THE DIGITAL DIVIDE DILEMMA: PRESERVING NATIVE AMERICAN CULTURE WHILE INCREASING ACCESS TO INFORMATION TECHNOLOGY ON RESERVATIONS

Therese Bissell*

I. INTRODUCTION

"[I]nformation is power. The development of a Navajo Nation information infrastructure is a historic event that holds many possibilities."[1]

A comparison of the access to technology on Native American reservations with urban American settings reveals a great divide. For example, only 39% of Native Americans living in rural areas have telephone service, while 94% of Native Americans living in urban areas have access to such service.[2] Overall, Native Americans living on reservations disproportionately lack access to both basic and advanced technologies because poor infrastructure makes the cost of obtaining fundamental telephone, cable, and computer service very high.[3] Despite recent proclamations that the vast disparity in access to information and communication tools, such as the Internet, between the rich and the poor has narrowed, the digital divide is still a very real concern for Native American tribes.[4]

The lack of technology on reservations is an important issue because it is directly connected to greater societal problems and concerns facing Native Americans who live on reservations, such as poverty and high unemployment rates. After the passage of the Telecommunications Act of 1996, the federal government, particularly the Federal Communications Commission ("FCC"), has made greater efforts in

* J.D., University of Illinois College of Law, 2004.

1. GEORGE ARTHUR, THE DEVELOPMENT OF INFORMATION TECHNOLOGY ON THE NAVAJO NATION – FULFILLING THE DREAM OF LIVING IN HARMONY IN RESERVATION CYBERSPACE, TESTIMONY BEFORE THE FEDERAL COMMUNICATIONS COMMISSION 10 (Jan. 29, 1999), *at* http://www.fcc.gov/Panel_Discussions/Teleservice_reservations/indians02.pdf.

2. Emily L. Dawson, Note, *Universal Service High-Cost Subsidy Reform: Hindering Cable-Telephony and Other Technological Advancements in Rural and Insular Regions*, 53 FED. COMM. L.J. 117, 126 n.41 (2000) (citing U.S. ENVIRONMENTAL PROTECTION AGENCY, ASSESSMENT OF TECHNOLOGY INFRASTRUCTURE IN AMERICAN INDIAN COMMUNITIES (1999)).

3. *See id.* at 126.

4. *See* Michelle Tirado, *The Disconnect: Will the Bush Administration Pull the Plug on the Digital Divide Programs*?, AM. INDIAN REP., Mar. 2002, at 12.

recent years to ensure that all Americans, including Native Americans, have access to telecommunications services.[5] However, despite widespread access to telecommunications and information technology throughout much of the United States, Native American reservations remain greatly underserved.[6]

Section II of this Note will provide a background and discuss the history of the U.S. government's relationship with Native Americans and the development of reservations in general. In addition, this section will examine recent federal government positions and policies toward Native Americans and take a brief look at the current conditions on reservations. Section III will discuss the existing digital divide by studying the technological developments in both urban and rural areas of the United States as compared to the technological standstill on reservations. This section will further look at the unique legal aspects of Native American tribes, including their quasi-sovereign status and strong desire to preserve Native culture. Following the analysis of the legal aspects of tribes, this section will then focus on the policy and social problems faced by Native Americans living on reservations. Many of these problems, such as high unemployment and poverty, are directly connected to the lack of basic infrastructure and access to technology on reservations. After an analysis of the legal and social issues arising from the lack of technology, Section IV will discuss some potential solutions and ways to narrow the digital divide while maintaining Native cultures and traditions. This section will focus on educational institutions, specifically tribal colleges and universities, as well as federally and privately funded programs that are working to improve infrastructure and increase access to information technology such as the Internet.

II. BACKGROUND

A. History of U.S. Policy Toward Native Americans and the Unique Relationship Between the Federal Government and Native American Tribes

In order to fully understand the problems with technology access and the lack of infrastructure on Native American reservations, it is first necessary to discuss the history and development of these reservations and the unique status of Native Americans in this country. Throughout the history of relations between the U.S. government and Native American tribes, federal policies toward the tribes have continued to

5. *See* FCC, STATEMENT OF POLICY ON ESTABLISHING A GOVERNMENT-TO-GOVERNMENT RELATIONSHIP WITH INDIAN TRIBES (2000), *available at* http://www.fcc.gov/Bureaus/OGC/Orders/2000/fcc00207.doc.

6. *Id.*

change and develop.[7] In general, due to the close relationship between Native American law and federal policy, as the government's attitude toward Native Americans has changed, so has Native American law.[8] The unique legal relationship between the federal and tribal governments is reflected in the United States Constitution, treaties, federal statutes, and numerous court decisions.[9]

At first, the U.S. government deemed Native American tribes to have all the sovereign powers of independent nations. A few early Supreme Court decisions authored by Chief Justice Marshall illustrated some of these important themes of federal policy toward Native Americans.[10] The Court continuously recognized Native American tribes as constituting separate, but dependent, sovereigns within the United States.[11] These early Supreme Court cases established that the federal government, not state or local governments, has complete authority over Native American tribes. In other words, the United States developed a federal trust relationship with the tribes that required the federal government to adhere to fiduciary standards when dealing with Native American tribes.[12] In addition, the federal government continuously recognized the separate status of Native American tribes and their land. For instance, the courts relied on Native American treaties that created areas of land as tribal territories.[13] The treaties often led to tribes giving up large tracts of land for general U.S. settlement in return for reservation lands.[14]

---

7. *See* James J. Belliveau, *Casino Gambling Under the Indian Gaming Regulatory Act: Narragansett Tribal Sovereignty Versus Rhode Island Gambling Laws*, 27 SUFFOLK U. L. REV. 389, 392 (1993).

