Health Care Programs.* Congress, through the 1996 Act, not only codified, but also expanded the concept of universal service to include, among other principles, that elementary and secondary schools and classrooms, libraries, and rural health care providers have access to telecommunications services for specific purposes at discounted rates. (See Sections 254(b)(6) and 254(h)of the 1996 Telecommunications Act, 47 USC 254.)

1. The Schools and Libraries Program. Under universal service provisions contained in the 1996 Act, elementary and secondary schools and classrooms and libraries are designated as beneficiaries of universal service discounts. Universal service principles detailed in Section 254(b)(6) state that "Elementary and secondary schools and classrooms ... and libraries should have access to advanced telecommunications services..." The Act further requires in Section 254(h)(1)(B) that services within the definition of universal service be provided to elementary and secondary schools and libraries for education purposes at discounts, that is at "rates less than the amounts charged for similar services to other parties."

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[21]Many states participate in or have programs that mirror FCC universal service mechanisms to help promote universal service goals within their states.

[22]Additional FCC policies such as rate averaging and pooling have also been implemented to assist high cost carriers.

The FCC established the Schools and Libraries Division within the Universal Service Administrative Company (USAC) to administer the schools and libraries or "E (education)-rate" program to comply with these provisions. Under this program, eligible schools and libraries receive discounts ranging from 20 to 90 percent for telecommunications services depending on the poverty level of the school's (or school district's) population and its location in a high cost telecommunications area. Three categories of services are eligible for discounts: internal connections (e.g. wiring, routers and servers); Internet access; and telecommunications and dedicated services. According to data released by program administrators, over $5.8 billion in funding has been committed over the first three years of the program with funding released to all states, the District of Columbia and all territories.[23]

2. The Rural Health Care Program. Section 254(h) of the 1996 Act requires that public and non-profit rural health care providers have access to telecommunications services necessary for the provision of health care services at rates comparable to those paid for similar services in urban areas. Subsection 254(h)(1) further specifies that "to the extent technically feasible and economically reasonable" health care providers should have access to advanced telecommunications and information services. The FCC established the Rural Health Care Division (RHCD) within the USAC to administer the universal support program to comply with these provisions. Under FCC established rules only public or non-profit health care providers are eligible to receive funding. Eligible health care providers, with the exception of those requesting only access to the Internet, must also be located in a rural area.[24] The funding ceiling, or cap, for this support was established at $400 million annually. The funding level for Year One of the program ( January 1998 - June 30, 1999) was set at $100 million. To date, $3.37 million has been dispersed to 483 health care providers under the first year of the program. Due to less than anticipated demand, the FCC established a $12 million funding level for the second year (July 1, 1999 to June 30, 2000) of the program; $7.1 million has been committed to 630 health care providers. As of mid-March 2001, $816 thousand had been committed to 28 providers for Year Three. The primary use of the funding is to provide reduced rates for telecommunications services to support telemedicine or telehealth programs.[25]

*The Telecommunications Development Fund.* Section 714 of the 1996 Act created the Telecommunications Development Fund (TDF). The TDF is a private, non-governmental, venture capital corporation overseen by a seven-member board of directors and fund management. The purpose of the TDF is threefold: to promote

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[23]For information on the status, funding and implementation of the program see CRS issue brief 98040, *Telecommunications Discounts for Schools and Libraries: The "E-Rate" Program and Controversies,* by Angele A. Gilroy.

[24]Any health care provider that does not have toll-free access to the Internet can receive the lesser of $180 in toll charges per month or the toll charges incurred for 30 hours of access to the Internet per month. To obtain this support the health care provider does not have to be located in a rural area, but must show that it lacks toll-free Internet access and that it is an eligible health care provider.

