

Telecommunications Access for Rural Americans With Disabilities

People with disabilities may be inadvertently excluded from rural community life unless telecommunications access—economic, social, and physical—is addressed and ensured locally. New telecommunications policies are committed to the inclusion of people with disabilities. However, policy alone cannot ensure equitable access. Grassroots understanding is needed to define access in telecommunications and to determine how access can inform development activities.

Since the invention of the telephone, people with disabilities that affect hearing or speech have been concerned about access to telecommunications. As telecommunications have become even more important in recent years, concerns have escalated and broadened to include other disability groups as well. These concerns are not just rural issues, but they will have a disproportionate effect on rural citizens. In urban areas, there are likely to be more, better organized watchdogs looking after disability access issues; in rural communities, people with disabilities may be inadvertently excluded from participation in both economic and social life before local people recognize the relevance of telecommunications access issues.

Disability raises an additional issue in telecommunications discussions—physical access—which will be discussed later in this article. There are issues in telecommunications that could significantly impede both physical and economic access for people with disabilities living in rural areas. In the 1992 Rehabilitation Act amendments, Congress declares that “disability is a natural part of human experience” and that “individuals with disabilities constitute one of the most disadvantaged groups in society.” “Millions of Americans have one or more physical or mental disabilities and the number of Americans with such disabilities is increasing,” Congress asserts, and “the goals of the Nation properly include the goal of providing individuals with disabilities with the tools neces-

sary to make informed choices and decisions; and achieve equality of opportunity, full inclusion and integration in society, employment, independent living, and economic and social self-sufficiency, for such individuals” (P.L. 102-569). Rural telecommunications is a very important tool for achieving these national goals.

Many Rural Disability Issues Are Common Rural Issues

Disability-related access and services can be readily incorporated into the new telecommunications infrastructures. Telecommunications legislation, as well as the civil rights protections described later in this article, advocates integrated and accessible systems that work for all members of the community. Recognition that an accessible environment reduces the negative effects of a disability is increasing. In the physical environment, ramps make it easier for many people—from couriers with hand carts to parents pushing baby strollers—to enter a building. The telecommunications industry is pursuing similar electronic on-ramps, built just as transparently and with as wide a range of potential users.

Incentives for incorporating disability-related access issues into infrastructure and service planning are increasing. Legislation is beginning to ensure that telecommunications products sold in the United States will incorporate access features useful to a wide range of people and be compatible with special equipment. For example, the Television Decoder Act of 1990 (P.L. 101-431) requires all new television sets with screens 13 inches or larger to have built-in decoder circuitry to display closed-captioned television transmissions. Previously, an individual needing captions displayed on the TV screen had to buy a \$200 set-top box. Today, when you need closed captioning,

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you simply enable a feature already built into a product you own; you do not have to buy a costly add-on unit. After the law was passed, market forces drove the chip cost to less than 50 cents per TV. Telecommunications equipment and customer premise equipment are slated to operate with transparent access already built in.

Access Is Both Physical and Economic

Access, as in “universal service” or “universal access,” in telecommunications is generally understood to be economic. With disability, access is generally understood to be physical. However, access is inextricably an economic and a physical issue. Economic access is crucial to people with disabilities, since they are poor in disproportionately high numbers, and improving physical access may have economic costs. Physical access is more obvious, but it may be overlooked. If a distance-learning center in a small-town high school is in a room on the second floor, a person who cannot climb stairs may have no access to the educational programs on the network.

Physical access issues also confound people who have difficulty seeing a visual display or hearing the words of a spoken menu in an automated answering system. Graphical user interfaces (GUI) have unintentionally shut out people who use a screen reader with voice output to read a display monitor. It also frustrates people with slow online connections, sluggish computers, or small screens. Complex displays on telecommunications equipment are confusing for people with cognitive disabilities. Manipulation of control buttons is also a part of physical access. Specific challenges are being addressed both by mass market companies and through the use of specialized equipment customized to the needs of an individual. For example, someone without hands can use speech input software as an alternative to a keyboard.