8. *See id*.

9. *See, e.g.,* U.S. CONST. art. I, § 8, cl. 3 (stating that the federal government has all the power "to regulate commerce . . . with the Indian Tribes").

10. *See generally* Worcester v. Georgia, 31 U.S. (6 Pet.) 515, 558 (1832); Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831); Johnson v. M'Intosh, 21 U.S. (8 Wheat.) 543 (1823).

11. *See Worcester*, 31 U.S. (6 Pet.) at 559 (stating that Indian tribes are not able to directly engage in commercial relations with other foreign nations).

12. *See, e.g*., *Cherokee Nation*, 30 U.S. (5 Pet.) 1;

> [C]arrying out its treaty obligations with the Indian tribes, the Government is something more than a mere contracting party. Under a humane and self imposed policy which has found expression in many acts of Congress and numerous decisions of this Court, it has charged itself with moral obligations of the highest responsibility and trust.

Seminole Nation v. United States, 316 U.S. 286, 296–97 (1942);

> [When the] Federal Government takes on or has control or supervision over tribal monies or properties, the fiduciary relationship normally exists with respect to such monies or properties (unless Congress has provided otherwise) even though nothing is said expressly in the authorizing or underlying statute . . . about a trust fund, or a trust or fiduciary connection.

Navajo Tribe of Indians v. United States, 624 F.2d 981, 987 (Ct. Cl. 1980); *see also* United States v. Mitchell, 463 U.S. 206, 225 (1983) ("[A] fiduciary relationship necessarily arises when the Government assumes . . . control over . . . property belonging to Indians. All of the necessary elements of a common-law trust are present: a trustee (the United States), a beneficiary (the Indian allottees), and a trust corpus (Indian . . . lands, and funds).").

13. *See Worcester*, 31 U.S. (6 Pet.) at 557 (finding that treaties establish boundaries of tribal land).

14. *See* Belliveau, *supra* note 7, at 393 (citing H. BARRY HOLT & GARY FORRESTER, DIGEST OF AMERICAN INDIAN LAW: CASES AND CHRONOLOGY 19 (1990)).

Beginning in the late nineteenth century and continuing throughout much of the twentieth century, the U.S. government followed a policy of benign neglect toward Native Americans. During this period the federal government's focus was on trying to assimilate Native Americans into mainstream American society and encouraging them to leave their reservations.[15] In 1887, Congress passed the General Allotment Act ("GAA"), also known as the Dawes Act.[16] This allowed the President to "allot" land to individual Native Americans on reservations and the Secretary of the Interior could then negotiate with the tribes to buy any remaining land.[17] As a result, by the 1930s there was a tremendous loss of Native American identity, and tribal land holdings dropped from 138 million acres to 48 million acres by 1934.[18] The Supreme Court held that the GAA did not create private rights enforceable in suits for money damages; it only created a limited trust relationship between the federal government and the allottee.[19] However, other statutes and regulations do impose judicially enforceable fiduciary duties and place full responsibility upon the federal government to manage resources and land for the benefit of Native Americans.[20]

In response to the criticism of the GAA and its negative effects on Native Americans, Congress passed the Indian Reorganization Act ("IRA") in 1934.[21] The IRA ended the allotment practice, encouraged the Secretary of the Interior to try to restore surplus tribal lands, and mandated that Congress support increased Native American self-governance.[22] The next step in federal Native American policy took the form of a policy of "termination," in which Congress attempted to make Native Americans living on land within the United States subject to the same laws and responsibilities as all citizens.[23] Under this policy, the federal government terminated several tribes.[24] At the same time, the Bureau of Indian Affairs' relocation program encouraged Native Americans to leave reservations and relocate to metropolitan areas.[25]

---

15. *See* Kevin J. Worthen, *The Role of Local Governments in Striking the Proper Balance Between Individualism and Communitarianism: Lessons for and from Americans*, 1993 BYU L. REV. 475, 491–93 (1993) (citing LYMAN TYLER, A HISTORY OF INDIAN POLICY 166 (1973)).

16. *See* Indian General Allotment Act, 25 U.S.C. § 334 (2000).

17. *Id.*

18. Belliveau, *supra* note 7, at 395 (citing H. BARRY HOLT & GARY FORRESTER, DIGEST OF AMERICAN INDIAN LAW: CASES AND CHRONOLOGY 19 (1990)).

19. *See* United States v. Mitchell, 445 U.S. 535, 542 (1980).