[25]For additional information on this program including funding commitments see the RHCD web site: [http://www.rhc.universalservice.org]

access to capital for small businesses in order to enhance competition in the telecommunications industry; to stimulate new technology development and promote employment and training; and to support universal service and enhance the delivery of telecommunications services to rural and underserved areas. The TDF is authorized to provide financing to eligible small businesses in the telecommunications industry through loans and investment capital. At this time the TDF is focusing on providing financing in the form of equity investments ranging from $375,000 to $1 million per investment.[26] Initial funding for the program is derived from the interest earned from the upfront payments bidders submit to participate in FCC auctions. The availability of funds for future investments is dependent on earning a successful return on the Fund's portfolio. As of September 2000 the TDF had $20 million available for investment of which approximately $3 million was invested in 5 portfolio companies.[27]

***Universal Service and Broadband.*** One of the policy debates surrounding universal service is whether access to advanced telecommunications services (i.e. broadband) should be incorporated into universal service objectives. The term universal service, when applied to telecommunications, refers to the ability to make available a basket of telecommunications services to the public, across the nation, at a reasonable price. As directed in the 1996 Telecommunications Act [Section 254(c)] a federal-state Joint Board was tasked with defining the services which should be included in the basket of services to be eligible for federal universal service support; in effect using and defining the term "universal service" for the first time. The Joint Board's recommendation, which was subsequently adopted by the FCC in May 1997, included the following in its universal services package: voice grade access to and some usage of the public switched network; single line service; dual tone signaling; access to directory assistance; emergency service such as 911; operator services; access and interexchange (long distance) service.

Some policy makers expressed concern that the FCC-adopted definition is too limited and does not take into consideration the importance and growing acceptance of advanced services such as broadband and Internet access. They point to a number of provisions contained in the Universal Service section of the 1996 Act to support their claim. Universal service principles contained in Section 254(b)(2) state that "Access to advanced telecommunications services should be provided to all regions of the Nation." The subsequent principle (b)(3) calls for consumers in all regions of the Nation including "low-income" and those in "rural, insular, and high cost areas" to have access to telecommunications and information services including "advanced services" at a comparable level and a comparable rate charged for similar services in urban areas. Such provisions, they state, dictate that the FCC expand its universal service definition.

Others caution that a more modest approach is appropriate given the "universal mandate" associated with this definition and the uncertainty and costs associated with mandating nationwide deployment of such advanced services as a universal service

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[26]The TDF also provides management and technical assistance to the companies in which it invests.

[27]For additional information on this program see the TDF web site at: [http://www.tdfund.com

policy goal. Furthermore they state the 1996 Act does take into consideration the changing nature of the telecommunications sector and allows for the universal service definition to be modified if future conditions warrant. Section 254(c)of the Act states that "universal service is an evolving level of telecommunications services" and the FCC is tasked with "periodically" reevaluating this definition "taking into account advances in telecommunications and information technologies and services." Furthermore, the Joint Board is given specific authority to recommend "from time to time" to the FCC modification in the definition of the services to be included for federal universal service support.

According to the FCC's August 2000 report, existing universal service mechanisms have already played a role in broadband deployment. The FCC found that "approximately 52 percent of schools have high-speed connections to the Internet, largely as a result of the use of the E-rate for high speed services."[28] The FCC indicated that it plans to further consider the issue of modifying universal service mechanisms to include advanced telecommunications services:

> Upon completion of our current work on the high-cost support mechanism for rural carriers, and in collaboration with the states, we will consider the appropriate mechanisms to ensure broadband access for customers who do not have access as a result of market forces. In addition, we will further examine our rules for the E-rate program to determine if we can encourage broadband services and connections; and if sharing of school and library facilities can improve access or deployment in surrounding communities."[29]

**Rural Utilities Service.** The Rural Electrification Administration (REA), subsequently renamed the Rural Utilities Service (RUS), was established by the Roosevelt Administration in 1935. Initially, it was established to provide credit assistance for the development of rural electric systems. In 1949, the mission of REA was expanded to include rural telephone providers. Congress further amended the Rural Electrification Act in 1971 to establish within REA a Rural Telephone Account and the Rural Telephone Bank (RTB). The RTB is described as a public-private partnership intended to provide additional sources of capital that will supplement loans made directly by RUS. Another program, the Distance Learning and Telemedicine Program, specifically addresses the needs engendered by passage of the Telecommunications Act of 1996 (P.L. 104-104). Its passage has contributed to an increase in demand for telecommunications loans. Currently, the RUS is in the process of modifying its regulations in order to allow it to use more of its lending authority to encourage private sector investment in rural broadband services.[30]

***Telecommunications Loans.*** This program makes three kinds of loans depending upon the financial condition of the borrowing utility and the costs associated with serving subscribers in rural areas. Hardship loans bear an interest

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[28]*Deployment of Advanced Telecommunications Capability: Second Report*, p. 6.

[29]*Ibid.*, p. 7.