Access is also a social sense of place and belonging. When community members are assembling upstairs for the evening’s program in a distance education center at the high school, it is exclusionary to simply link up from a first floor room the person who cannot climb the stairs. Program developers must design technology and its applications to allow everyone the same choices in use. It is surprising how often access is overlooked until the telecommunications equipment has been installed and service begun. Then, no resources remain for retrofitting the access that could have been inexpensively built into the original installation.

Issues of choice are paramount. If an individual **wants to** tie into the community meeting from his or her home, telecommunications may be able to facilitate that connection. But if physical inaccessibility forces the person into the **sole option** of a cyberconnection, real world connections that are at the root of rural community life are lost. These isolating situations are happening in rural schools

from Kentucky to Montana. Even a high school student who has legal redress for such inequitable treatment in the school day is not likely to sue for access because that will only separate them further from their rural community. Instead of making waves, they will make do.

Cyberconnections enhance community life only when they provide a range of viable options, not forced segregation because of disability, gender, or race. The underlying civil rights issues may be subtle, but they are essential to equity and participation.

Geography of Rural Disability

Disability and rehabilitation are a significant, though often overlooked, part of the complex rural American situation. Rural Americans account for a greater proportion of chronic disease and disability than urban populations, but have fewer services or resources to meet their needs. J. M. McNeill estimates as many as 51 million people with some disability in the United States, 25.2 million people with a severe disability (table 1). The 12.5 million people with disabilities who live in nonmetro areas make up a higher proportion (23 percent) than the people with disabilities who live in metro areas (18 percent). McNeil classified over 6 million of these nonmetro people as reporting a severe disability (table 1).

The rate of disability in rural areas is disproportionately higher for several reasons. First, many rural occupations (mining, logging, farming) are among the most physically dangerous and produce high rates of injury that can lead to disability. Second, the proportion of older Americans in rural areas is higher than in urban areas, and rates of disability increase with age. Third, better educated individuals tend to leave rural areas for employment in cities. This migration pattern leaves a higher proportion of less educated people working at dangerous occupations, potentially contributing to the higher injury rate. For example, some of these individuals may not be able to read and follow complex safety information. Fourth, medical and other support services that may prevent disability are less available in rural areas. Fifth, the environmental infrastructure (such as public transportation, access to buildings) is less developed in rural areas and may contribute to reported limitation/disability. And finally, poverty is highly associated with disability, and poverty rates in rural areas are disproportionately high, equivalent to those found in our Nation’s central cities.

Rural Disability and Rehabilitation

Providing rehabilitation services to individuals with disabilities in rural areas presents special problems. National surveys of adults with disabilities, rural independent living centers, and rehabilitation hospitals serving rural areas indicate limited resources and limited access. For example, vocational rehabilitation counselors reported

Table 1

Geography of disability in America, 1995

Nonmetro areas have greater shares of people with disabilities and with severe disabilities than do metro areas

Population categories	Disability		Severe disability	
	Estimated number	Percent	Estimated number	Percent
Metro counties:				
Central, 1 million population or more	21,141,448	17.83	10,526,552	8.88
Fringe, 1 million population or more	1,827,049	17.87	909,711	8.9
250,000-999,999 population	11,452,952	19.33	5,702,552	9.62
Fewer than 250,000 population	4,103,599	19.67	2,043,232	9.79
Total	38,525,048	18.44	19,182,047	9.18
Nonmetro:				
Counties with urban areas—				
20,000 population or greater, adjacent to metro	2,108,069	21.07	1,010,892	10.1
20,000 population or greater, not adjacent to metro	1,413,286	20.55	677,718	9.86
2,500-19,999 population, adjacent to metro area	4,122,080	23.74	1,976,688	11.45
2,500-19,999 population, not adjacent to metro area	3,250,697	24.32	1,558,819	11.66
Completely rural counties—				
Fewer than 2,500 population, adjacent to metro area	672,115	25.34	322,309	12.15
Fewer than 2,500 population, not adjacent to metro area	976,587	26.56	468,311	12.74
Total	12,542,834	23.3	6,014,737	11.17
U.S. total	51,067,882	19.44	25,196,784	9.59

Note: Data reflect people of all ages living in both community and institutions who are unable to perform one or more activities, or as having one or more specific impairments, or as a person who used a wheelchair or who was a long-term user of crutches, a cane, or a walker. However, this number does not directly reflect restriction in participation in the community nor recognize the impact of the environment as a causal factor of disability now highlighted by the World Health Organization.