20. *See* United States v. Mitchell, 463 U.S. 206, 224 (1983) ("In contrast to the bare trust created by the [GAA], the statutes and regulations now before us clearly give the Federal Government full responsibility to manage Indian resources and land for the benefit of the Indians."); *see also* United States v. Navajo Nation, 537 U.S. 488 (2003).

21. *See generally* 25 U.S.C. §§ 461–479 (2000).

22. *See id*.

23. H.R. Con. Res. 108, 83d Cong., 67 Stat. B132 (1953).

24. Belliveau, *supra* note 7, at 396.

25. *Id*. at 397.

This program generally had negative effects and created large groups of poor Native Americans in metropolitan areas.[26]

B. Recent Federal Government Policies and Conditions on Reservations

In the second half of the twentieth century, beginning with the enactment of the Indian Civil Rights Act of 1968, Congress attempted to rectify the negative results of earlier federal Native American policies by shifting modern policy more toward tribal self-determination, thus making it possible for tribes to have increased control over their own development goals and programs.[27] Not only did the Indian Civil Rights Act support tribal existence, it also required tribes to provide their members with the protections of the Bill of Rights.[28] In 1970, President Richard Nixon established the policy of self-determination that is presently followed by the federal government.[29] Although this idea is not new, it does promote tribal self-management and stresses the importance of a trust relationship between the federal government and Native American tribes.[30] President Clinton most recently demonstrated the federal policy of self-determination by encouraging federal agencies to respect the tribal governments and their sovereignty.[31]

Today, despite the constantly changing federal policy, Native American tribes remain vibrant with 312 federally recognized tribes located on reservations throughout the United States.[32] Much of the Native American population lives on reservations rather than in larger metropolitan areas. Of the approximately two million Native Americans in the United States, about 60% live in tribal areas or the surrounding counties.[33] Many reservations currently face harsh economic conditions. For example, Native Americans and Alaska Natives have the highest poverty rate of all ethnic groups in the country at 25.9%, and unemployment rates on reservations are over 50%.[34] Moreover, the per

26. *Id*. (citing FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW 170 n.186 (1982)).
27. *See* 25 U.S.C. §§ 1301–1341 (2000).
28. *See id*. § 1302.
29. H.R. DOC. NO. 91-363 (1970).
30. *Id*.
31. *See* Exec. Order No. 13,084, 63 Fed. Reg. 27,655 (May 14, 1998).
32. Belliveau, *supra* note 7, at 389.
33. Thirty-seven percent lived in tribal areas and 23% lived in the surrounding counties; of the remaining population, 31% were residents of U.S. metropolitan areas and 9% lived in other non-metropolitan areas. *See* U.S. ENVTL. PROT. AGENCY, AM. INDIAN ENVTL. OFFICE, RESOURCE GUIDE ch. 1 pt. I.B.1, *available at* http://www.epa.gov/indian/resource/chap1.htm#7 (last modified Aug. 30, 2004).
34. Marjane Ambler, *Sustaining Our Home, Determining Our Destiny*, TRIBAL C. J. OF AM. INDIAN HIGHER EDUC., Spring 2002, *at* http://www.tribalcollegejournal.org/themag/backissues/spring2002/spring2002ee.html.

capita income of Native Americans on reservations is only approximately $4500.[35]

The high poverty rates result from many factors, including the political and economic history of reservations, as well as their geographic isolation.[36] Yet despite the high poverty levels, many Native Americans who leave reservations often decide to return after pursuing education or employment elsewhere. One of the main reasons why so many Native Americans choose to live on remote, rural reservations is their desire to participate in tribal culture and traditional activities.[37] Although critics of the reservation system argue that reservations are necessarily destitute because of tribal cultures and failure to adapt to mainstream American society, Native Americans recently have proven that programs with strong cultural foundations, such as tribal colleges, are successful.[38] Cultural attractiveness of reservations aside, the fact is that a majority of the Native American population lives in areas that are remote, small, and poor, with little access to technology, employment, and other opportunities.

III. ANALYSIS

A. The Digital Divide

While much of the country has widespread access to telephone service, computers, and the Internet, Native Americans living on reservations do not have these same opportunities, due in large part to a lack of resources to provide for even basic infrastructure. As illustrated by the Navajo Nation, "[b]ecause of a lack of adequate financial resources and the naturally deliberate pace of government in providing much needed basic services to residents of the Navajo Nation relative to the extremely quick pace of developments in technology, the government is always playing a losing game of catch-up."[39] In contrast to the incredible increase in telecommunications and information technology in both urban and rural areas of the United States during the previous century, many Native Americans living on reservations lack access to even telephones. Therefore a vast digital divide, defined by the gulf in

35. Kade L. Twist, *May the Tribes Have Adequate Access: New FCC Orders for Indian Country*, Digital Divide Network, Sept. 16, 2000 (on file with the *Journal of Law, Technology & Policy*) [hereinafter Twist, *Adequate Access*].

36. Ambler, *supra* note 34.

37. *Id*.