[30]See, for example: Department of Agriculture, Rural Utilities Service, General Policies, Types of Loans, Loan Requirements – Telecommunications Program, Final Rule, Federal Register, Vol. 65, no. 175, September 8, 2000, p. 54399.

rate of 5% and are intended for smaller utility systems in the most remote areas where there are fewer subscribers per mile of line. The second category of loans is RUS "cost-of-money" and RTB loans. These are made concurrently to a borrower, with the funds drawn from RUS and RTB in proportion to the respective annual appropriation to each. These loans carry an interest rate equal to its "cost of capital," which is roughly the U.S. Treasury's cost of funds. Lastly, there are loans administered by RUS but guaranteed by the Federal Financing Bank (FFB), where the interest rate is set by agreement between the borrower and the private lender.

The congressionally approved FY2001 appropriation for Telecommunications Loans (P.L. 106-387) is $75 million in hardship loan authority, $300 million in Treasury-rate loans, and $120 million for guaranteed loans. According to RUS, demand for loans, particularly hardship loans, exceeds available funds. The FY2001 appropriation for the RTB is $175 million.

The Bush Administration, in its FY2002 budget proposal, requests the identical level of funding for the Telecommunications Loans program as was appropriated in FY2001 ($75 million in hardship loan authority, $300 million in Treasury-rate loans, and $120 million for guaranteed loans). However, the FY2002 budget proposal requests no federal funding for the Rural Telephone Bank, in order to "continue the progression of the RTB toward becoming a private bank."

***Distance Learning and Telemedicine Program.*** This program provides seed money for loans and grants to rural community facilities (e.g., schools, libraries, hospitals) for advanced telecommunications systems that can provide health care and educational benefits to rural areas. Appropriations for loans and grants in this program have increased significantly since its inception in 1993. For FY2001, Congress approved an appropriation of $27 million for loans and grants. This total includes a $2 million pilot program (requested in the Clinton Administration's FY2001 budget proposal) to finance broadband transmission and local dial-up service in rural areas. Congress also approved a one-year pilot program which makes $100 million in treasury rate loan funds available to finance the construction and installation of broadband telecommunications services in rural America. Available through September 30, 2001, the loans will be processed and approved on a first-come, first-served basis.[31]

For FY2002, the Bush Administration is proposing $100 million for broadband treasury rate loans and $2 million in broadband grants. The funding would be used as a grant/loan combination to finance installation of rural broadband capacity provided by RUS telecommunication cooperatives and businesses serving rural areas and communities. The funding could also be used to finance local dialup Internet service for communities that currently lack Internet access via a local call.

**Department of Commerce Programs.** The Technology Opportunities Program (TOP), formerly the Telecommunications and Information Infrastructure Assistance Program (TIAPP), is administered by the National Telecommunications and Information Administration (NTIA) at the Department of Commerce. TOP gives

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[31]For further information, see: [http://www.usda.gov/rus/telecom/dlt/broadbanddlt.htm]

grants for model projects demonstrating innovative uses of advanced telecommunications technologies, especially in rural and underserved communities. Matching grants are awarded to state, local and tribal governments, health care providers, schools, libraries, police departments, and community-based non-profit organizations. Applications include distance learning, telemedicine, and economic development.

Since 1994, TOP has awarded 456 grants, totaling $149.7 million and leveraging $221 million in local matching funds. As broadband technologies become increasingly developed and deployed, it is likely that an increasing number of TOP grants will be related to broadband deployment. In FY2000, TOP awarded $13.9 million to 35 organizations. On January 11, 2001, NTIA/TOP announced that approximately $42.5 million in grant money will be available in FY2001.[32]

The Bush Administration's FY2002 budget proposal requests $15.5 million for TOP in FY2002. This would be a 66% cut from TOP's FY2001 appropriated level.

## Legislation in the 106th and 107th Congress

A number of bills were introduced in the 106th Congress which sought to provide financial support for broadband deployment, especially in rural and/or low-income areas. Some provisions would have authorized funding for loans and grants, while others would have established targeted tax credits for companies investing in broadband facilities. None of those bills were enacted. Similar legislation has subsequently been introduced into the 107th Congress. For broadband legislation which addresses regulatory issues such as "open access" of cable systems and lifting data transmission restrictions on incumbent telephone companies, please see the CRS Issue Brief, *Broadband Internet Access: Background and Issues*, IB10045.