Source: Estimates for 1995 calculated by RTC: Rural based on J.M. McNeil, *Americans with Disabilities: 1991-2*, and data from the Survey of Income and Program Participation, 1993.

significantly more problems, but fewer resources, for helping people with disabilities find employment in rural areas. Like employment, independent living for many rural persons with disabilities in rural areas is undercut by severe isolation, scarce health and human services, widespread inaccessibility, and limited means to obtain social services. In addition to these problems, core independent living (IL) services (information and referral, IL skills training, peer counseling, and individual and systems advocacy) are available in only about 53 percent of nonmetro counties, compared with 81 percent of metro counties.

Generally, rehabilitation methods and procedures have been developed for urban environments, with professional training and experiences based in urban service models and concepts. Therefore, viable approaches to rehabilitation in rural areas are often limited by the assumption that appropriate rehabilitation service delivery is contingent on the availability of traditional resources and urban environmental features, such as buses, hospitals with specialty services, and multiple social service agencies. While urban models of IL services are relatively well established, they may not easily apply to rural areas. For example, programs may have to serve areas significantly

larger than one contiguous community (that is, city and surrounding suburbs) because of the sparse rural population. That poses great difficulty in developing local community identity and support. Similarly, it may be extremely difficult for people with disabilities to come together to manage programs or participate in peer groups.

The Promise of Telecommunications

Many policymakers and advocates for telecommunications argue that recent advances in technology will go a long way to solving the age-old problem of distance for rural residents. This assumes widespread access to telecommunications. However, recent analyses show that people in rural areas, especially those with low incomes—and people with disabilities are often poor—are the least likely to have access to such technology (McConaughy, Nila, and Sloan; McConaughy and Lader).

High-tech solutions are alluring, but the reality is often ambiguous. We need to assess and systematically monitor the availability of, access to, and use of telecommunications technology by people with disabilities and those who serve them. Such data will clarify important ques-

Recent Legislation on Telecommunications and Disabilities

Telecommunications Act of 1996 (P.L. 104-104)

SEC. 255. [47 U.S.C. 255] ACCESS BY PERSONS WITH DISABILITIES.

(a) DEFINITIONS—As used in this section—

(1) Disability—The term “disability” has the meaning given to it by section 3(2)(A) of the Americans with Disabilities Act of 1990 (42 U.S.C. 12102(2)(A)).

(2) Readily achievable—The term “readily achievable” has the meaning given to it by section 301(9) of that Act (42 U.S.C. 12181(9)).

(b) MANUFACTURING—A manufacturer of telecommunications equipment or customer premises equipment shall ensure that the equipment is designed, developed, and fabricated to be accessible to and usable by individuals with disabilities, if readily achievable.

(c) TELECOMMUNICATIONS SERVICES—A provider of telecommunications service shall ensure that the service is accessible to and usable by individuals with disabilities, if readily achievable.

(d) COMPATIBILITY—Whenever the requirements of subsections (b) and (c) are not readily achievable, such a manufacturer or provider shall ensure that the equipment or service is compatible with existing peripheral devices or specialized customer premises equipment commonly used by individuals with disabilities to achieve access, if readily achievable.

(e) GUIDELINES—Within 18 months after the date of enactment of the Telecommunications Act of 1996, the Architectural and Transportation Barriers Compliance Board shall develop guidelines for accessibility of telecommunications equipment and customer premises equipment in conjunction with the Commission. The Board shall review and update the guidelines periodically.

(f) NO ADDITIONAL PRIVATE RIGHTS AUTHORIZED—Nothing in this section shall be construed to authorize any private right of action to enforce any requirement of this section or any regulation thereunder. The Commission shall have exclusive jurisdiction with respect to any complaint under this section.