38. *See id*. (discussing how Native American students have thrived in tribal colleges with strong cultural foundations and are proving that living on a reservation can be economically practical). For example, "[a] 1999 survey of tribal college graduates by the American Indian Higher Education Consortium ("AIHEC") found that 74% were employed—even though unemployment rates on reservations were over 50%." *Id.*

39. Arthur, *supra* note 1, at 3.

access to technology tools and related learning opportunities, currently exists between reservations and the rest of the country.[40]

1. Information Technology Development in Urban and Rural Areas of the United States

In general, there has been an incredible increase in telecommunications and information technology access in the last century throughout the country. In 2001, 95.5% of U.S. households had telephone service.[41] That is an increase of 3.7% since 1983.[42] In 1920, only 35% of households in the United States had telephones.[43] This increase in telephone and telecommunications service penetration has occurred across the country and over all economic strata.[44] For instance, the telephone penetration rate in 2001 was 79.1% for households with annual incomes of less than $5,000, and the total penetration rates by state ranged from a low of 88.1% in Mississippi to a high of 97.8% in New Hampshire.[45] The 2002 FCC Telephone Subscribership Report also indicates that the penetration rate for households headed by Caucasians was 95.6%, those headed by African Americans was 90.3%, and those headed by Hispanics was 90.8%.[46] Furthermore, the FCC report reveals that the penetration rate for unemployed adults was 92.0%, while the rate for employed adults was 96.2%.[47] As these statistics illustrate, only a very small percentage of both rich and poor Americans, in both urban and rural areas, do not have telephones or telephone service.

The percentage of American households with a computer and Internet service has sharply increased in recent years. In 1994, only 24.1% of U.S. households had a computer, but in 2001 that figure improved to 56.5%.[48] Internet use has also increased dramatically in the United States, with 50.5% of American households using the Internet in 2001 compared to 18.6% of households just four years earlier in 1997.[49] There are approximately 840 million people online worldwide, and 35.2% of those reside in English-speaking countries.[50] Furthermore,

---

40. *See* Mark Sargent, *Community Technology Centers: A National Movement to Close the Digital Divide*, EDUTOPIA, *at* http://www.glef.org/php/article.php?id=Art_992&key=188 (last visited Feb. 2, 2005).

41. FCC, TRENDS IN TELEPHONE SERVICE 17-6 (2002), *available at* http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/trend502.pdf [hereinafter FCC, TRENDS].

42. *See id*. at 17-4, 17-6.

43. *Id*. at 17-5.

44. *See generally id.* at 17-1 to 17-6.

45. *Id*. at 17-4.

46. Press Release, FCC, FCC Releases New Telephone Subscribership Report (May 21, 2002), *available at* http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/subs1101.pdf.

47. *Id*.

48. FCC, TRENDS, *supra* note 41, at 17-6.

49. *Id*.

50. Global Reach, Global Internet Statistics (by Language), *at* http://www.glreach.com/globstats/ (last modified Sept. 30, 2004).

there are more computers in the United States than in the rest of the world combined.[51] Internet availability has also increased in rural areas of the country, as evidenced by a Department of Commerce study revealing that rural areas have surpassed central cities in Internet availability and use, and are just slightly behind urban areas.[52] Thus, it is clear that in both urban and rural areas many Americans have increased their access to information technology in just the last few years.

As this information demonstrates, access to and advancements in technology have increased dramatically throughout the twentieth century in much of the United States, particularly in the fields of telecommunications and information technology. In general, the twentieth century was a time of incredible technological development and growth. While only about one-third of American households had telephones in the 1920s, that figure had risen to nearly 100% by the late 1990s.[53] In addition, the availability of computers and Internet service has grown rapidly and spread throughout American households.

2. Universal Service and the Telecommunications Act of 1996

"Universal service" is the term used to refer to the public policy initiative designed to provide access to telecommunications services for all Americans, especially those in high-cost rural areas.[54] Basically, universal service is a mix of state and federal programs designed to reach the goal of affordable access to telephone and telecommunications services through the use of subsidies.[55] The idea of universal service is not new. The preamble to the Communications Act of 1934 first discussed the idea of what is now known as universal service.[56] The Telecommunications Act of 1996 ("1996 Act") is the modern statutory basis for the idea of universal service.[57] Prior to its enactment, various subsidies collected from long-distance companies and other service providers funded universal service, so the primary purposes of the 1996 Act were to implement a competitive market system and provide congressional support for the universal service program.[58]

---

51. Frontline/World, India—Hole in the Wall, Facts and Stats, *at* http://www.pbs.org/frontlineworld/stories/india/didyouknow.html (last visited Sept. 1, 2004).

52. *See* U.S. DEP'T OF COMMERCE, FALLING THROUGH THE NET: TOWARD DIGITAL INCLUSION (2000), *available at* http://www.ntia.doc.gov/ntiahome/fttn00/contents00.html (indicating in Figure I-3 that Internet availability and use in 2000 was 42.3% in urban areas, 38.9% in rural areas, and 37.7% in "central city" areas).

53. FCC, TRENDS, *supra* note 41, at 17-5.

54. Dawson, *supra* note 2, at 119.

55. *See* Markenzy Lapointe, *Universal Service and the Digital Revolution: Beyond the Telecommunications Act of 1996*, 25 RUTGERS COMPUTER & TECH. L.J. 61, 63 (1999).