### 106th Congress

**H.R. 4122 (Stupak)**

Rural Broadband Enhancement Act. Requires the FCC to initiate a proceeding to provide universal service support for the deployment of broadband service to eligible rural communities. Directs the Rural Utilities Service of the Department of Agriculture to finance (via loans or other extensions of credit) the deployment of broadband telecommunications services to eligible rural communities. For RUS program, authorizes $3 billion per year for fiscal years 2001 through 2005. Introduced March 29, 2000; referred to Committee on Commerce and Committee on Agriculture. Related bill: S. 2307.

**H.R. 4477 (Towns)**

Digital Bridge Trust Fund Act. Establishes fund for programs to improve skills and career opportunities in information technology for underserved communities; includes funding for assistance regarding deployment of broadband networks. Introduced May 17, 2000; referred to Committees on Commerce, Ways and Means,

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[32]For more information, see: [http://www.ntia.doc.gov/otiahome/top/]

Education and the Workforce, Transportation and Infrastructure, and Banking and Financial Services.

**H.R. 4728 (English)**

Broadband Internet Access Act. Provides tax credits for five years to companies investing in broadband facilities or equipment to serve rural and low-income areas. Provides a 10% tax credit for "current generation" broadband service (defined as download speeds of at least 1.5 million bits per second), and a 20% tax credit for "next generation" broadband service (defined as download speeds of at least 22 million bits per second). Introduced June 22, 2000; referred to Committee on Ways and Means. Related bill: S. 2698.

**H.R. 5069 (Minge)**

Comprehensive Rural Telecommunications Act. Provides tax credits, universal service support, and Rural Utilities Service loans for the construction of broadband telecommunications facilities in rural areas. Also includes provisions on rural teleworking. Introduced July 27, 2000; referred to Committees on Commerce, Ways and Means, and Agriculture.

**S. 2097 (Burns)**

Launching Our Communities' Access to Local Television Act of 2000. Would make "high speed Internet access" services eligible for loan guarantees under a loan guarantee program the legislation would establish for providing local television in rural areas (for more information on this legislation, see CRS Report RL30481, *Satellite Television: An Analysis of Pending Legislation Regarding Loan Guarantees for Providing Local Broadcast TV Signals*). Introduced Feb. 24, 2000; referred to Committee on Banking, Housing and Urban Affairs. Passed Senate, amended, March 30, 2000.

**S. 2307 (Dorgan)**

Rural Broadband Enhancement Act. Requires the FCC to initiate a proceeding to provide universal service support for the deployment of broadband service to eligible rural communities. Directs the Rural Utilities Service of the Department of Agriculture to finance (via loans or other extensions of credit) the deployment of broadband telecommunications services to eligible rural communities. For RUS program, authorizes $3 billion per year for fiscal years 2001 through 2005. Introduced March 28, 2000; referred to Committee on Commerce, Science, and Transportation. Related bill: H.R. 4122.

**S. 2321 (Rockefeller)**

Rural Telecommunications Modernization Act. Provide tax credits for three years to companies investing in broadband facilities or equipment to serve rural areas. Provides a 10% tax credit for "broadband telecommunications facilities" (defined as download speeds of at least 1.5 million bits per second), and a 15% tax credit for "enhanced broadband telecommunications facilities" (defined as download speeds of at least 10 million bits per second). Introduced March 29, 2000; referred to Committee on Commerce, Science, and Transportation.

**S. 2698 (Moynihan)**

Broadband Internet Access Act. Provide tax credits for five years to companies investing in broadband facilities or equipment to serve rural and low-income areas. Provides a 10% tax credit for "current generation" broadband service (defined as download speeds of at least 1.5 million bits per second), and a 20% tax credit for "next generation" broadband service (defined as download speeds of at least 22 million bits per second). Introduced June 8, 2000; referred to Committee on Finance. Related bill: H.R. 4728.

**S. 3152 (Roth)**

Community Renewal and New Markets Act of 2000. Section 303 would provide a broadband Internet access tax credit for five years to companies investing in broadband facilities or equipment to serve rural and low-income areas. Provides a 10% tax credit for "current generation" broadband service (defined as download speeds of at least 1.5 million bits per second), and a 20% tax credit for "next generation" broadband service (defined as download speeds of at least 22 million bits per second). Introduced October 3, 2000; placed on Senate Legislative Calendar. Related bills: S. 2698, H.R. 4728.