Workforce Investment Act of 1998 (P.L. 105-220; HR 1385)

Title IV Rehabilitation Act Amendments of 1998

(b) ELECTRONIC AND INFORMATION TECHNOLOGY REGULATIONS—Section 508 (29 U.S.C. 794d) is amended to read as follows:

SEC. 508. ELECTRONIC AND INFORMATION TECHNOLOGY.

(a) REQUIREMENTS FOR FEDERAL DEPARTMENTS AND AGENCIES—

(1) ACCESSIBILITY—

(A) DEVELOPMENT, PROCUREMENT, MAINTENANCE, OR USE OF ELECTRONIC AND INFORMATION TECHNOLOGY—When developing, procuring, maintaining, or using electronic and information technology, each Federal department or agency, including the United States Postal Service, shall ensure, unless an undue burden would be imposed on the department or agency, that the electronic and information technology allows, regardless of the type of medium of the technology—

(i) individuals with disabilities who are Federal employees to have access to and use of information and data that is comparable to the access to and use of the information and data by Federal employees who are not individuals with disabilities; and

(ii) individuals with disabilities who are members of the public seeking information or services from a Federal department or agency to have access to and use of information and data that is comparable to the access to and use of the information and data by such members of the public who are not individuals with disabilities.

tions: Who has access to what types of telecommunications? How are telecommunications used? What are the obstacles to access and use? Who needs better access? What type of access is needed and under what conditions? Assessing current rural adoption of, and access to, telecommunications may help refine policy and practice in order to increase use.

Legal Protections for Access

The Americans with Disabilities Act of 1990 (ADA, P.L. 101-336) provides civil rights protections to individuals with disabilities similar to those provided on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity in public accommodations, employment, transportation, State and local government

services, and telecommunications. Two sections are specific to telecommunications: Section 401, telecommunications relay services for hearing-impaired and speech-impaired individuals; and Section 402, closed-captioning of public service announcements. In addition, several interpretations maintain that web sites offered not only by State and local governments but also by “places of public accommodation” (that is, businesses catering to the public) have a requirement and responsibility to be accessible to people with disabilities. For example, “covered entities that use the Internet for communications regarding their programs, goods, or services must be prepared to offer those communications through accessible means as well” (Patrick).

The Telecommunications Act of 1996 has several references to disability access. The most important, Section 255, requires that “manufacturers of telecommunications equipment or customer premises equipment shall ensure that the equipment is designed, developed, and fabricated to be accessible to and usable by individuals with disabilities, if readily achievable.” Likewise, “a provider of telecommunications service shall ensure that the service is accessible to and usable by individuals with disabilities, if readily achievable.” In addition, Section 251 notes, “Each telecommunications carrier has the duty . . . not to install network features, functions, or capabilities that do not comply with the guidelines and standards established pursuant to section 255 or 256.”

The Workforce Investment Act of 1998, Chapter IV, Section 508 (see “Recent Legislation on Telecommunications and Disabilities”) clarifies the responsibilities of Federal agencies for accessibility in electronic and information technology. This includes accessibility both for Federal employees and for individuals with disabilities who are seeking information or services from a Federal agency. Though these principles have existed in various forms since the 1986 Rehabilitation Act Amendments, the 1998 law provides for standards development and enforcement protocols.

Access and Equity

Historically, telecommunications has focused on equity through economic parity (universal service), while disability equity was addressed with transfer payment schemes (for example, Social Security). Advances in technology raised expectations and possibilities for both telecommunications services and the inclusion of people with disabilities in mainstream society. The broadened environmental/contextual metaphor of the information highway is a good fit with the focus of modern disability politics. The old view—seeing the “cripple” as an isolated homebound entity without context—is as archaic as looking at a plain old black rotary dial telephone and trying to imagine an interactive information kiosk.