56. Communications Act of 1934, 48 Stat. 1064 (1934) (current version at 47 U.S.C. § 151 (2000)).

57. Dawson, *supra* note 2, at 120.

58. *Id*.

The 1996 Act makes a commitment to ensure that rural customers, such as Native Americans on reservations, receive the same benefits as those in urban areas by encouraging competition in high-cost rural areas. The 1996 Act mandates that:

> [c]onsumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services . . . that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.[59]

The goal of providing telecommunications services to Native American reservations is also based on additional provisions of the 1996 Act.[60]

In addition, two federal universal service programs provide financial assistance to low-income telephone subscribers and help ensure that low-income households can afford telephone service. In 1987, the Link-Up America program was established to help low-income households pay the initial costs of commencing telephone service.[61] The Lifeline Assistance Program, established in 1984, provides low-income households with discounts on their monthly cost of telephone service.[62] In 2000, the FCC expanded both of these programs to address the needs of individuals living on tribal lands.[63] According to the FCC, there were nearly 52,000 tribal Lifeline Assistance subscribers in 2001, up from around 18,000 in 2000.[64] There were also nearly 18,500 tribal Link-Up Assistance subscribers in 2001 compared to 2000 the prior year.[65]

3. Technological Standstill on Native American Reservations

Despite these recent actions pursuant to the 1996 Act and the efforts to promote service in rural parts of the country, not all Americans are enjoying access to technology, particularly telecommunications and information technology. As mentioned previously, many Native Americans living on reservations do not have access to basic technology, such as telephones, and many reservations lack the resources needed to develop proper infrastructure. Currently, a total of 47% of households on Native American reservations have telephone service.[66] On individual reservations the percentage is much lower. For example, only 22% of

59. 47 U.S.C. § 254(b)(3) (2000).
60. *Id*. § 254(i).
61. FCC, Promoting Deployment/Subscribership in Underserved Areas, Including Tribal and Insular Areas, *at* http://www.fcc.gov/Bureaus/Wireless/Factsheets/tribal_lands_fact_sheet.txt (last visited Aug. 23, 2004) [hereinafter FCC, Promoting Deployment].
62. *Id*.
63. *See generally* FCC, TRENDS, *supra* note 41, at 7-3.
64. *Id*. at 7-7.
65. *Id*. at 7-9.
66. FCC, Promoting Deployment, *supra* note 61.

households on the Navajo reservation have telephone service.[67] A look at the Navajo Nation reveals deficiencies in basic resources to provide for infrastructure as well. For instance, 51% of Navajo reservation residents do not have indoor plumbing, 48% lack complete kitchen facilities, and 54% use wood as a major source of heating.[68] As these figures demonstrate, while much of the country is experiencing the opportunities that come with Internet and computer use, many Native Americans living on reservations do not even have modern household conveniences, much less access to further information technology, due to lack of resources and poor infrastructure.

B. The Connection Between the Lack of Technology and the Social and Economic Problems on Native American Reservations

While much of the United States is seeing great increases in technology, Native American reservations are faced with severe social problems in addition (and related to) a lack of technology, as evidenced by the previous statistics. Unemployment and poverty rates on Native American reservations are high, and it is evident that the 312 Native American reservations face critical economic and social problems. Many of the problems faced by the reservations have arisen due to their physical location in remote areas, lack of basic infrastructure, unique quasi-sovereign status, and other barriers that prevent them from gaining access to information technology. Preservation of culture, while vital to Native American tribes, may serve as a barrier. As previously discussed, despite poor conditions and problems, many Native Americans choose to live on reservations because of their desire to maintain their traditions and culture.

1. Social and Economic Problems Facing Reservations

The social and economic problems facing Native Americans, such as high poverty and unemployment, are closely related to the digital divide and a lack of technology on reservations. Gaining access potentially is a way for tribes to develop and thereby solve some of the main economic problems on reservations, but inadequate financial resources for improving infrastructure prevent tribes from gaining access to technological improvements. Communities with less access to basic technology tools are at a disadvantage when compared to areas with more access when it comes to seeking better education, better jobs, even higher levels of civic participation.[69] Communities such as reservations that do not have the tools and skills to compete in the digital economy

67. *Id.*

68. Arthur, *supra* note 1, at 3.

69. *See* Digital Divide Network: Access, *at* http://www.digitaldivide.net/community/access (last visited Feb. 2, 2005) (providing background material and archive of articles on specific disadvantages).

are at a definite disadvantage compared to communities that have these tools and skills.[70] Moreover, the problems facing Native American reservations may increase dramatically. If Native Americans lack access and the skills to use technology, they are unlikely to attract and sustain new businesses that potentially could stimulate economic growth.[71]