## 107th Congress

**H.R. 267 (English)**

Broadband Internet Access Act of 2001. Provides tax credits for five years to companies investing in broadband equipment. Provides a 10% tax credit for "current generation" broadband service (defined as download speeds of at least 1.5 million bits per second) for rural and low-income areas, and a 20% tax credit for "next generation" broadband service (defined as download speeds of at least 22 million bits per second). Introduced January 30, 2001; referred to Committee on Ways and Means.

**H.R. 1416 (LaFalce)**

Broadband Expansion Grant Initiative of 2001. Authorizes $100 million in grants and loan guarantees from the Department of Commerce for deployment by the private sector of broadband telecommunications networks and capabilities to underserved rural areas. Introduced April 4, 2001; referred to Committee on Energy and Commerce.

**S. 88 (Rockefeller)**

Broadband Internet Access Act of 2001. Provides tax credits for five years to companies investing in broadband equipment. Provides a 10% tax credit for "current generation" broadband service (defined as download speeds of at least 1.5 million bits per second) for rural and low-income areas, and a 20% tax credit for "next generation" broadband service (defined as download speeds of at least 22 million bits per second). Introduced January 22, 2001; referred to Committee on Finance.

**S. 150 (Kerry)**

Broadband Deployment Act of 2001. Provides tax credits for five years to companies investing in broadband equipment to serve low-income areas. Provides a 10% tax credit for broadband service delivering a minimum download speed of 1.5

million bits per second. Introduced January 23, 2001; referred to Committee on Finance.

**S. 426 (Clinton)**
Technology Bond Initiative of 2001. Provides an income tax credit to holders of bonds financing the deployment of broadband technologies. Introduced March 1, 2001; referred to Committee on Finance.

**S. 428 (Clinton)**
Broadband Expansion Grant Initiative of 2001. Authorizes $100 million in grants and loan guarantees from the Department of Commerce for deployment by the private sector of broadband telecommunications networks and capabilities to underserved rural areas. Introduced March 1, 2001; referred to Committee on Commerce, Science, and Transportation.

**S. 430 (Clinton)**
Broadband Rural Research Investment Act of 2001. Authorizes $25 million for the National Science Foundation to fund research on broadband services in rural and other remote areas. Introduced March 1, 2001; referred to Committee on Finance.

## Policy Issues

As summarized above, legislation was introduced into the 106th Congress that sought to provide federal financial assistance for broadband deployment in underserved areas. Similar legislation is expected to be considered in the 107th Congress. In assessing this legislation, several policy issues arise.

**Is Broadband Deployment Data Adequate?** Obtaining an accurate snapshot of the status of broadband deployment is problematic. Anecdotes abound of rural and low-income areas which do not have adequate Internet access, as well as those which are receiving access to high-speed, state-of-the-art connections. Rapidly evolving technologies, the constant flux of the telecommunications industry, the uncertainty of consumer wants and needs, and the sheer diversity and size of the nation's economy and geography make the status of broadband deployment very difficult to characterize. The FCC has begun the process of periodically collecting deployment data from the private sector. In using these data as the basis of the Second Report, the FCC acknowledges that broadband deployment data collection and analysis remain a work in progress. According to FCC Commissioner Tristani, "[t]he data on which the Report relies suffer from several weaknesses that undermine our ability to draw well-supported conclusions and to identify with specificity at-risk communities."[33]

The FCC is working to refine the data used in future Reports in order to provide an increasingly accurate portrayal. Meanwhile, other studies have been

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[33]Separate Statement of Commissioner Gloria Tristani, *Deployment of Advanced Telecommunications Capability: Second Report.*
[http://www.fcc.gov/Speeches/Tristani/Statements/2000/stgt043.html]

released or are forthcoming which could shed further light on broadband deployment. The General Accounting Office (GAO) released a report in October 2000 which examined how competition is developing in the market for Internet access services, including the development of consumer choice of Internet access.[34] The National Academy of Sciences is working on a study of broadband local access issues.[35]

Some argue that because the overall status of broadband deployment is not yet adequately understood, government intervention is not appropriate at this time. On the other hand, advocates of federal assistance for broadband deployment maintain that the available data indicate clearly enough that rural and low-income areas are being underserved, and that the risk of delaying assistance to these areas outweighs the benefit of waiting for more complete data.