Where does disability access, particularly rural disability access, fit into the converging and rapidly changing information highway? The regulatory structures that have historically provided rural areas with equitable access (such as rural electrification) are being redefined, especially regarding access to universal service funds and infrastructure subsidies. The 1996 Telecommunications Act authorizes more discounts and subsidies than there are universal service funds available in existing formulas. Recognizing that modern telecommunications is now a necessity that should be accessible to all, these discounts focus on urban/rural lower income communities. Rather than continuing to dispute the limits of the expanded universal service programs, some major telephone companies have added a monthly fee on all customer accounts to support the e-rate discount programs for schools, libraries, and rural nonprofit health care providers. Subsidized text telephones (TTY’s, TDD’s, TT’s), telephone relay services (TRS), and communication assistants (CA) have become an integral part of telephone access for people with hearing and speech disabilities. Will subsidized terminals and peripherals become part of Internet access? Will the additional software and hardware needed by a person with a disability be subsidized when web access becomes a basic right? What will be included in the new definition of POTS (plain old telephone service)? It depends on who is making the decisions.

Rural residents (including rural residents with disabilities) need to be good advocates for their place on the information superhighway. People with disabilities in rural areas must contribute to rural telecommunications policy and implementation, both as community members and as watchdogs on disability access. If not, they are at risk of being further excluded from the benefits of technology innovation and information access. Telecommunications is but one component of the “information highway,” but is the area most sensitive to public policy planning. Telecommunications is still regulated as a public utility, whereas other information technologies (such as computers, television) are mostly unregulated outside their telecommunications aspects.

At the core of U.S. telecommunications policy is the goal of “universal service”—the idea that all Americans should have access to affordable telephone service (McConnaughey, Nila, and Sloan). Our longstanding national policy of sharing responsibility via cross-subsidization will be reinterpreted as universal service evolves in response to the 1996 Telecommunications Act and telecommunications advancements. Rural interests focus on which services will be included in universal service, who will pay for these services, which rural places and institutions will receive support, and how much support they will receive.

Key Developments in Telecommunications Access for Individuals with Disabilities: Final Report of the Telecommunications Access Advisory Committee, January 1997, Section 2

Barriers to Telecommunications and Design Solutions

Since the early 1970's, several telecommunications companies have initiated and supported the development of a number of access technologies. The application of Baudot technology (both teletypewriter hardware and the protocol) to text terminals for deaf, hard-of-hearing, and speech-disabled users, and its dissemination, was a principal focus of their efforts in this area. In addition to general initiatives, some of these companies provided case-by-case custom support for telecommunications functions for people with disabilities, including special assemblies, such as on-hook/off-hook switches that could be controlled by light touch, puff and sip, and electronic environmental controls. These products enabled many persons with disabilities to live more independently. The Telephone Pioneers published and distributed the first compendium of telecommunications accessibility tools known as the "Green Book."

In the late 1970's, consumers began to take their concerns to State utility commissions and legislatures. The State of California took the lead by assessing a line charge to finance the lending of TTY's. This program was later extended to other specialized customer premises equipment used by people who are hard of hearing as well as those with speech disabilities, and those experiencing other problems with telephone access.

In the 1980's, a number of telecommunications companies began efforts to maximize access for persons with disabilities. First, they participated in State equipment distribution programs for people with disabilities. Second, many companies participated in the initial efforts to establish telecommunications relay services (TRS). Finally, several companies initiated research in speech recognition technology that would offer new input and output opportunities for people who had speech, vision, and physical limitations.

By the 1980's, telecommunications and customer premises equipment had become much more diverse. Some of the new technologies improved accessibility and offered new functionality. With the diversity, however, came a new array of access problems. For example, the proliferation of facsimile (FAX) created a new barrier to people with low vision or blindness. At the same time, ongoing problems with access to the voice network led deaf individuals to advocate for telephone relay service in their States and ultimately nationwide, through Title IV of the Americans with Disabilities Act (ADA).

As the convergence of telephone, computers, and television technologies began to escalate in the late 1980's and early 1990's, individuals with disabilities began to realize both the tremendous potential of technology and the potential for setbacks in accessibility. Of particular concern was the impact of these technologies on employment and participation in the mainstream of technology. For example, the marriage of computers and networks brought the graphical user interface, an inaccessible interface for people who are blind, into the world of telecommunications, extending its importance as a tool in the workplace.