The lack of access to information technology on reservations is also a significant hurdle to Native Americans trying to gain employment in the current technology-driven economy. Many of today's jobs require some technical training.[72] In addition, the United States sends a great deal of work overseas and, as Pete Homer, Jr., director of the Small Business Administration's Office of Native American Affairs, testified before the Senate Committee on Small Business and Entrepreneurship, overseas businesses "often fill the void in U.S.-based information technology businesses, while the potential resources of Native American businesses on and off Native American reservations are overlooked."[73] With the proper training and access to information technology, much of that work potentially could be done on reservations. Furthermore, large numbers of foreign nationals have come to this country to "fill jobs in science and technology."[74] This is due in part to the Native American workforce not having the needed skills that could be developed with greater access to information technology.[75]

2. Barriers to Information Technology Development on Reservations

Native American nations are faced with formidable barriers to developing and thus increasing access to information technology. These barriers include the isolation of reservations in rural areas, low population densities, a shortage of basic infrastructure such as electricity and telephones, and the complex relationship between the federal government and Native American nations. As previously discussed, the lack of economic resources and infrastructure in the Navajo Nation, for example, is quite staggering compared to a majority of the United States. Thus the digital divide is a critical problem facing Native Americans on reservations.

---

70. *See* Digital Divide Network: Economic Development, *at* http://www.digitaldivide.net/community/ecodev (last visited Feb. 2, 2005) (addressing differences in prosperity between communities with access to technology and those without it).

71. *See id.*

72. *Id.*

73. Pete Homer, Jr., *Testimony to the Senate on Small Business*, INDIAN COUNTRY TODAY, May 8, 2002, at A5; *see also* Twist, *Adequate Access, supra* note 35.

74. Peter Hardin, *Allen and Lott Join Forces on Measure; Funds to Aid Black Colleges*, RICHMOND TIMES-DISPATCH, Feb. 16, 2003, at A-3.

75. *Id.*

a. Lack of Resources and Infrastructure

As an example of the lack of basic infrastructure and resources, schools on Native American reservations in western Alaska found that the last mile of their telephone line was not covered by local telephone companies.[76] When a plan was developed to connect the last mile, the local telephone companies used political pressure to prevent the connection because they would not see any profit.[77]

Although a number of universities have undertaken efforts and programs to bring computers and the Internet to Native American reservation schools, problems still persist and many are unable to take advantage of the programs. Northern Arizona University offers free Internet service to reservation schools through the use of interactive instructional television sites.[78] Despite the fact that there are almost one thousand computers with Internet access in the university's area, efforts to have other local schools join at the free Internet routers have been largely unsuccessful because the telephone companies do not have lines available, or the cost to lease the lines is simply too expensive for the schools.[79] Another example is an elementary school on the Hopi Reservation that "[cannot] afford a $600 per month telephone bill for a single 56 kbps line just to connect to free Internet service" provided by a nearby university.[80] Furthermore, many tribal schools and government entities are great distances from institutional centers and it would take extraordinary efforts to connect them.[81]

Other related infrastructure and resource problems on Native American reservations include multiple companies providing services. For instance, on some areas of the Navajo Nation, telephone service is provided by more than one company.[82] This actually leads to increased costs and difficulties because if a line goes down in these locations, two separate companies have to be notified. Both companies have to be at the location at the same time to provide service on the line since one company services the line while the other services the system.[83] If one company shows up but not the other, the customer will still be charged for the service call, thus increasing costs and hassles to Native American reservation customers even if they have telephone service.[84]

76. Arthur, *supra* note 1, at 24.
77. *Id.*
78. *Id.*
79. *Id.*
80. *Id.*
81. *Id.*
82. *Id.* at 8.
83. *Id.*
84. *Id.*

b. The Complex Relationship Between Reservations and the Government

The difficulty and high cost of establishing communications infrastructure, combined with the complex relationship between the federal government, states, and Native American nations, is the biggest challenge to information technology access on reservations.[85] The complex regulatory landscape poses many barriers to the economic development of Native American reservations mainly "because it restricts the speed of business and impedes the flow of capital."[86] In addition, the extent to which the federal and state governments have regulatory authority over telecommunications services on reservations has never been clearly defined.[87] Often state regulatory agencies have exercised jurisdiction by default because tribes have not exercised their power to regulate services within the reservations.[88] On the other hand, some states such as Arizona and California recognize that the jurisdiction over the telecommunications companies providing service on reservations belongs to the tribe.[89] Therefore, the complex relationship between the government and reservations causes the resolution of normally simple issues, such as jurisdictional authority, to require a long tribal-specific analysis of relevant case law, statutes, and treaties.[90]

There are also problems with regulating rights of way on reservations. One example from the Navajo Nation illustrates the frustration facing Native American reservations in gaining access to telecommunications services and technology. A fiber was installed from New Mexico to Colorado that crossed into part of the Navajo Nation.[91] The local telephone company acquired the right of way through a joint use agreement with the New Mexico State Highway Department.[92] However, the Navajo Nation was not made aware of the joint use agreement until after the project was complete.[93] As a result, the Navajo Nation was unable to provide proper input or influence to ensure that towns on the route would be guaranteed access to the services provided through use of the fiber.[94] Hence, the complex relationship between Native American reservations and the government, including right of

85. *See* Twist, *Adequate Access, supra* note 35.