**Is Federal Assistance for Broadband Deployment Premature?** Related to the data issue is the argument that government intervention in the broadband marketplace would be premature or inappropriate. The FCC currently does not favor significant regulatory intervention, arguing that broadband deployment is in its early stages, that critical applications for broadband have not yet emerged, and that even in areas where broadband access is available, it is not yet apparent that most consumers are willing to pay the average fee of $40 per month for this new service. Some argue that financial assistance for broadband deployment could distort private sector investment decisions in a dynamic and rapidly evolving marketplace, and question whether federal tax dollars should support a technology that has not yet matured, and whose societal benefits have not yet been demonstrated.

On the other hand, proponents of financial assistance counter that the available data show, in general, that the private sector will invest in areas where it expects the greatest return – areas of high population density and income. Without some governmental assistance in underserved areas, they argue, it is reasonable to conclude that broadband deployment will lag behind in many rural and low income areas.

**Which Approach is Best?** If one assumes that governmental action is appropriate to spur broadband deployment in underserved areas, which specific approaches, either separately or in combination, would likely be most effective? Targeted grants and loans from several existing federal programs have been proposed, as well as tax credits for companies deploying broadband systems in rural and low-income areas. How might the impact of federal assistance compare with the effects of regulatory or deregulatory actions, such as mandating "open access" in cable systems or lifting long distance data transmission restrictions on

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[34]General Accounting Office, *Technological and Regulatory Factors Affecting Consumer Choice of Internet Providers*, GAO-01-93, October 2000, 68 p.

[35]See: [http://www4.nationalacademies.org/cpsma/cstb.nsf]

incumbent local exchange carriers?[36] And finally, how might any federal assistance programs best compliment existing "digital divide" initiatives by the states, localities, and private sector?[37]

[36]See CRS Issue Brief IB10045 for a detailed discussion of these issues.

[37]For more information on state, local, and private sector initiatives, see: [http://www.digitaldividenetwork.org]

## Table 2. Selected Federal Domestic Assistance Programs Related to Telecommunications Development [38]

| Program | Agency | Description | FY2001 funding (estimated) | Web Links for More Information |
|---|---|---|---|---|
| Technology Opportunities Program | National Telecommunications and Information Administration, Dept. of Commerce | Provides grants for model projects demonstrating innovative uses of advanced telecommunications technologies, especially in rural and underserved communities | $45.40 million | [http://www.cfda.gov/static/11552.asp] [http://www.ntia.doc.gov/otiahome/top/index.html] |
| Public Telecommunications Facilities – Planning and Construction | National Telecommunications and Information Administration, Dept. of Commerce | Assists in planning, acquisition, installation and modernization of public telecommunications facilities | $43.40 million | [http://www.cfda.gov/static/11550.asp] [http://www.ntia.doc.gov/otiahome/ptfp/index.html] |
| Rural Telephone Loans and Loan Guarantees | Rural Utilities Service, U.S. Dept. of Agriculture | Provides long-term direct and guaranteed loans to qualified organizations for the purpose of financing the improvement, expansion, construction, acquisition, and operation of telephone lines, facilities, or systems to furnish and improve telecommunications service in rural areas | $50 million (hardship loans); $300 million (cost of money loans); $120 million (FFB Treasury loans) | [http://www.cfda.gov/static/10851.asp] [http://www.usda.gov/rus/telecom/index.htm] |
| Rural Telephone Bank Loans | Rural Utilities Service, U.S. Dept. of Agriculture | Provides supplemental financing to extend and improve telecommunications services in rural areas | $175 million | [http://www.cfda.gov/static/10852.asp] [http://www.usda.gov/rus/telecom/rtb/rtb.htm] |

[38] Prepared by CRS based on information from the 2000 Catalog of Federal Domestic Assistance, updated 12/26/2000.