Developing accessibility guidelines for the new generation of telecommunications and customer premises equipment poses a series of issues for both the industry and individuals with disabilities. For example, with the rapid pace of technological innovation within the telecommunications industry, individuals with disabilities are concerned that new technologies be accessible so that they can compete in the workplace. Moreover, as technology becomes commonplace in the American lifestyle, individuals with disabilities need to know if they will be able to use such equipment, or if it will be usable with specialized customer premises equipment.

Legislative History

Prior to the 1980's, little had been done by State or Federal legislatures to address the needs of individuals with disabilities to use telecommunications equipment. Starting in the early 1980's, some States developed programs for the provision of telecommunications relay services and the distribution of specialized customer premises equipment, such as text telephones (TTY's), telebraille machines, and artificial larynxes.

The first important step in the development of a national telecommunications policy for persons with disabilities was the Telecommunications for the Disabled Act of 1982. This law expressly allowed States to require carriers to continue providing subsidies for specialized equipment needed by persons with impaired hearing, speech, vision, or mobility.

In 1986, Congress continued to recognize the importance of providing access to information technology when, in Section 508 of the 1986 Amendments to the Rehabilitation Act, Congress directed Federal agencies to limit their purchases to information technology that is accessible or could support accessibility.

In July 1990, the Americans with Disabilities Act (ADA) was signed into law. The ADA was the first comprehensive civil rights law to prohibit discrimination against persons with disabilities in employment, State and local government programs, places of public accommodation, transportation, and telecommunications. Title IV of the ADA mandated the establishment of a nationwide telecommunications relay service (TRS) by July 26, 1993.

National Information Infrastructure (NII)

The development of an advanced information and communications infrastructure that serves the needs of the public and private sectors is a priority for the Clinton administration. The NII initiative was launched in September 1993 by Vice President Albert Gore and Secretary of Commerce Ronald H. Brown with the release of *The National Information Infrastructure: Agenda for Action*. Federal support has been targeted to insuring accessibility and affordability, with the aim of preventing the United States from evolving into a nation of information “haves” and “have nots.” The administration is committed to developing a broad, modern concept of universal service—one that would emphasize giving all Americans who desire it easy, affordable access to advanced communications and information services, regardless of income, disability, or location. Through public and private investment, America’s information infrastructure is evolving into an interconnected network of networks, allowing us to share information and to communicate as local, national, and global communities. For more information on the NII: <<http://nii.nist.gov/>>

There are contradictory and even conflicting assumptions in existing and emerging rural telecommunications policy. For example, the potential for telecommunications to overcome the barriers of distance in health, education, and business is repeatedly cited to justify development of information infrastructure. Yet, it will always cost more to deliver telecommunications in rural areas. This forms the basis for establishing that specific deserving entities need subsidies, which in turn can provoke undesirable competition among special interests.

One such basic disconnect between policy and rural practice is telecommunications discounts for rural health care providers, for which only nonprofit organizations are eligible. Many rural communities are served by a single physician or small group practice, which though marginally profitable, does not qualify as a not-for-profit entity. This could worsen the problem of retaining physicians in rural health care. The policy may appear sensible from a national perspective, but not to a small-town doctor’s patient. The absence of subsidy creates disincentives for the physician to seek disability-related information or consultation online. Practical policy solutions may have to originate at the State or county level to reflect rural conditions. However, infrastructure policies may require more centralized coordination and monitoring, and may even need to look outside the telecommunications sectors to develop synergy and increase efficiency.

Cross-subsidization in public utilities is being subtly transformed by a more competitive framework. This is obvious in the privatization of the electric power industry, and in the new competitiveness and open participation encouraged in the 1996 Telecommunications Act. The

power shifts will be more than metaphorical. Unregulated Internet services (such as Internet telephony) are infringing on the profits of regulated telecommunications infrastructure providers, significantly challenging the economic models and basic assumptions underlying the common carrier paradigm that has been in place for 60 years. For example, long-distance voice connections on the Internet are considerably less expensive than traditional phone calls; additionally, Internet service providers do not currently pay into the universal service fund because they are not “common carriers.” Cross-subsidization has played a major role in ensuring that rural Americans can depend on affordable telephone service as an essential part of everyday life. Advanced telecommunications services are the economic lifeblood of modern communities, but they are not available in all locations. The breadth of equity issues in rural telecommunications is beyond the scope of this article. Suffice it to say that emerging models for addressing access, affordability, and comparability are being hotly debated.