86. Kade L. Twist, *Regulatory Complexity in Indian Country*, Digital Divide Network (last viewed online Sept. 8, 2004) (on file with the *Journal of Law, Technology & Policy*) [hereinafter Twist, *Regulatory Complexity*].

87. JAMES CASEY ET AL., THE BENTON FOUNDATION, NATIVE NETWORKING: TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY IN INDIAN COUNTRY 15 (Apr. 1999), *available at* http://www.benton.org/publibrary/native/bentonne.pdf.

88. *Id.*

89. *Id.*

90. *See* Twist, *Regulatory Complexity*, *supra* note 86.

91. Arthur, *supra* note 1, at 8.

92. *Id.*

93. *Id*.

94. *Id.*

way issues, imposes a substantial barrier to information technology access on reservations.

c. Problems of Physical Location and Politically Insignificant Population

There are other unique problems that increase the difficulties Native American reservations face in accessing information technology. One problem is the location of many Native American reservations. Reservations are often isolated and located far from major metropolitan cities. For instance, the first major problem faced by researchers at the University of California - San Diego, who were involved in a project to bring high-speed Internet access to the La Jolla and Pala tribes in southern California, was the rugged terrain where the reservations were located.[95] The land ranged from valleys at an elevation of 2000 feet above sea level to mountain peaks at 5000 feet.[96] In addition to the physical location of many reservations, Native Americans do not constitute a very large portion of the U.S. population and, consequently, they are often seen as politically insignificant. For example, the first study done by President George W. Bush's administration on the digital divide does not even mention Native Americans.[97]

C. Preserving Native American Traditions

Development of information technology has the potential to provide great opportunities for Native Americans living on reservations. Information technology could, among other things, enhance communication among organizations, expand the availability of resource options to entities such as medical facilities, provide resources to educational systems, create employment opportunities, and increase the technology literacy of Native Americans.[98] However, steps to narrow the digital divide must be balanced with the history and grand traditions of Native Americans. It is important to look at the desire of many Native Americans to live on reservations and within tribal communities in order to understand the lack of technological development on Native American reservations.[99]

---

95. *See* Press Release, National Science Foundation, Research Network Brings Wireless Internet to Native American Reservations (Feb. 8, 2001), *available at* http://www.nsf.gov/od/lpa/news/press/01/pr0111.htm.

96. *Id*.

97. Kade Twist, *A Nation Online, But Where Are the Indians?, at* http://www.hartford-hwp.com/archives/41/402.html (last visited Feb. 2, 2005). *See generally* U.S. DEP'T OF COMMERCE, A NATION ONLINE: HOW AMERICANS ARE EXPANDING THEIR USE OF THE INTERNET (Feb. 2002), *available at* http://www.ntia.doc.gov/ntiahome/dn/index.html.

98. *See* Tirado, *supra* note 4 (stating that the Internet has the potential to become a virtual cultural tool and provide opportunities for Native Americans to display and preserve arts, ideas, and values).

99. *See* Ambler, *supra* note 34.

There is concern that technology will penetrate deeply into Native American communities and lead to greater costs than benefits. As Jean Whitehorse, a training and outreach coordinator for the New Mexico State Library, found when she went to explain the benefits of having computers and Internet connections to tribal elders and officials, "[m]any of them felt bringing computers would take children's interest away from their community traditions and families and would expose them to bad things."[100] There is concern that technological processes of assimilation will dominate and thus be an effective way of homogenizing Native American communities.[101] In general, there is a feeling that if Native American nations try to adopt Western or American institutions they will be unsuccessful in Native communities.[102] As previously discussed, past attempts to assimilate Native Americans into American society have had tragic consequences, and earlier federal government programs such as the GAA resulted in a tremendous loss of Native American identity.[103] Given the history of Native Americans in this country, it is not surprising that many are reluctant to embrace technological developments that could potentially lead to greater assimilation and loss of identity and traditions.

On the other hand, technology also provides an opportunity for Native Americans not only to develop and possibly solve some of the economic troubles they face, but also to protect and spread awareness of their culture and traditions.[104] For instance, computer and Internet use could potentially connect Native American children in different tribes and help them to more fully learn about their history and traditions. Therefore, although there are legitimate concerns about the potential for technological development to increase assimilation, there is a great potential for increased communication among Native Americans and a shared understanding of their cultures and traditions.[105]

The development of information technology on Native American reservations represents a great opportunity to decrease the digital divide that exists between reservations and much of the rest of the United States. At the same time, it is important to consider and address concerns about maintaining Native American cultures and traditions in the midst of expanding infrastructure and telecommunications technology on reservations. The same information technology that represents an opportunity for Native Americans living on isolated reservations to "use technology to expand their knowledge, improve

100. Jessica Dorr & Richard Akeroyd, *New Mexico Tribal Libraries: Bridging the Digital Divide*, COMPUTERS IN LIBRARIES, Oct. 2001, at 36, 40, *available at* http://www.infotoday.com/cilmag/oct01/dorr&akeroyd.htm.

101. Duane Champagne, *Challenges to Native Nation Building in the 21st Century*, 34 ARIZ. ST. L.J. 47, 48 (2002).

102. *Id*.