| Program | Agency | Description | FY2001 funding (estimated) | Web Links for More Information |
|---|---|---|---|---|
| Distance Learning and Telemedicine Loans and Grants | Rural Utilities Service, U.S. Dept. of Agriculture | Provides seed money for loans and grants to rural community facilities (e.g., schools, libraries, hospitals) for advanced telecommunications systems that can provide health care and educational benefits to rural areas | $20 million (grants) $200 million (loans) | [http://www.cfda.gov/static/10855.asp] [http://www.usda.gov/rus/dlt/dlml.htm] |
| Community Technology Centers Program | Office of Vocational and Adult Education Dept. of Education | Provides access to computers and technology, particularly educational technology, to adults and children in low-income communities in both urban and rural areas who otherwise would lack that access | $10 million | [http://www.cfda.gov/static/84341.asp] [http://www.ed.gov/offices/OVAE/CTC/] |
| Technology Literacy Challenge Fund Grants | Office of Elementary and Secondary Education, Dept. of Education | Grants to State Education Agencies for development of information technology to improve teaching and learning in schools | $450 million | [http://www.cfda.gov/static/84318.asp] [http://www.ed.gov/Technology/TLCF/] |
| Technology Innovation Challenge Grants | Office of Assistant Secretary for Educational Research and Improvement, Dept. of Education | Supports the development, interconnection, implementation, improvement, and maintenance of an effective educational technology infrastructure | $78.233 million | [http://www.cfda.gov/static/84303.asp] [http://www.ed.gov/Technology/challenge/] |
| Star Schools | Office of Assistant Secretary for Educational Research and Improvement, Dept. of Education | Grants to telecommunication partnerships for telecommunications facilities and equipment, educational and instructional programming | $50.55 million (FY2000) | [http://www.cfda.gov/static/84203.asp] [http://www.ed.gov/prog_info/StarSchools/] |

| Program | Agency | Description | FY2001 funding (estimated) | Web Links for More Information |
|---|---|---|---|---|
| Telecommunications Demonstration Project for Mathematics | Office of Assistant Secretary for Educational Research and Improvement, Dept. of Education | National telecommunications based demonstration project to improve the teaching of mathematics | $8.5 million (FY2000) | [http://www.cfda.gov/static/84286.asp] [http://www.ed.gov/offices/OERI/] |
| Regional Technical Support and Professional Development Consortia | Office of Assistant Secretary for Educational Research and Improvement, Dept. of Education | Helps states, schools, districts, adult literacy centers, pre-service providers, and other educational institutions to use advanced technologies to improve teaching and student achievement | $10 million (FY2000) | [http://www.cfda.gov/static/84302.asp] [http://www.rtec.org/] |
| Special Education – Technology and Media Services for Individuals with Disabilities | Office of Special Education and Rehabilitative Services, Dept. of Education | Supports development and application of technology and education media activities for disabled children and adults | $34.523 million | [http://www.cfda.gov/static/84327.asp] [http://www.ed.gov/offices/OSERS/] |
| Rural Telemedicine Grants | Health Resources and Services Administration, Department of Health and Human Services | Develops integrated health care delivery systems or networks in rural areas | $5 million | [http://www.cfda.gov/static/93211.asp] [http://telehealth.hrsa.gov/grantee.htm] |
| Medical Library Assistance | National Library of Medicine, National Institutes of Health, Department of Health and Human Services | Provides funds to train professional personnel; strengthen library and information services; facilitate access to and delivery of health science information; plan and develop advanced information networks; support certain kinds of biomedical publications; and conduct research in medical informatics and related sciences | $50.371 million | [http://www.cfda.gov/static/93879.asp] [http://www.nlm.nih.gov/ep/extramural.html] |

| Program | Agency | Description | FY2001 funding (estimated) | Web Links for More Information |
|---|---|---|---|---|
| State Library Program | Office of Library Services, Institute of Museum and Library Services, National Foundation on the Arts and the Humanities | Grants to state library administrative agencies for promotion of library services that provide all users access to information through State, regional, and international electronic networks | $151.78 million | [http://www.cfda.gov/static/45310.asp] [http://www.imls.gov/grants/library/lib_gsla.asp#po] |
| Native American Library Services | Office of Library Services, Institute of Museum and Library Services, National Foundation on the Arts and the Humanities | Supports library services including electronically linking libraries to networks | $2.616 million | [http://www.cfda.gov/static/45311.asp] [http://www.imls.gov/grants/library/lib_nat.asp] |
| Denali Commission Program | Denali Commission | Provides grants through a federal and state partnership designed to provide critical infrastructure and utilities throughout Alaska, particularly in distressed communities | $49 million | [http://www.cfda.gov/static/90100.asp] [http://www.denali.gov] |