Conclusions

While the 1996 Telecommunications Act is a powerful first step in ensuring accessible products and services, it is still only a technology fix. The larger question of how access—economic, physical, social, and environmental—is defined and who has a voice in defining it is especially pressing with regard to rural telecommunications access for people with disabilities.

Research and policy analysis has investigated national telecommunications policy for persons with disabilities (National Council on Disability), but not from a specifically rural perspective. Telecommunications applications in business, education, and health care are often cited as powerful rural development tools. But the intersection of economic development and disability services like vocational rehabilitation is just now being studied. Despite the fact that the word “rural” and the word “disability” are both frequently listed in the groups of people whose needs should be specifically targeted in National Information Infrastructure planning (see “National Information Infrastructure”), they appear to be regarded as discrete groups with little if any overlap.

In order for people with disabilities in rural America to benefit from innovation, disability-related issues need to infuse all aspects of rural telecommunications applications—economic development, employment, community development, education and life-long learning, wellness and health care, recreation, etc. Research and data collection can support integrated policy and program recommendations that remove community barriers and include all rural Americans. But it is grassroots community action that will ensure true and full access is a part of the local telecommunications environment.

For Further Reading . . .

Charles Firestone, *The Internet as Paradigm. Eighth Annual Review of the Institute for Information Studies*, Queenstown, MD: Aspen Institute, 1997 (abstract and info online at: <http://www.aspeninst.org/dir/polpro/CSP/IIS.html>).

Deborah Kaplan and John DeWitt, *Building the Framework, The Second Report of the Blue Ribbon Panel on National Telecommunications Policy*, Oakland, CA: World Institute on Disability (full text online at: <http://www.trace.wisc.edu>).

Jim McConnaughey, Cynthia Ann Nila, and Tim Sloan, *Falling Through the Net: A Survey of the "Have Nots" in Rural and Urban America*, U.S. Dept. Commerce, July 1995 (full text online at: <http://www.ntia.doc.gov/ntiahome/fallingthru.html>).

Jim McConnaughey and Wendy Lader, *Falling Through the Net: New Data on the Digital Divide*, U.S. Dept. Commerce, 1998 (full text online at: <http://www.ntia.doc.gov/ntiahome/net2/>).

J.M. McNeil, *Americans with Disabilities: 1991-92, Data from the Survey of Income and Program Participation*, U.S. Dept. Commerce, Economics and Statistics Administration, Bureau of the Census, Item: P70-33, 1993.

National Council on Disability (NCD), *Access to the Information Superhighway and Emerging Information Technologies by People with Disabilities*, September 1996 (full text online at: <http://www.ncd.gov/publications/superhwy.html>).

R. Offner, T. Seekins, and F. Clark, "Disability and rural independent living: Setting an agenda for rural rehabilitation," *Human Services in the Rural Environment*, vol. 15, no. 3, 1992, pp. 6-8.

Deval Patrick, Letter from Assistant Attorney General, Civil Rights Division, to Senator Tom Harkin, Sept. 9, 1996 (online at <http://www.usdoj.gov/crt/foia/cltr204.txt>).

Tom Seekins, "Rural rehabilitation," in A.E. Dell Orto and R.P. Marinelli, eds., *Encyclopedia of Disability and Rehabilitation, 1995*. New York: Simon and Schuster Macmillan Library Reference USA, pp. 643-651.

Telecommunications Access Advisory Committee, Final Report: Access to Telecommunications Equipment and Customer Premises Equipment by Individuals with Disabilities, Washington, DC: Architectural and Transportation Barriers Compliance Board, Jan. 1997 (full text online at: <http://www.trace.wisc.edu> or <http://www.access-board.gov/pubs/taacrpt.htm>).