103. *See* Belliveau, *supra* note 7, at 395.

104. *See* Tirado, *supra* note 4.

105. *See id*.

their daily lives, and fully participate in this nation's prosperity"[106] also may lead to the infiltration of mainstream American values on reservations. As previously mentioned, earlier attempts to assimilate Native Americans into mainstream society had disastrous consequences.[107] Therefore, it is likely that increased attempts to bring information technology to reservations may face resistance from those who desire to maintain precious and unique Native American traditions and values.

IV. RESOLUTION

It is evident from an analysis of the substandard technology on Native American reservations that the great divide between them and urban areas of the country is a substantial problem with no easy solution. However, some rather recent developments, especially in the area of wireless technology programs, have the potential to help increase access to information technology. It is first important to examine the growth of tribal colleges and their role in helping to improve access to information technology for their students as well as the entire reservation population. The discussion will then shift to the role of government-initiated programs, such as the FCC's bidding credits program. In addition, there are many private programs, including the Bill & Melinda Gates Foundation's Native American Access to Technology Program (discussed *infra* Section IV.C.) and Native-run organizations such as the National Indian Telecommunications Institute, which are working to increase access to technology in remote tribal areas and narrow the digital divide. An expansion of federal funding for tribal colleges would be the best opportunity for Native Americans to gain access to information technology while preserving their unique culture and traditions.

A. Tribal Colleges and Universities

1. Background of Tribal Colleges and Universities

Today there are thirty-four tribal colleges and universities ("TCUs") throughout the country.[108] These Native-run educational institutions are beginning to play a large role in narrowing the digital divide by helping more reservations gain access to technology and

106. *Technology Infrastructures at Minority Serving Institutions: Hearing on S.196, The Digital and Wireless Network Technology Program Act, Before the Senate Comm. on Commerce*, 108th Cong. (Feb. 13, 2003), *available at* http://commerce.senate.gov/hearings/testimony.cfm?id=721&wit_id=1929 (statement of Dr. Gerald Monette, President, Turtle Mountain Community College) [hereinafter *Technology Infrastructures Hearings*].

107. *See* Belliveau, *supra* note 7, at 395.

108. *Technology Infrastructures Hearings*, *supra* note 106.

training Native Americans in technical areas. Diné College, founded in 1970 in South Dakota, was the first Native-run college and was soon replicated in other areas.[109] Most TCUs are located on reservations in extremely remote, poor areas in the Great Lakes, Great Plains, and Southwest.[110] Despite being the most poorly funded higher education institutions in the nation, TCUs provide educational opportunities to more than 30,000 Native American students each year.[111] Furthermore, TCUs serve their communities in many ways beyond providing college classes; they function on many reservations to improve the entire community and help bring Native Americans closer to self-sufficiency.[112] TCUs serve as "community centers, libraries, tribal archives, career and business centers, economic development centers, public-meeting places, and child care centers."[113]

As previously discussed, cultural preservation is a key aspect to understanding Native American reservations, and any solution to the lack of technology in these communities must reflect and respect this desire to preserve Native traditions and culture. TCUs initially were established because Native Americans wanted institutions that "would reflect their cultures and respect their students for who they were as Diné, Lakota, Hidatsa, Anishinable, or Assiniboine people."[114] When the first TCUs were established over thirty years ago, many critics said that Native Americans could not build colleges because of a lack of facilities, money, and talent.[115] Today, AIHEC has thirty-four members in twelve states that educate about 30,000 students from 250 federally recognized tribes.[116]

These Native-run educational institutions could help bring technology into the lives of many in their communities. While TCUs currently are important in the preservation of the history, languages, and religions of their communities, many Native Americans emphasize that TCUs must continue to help preserve the Native intellect and

109. Laura M. Dellinger, *Tribal Colleges Growing: AIHEC Spring Conference Shows Vitality*, INDIAN COUNTRY TODAY, Apr. 10, 2002, at D1 (providing that membership into AIHEC is expected to grow to forty-five institutions within the next two years).

110. *Technology Infrastructures Hearings*, *supra* note 106.

111. *Id*.

112. *Fiscal Year 2004 Budget: Hearing on the President's Budget Request for Indian Programs for Fiscal Year 2004 Before the Senate Comm. on Indian Affairs*, 108th Cong. 2 (2003), *available at* http://indian.senate.gov/2003hrgs/022603hrg/022603wit_list.htm [hereinafter *Indian Affairs Hearings*] (statement of Ron McNeil, Chairman, President's Board of Advisors on Tribal Colleges and Universities) (stating that TCUs "are often called beacons of hope for our people," and that "[w]e provide much-needed high school completion (GED), basic remediation, job training, college preparatory courses, and adult education programs").

113. *Id.*; *see also* Dellinger, *supra* note 109 (stating that tribal colleges are provided with only 50% as much funding as non-tribal community colleges). Also, tribal colleges are the fastest-growing higher educational institutions in the country with a growth of approximately 5% per year. *Id.*

114. Ambler, *supra* note 34.

115. *Id.* ("When the first tribal colleges were born in the late 1960s and early 1970s, the critics lined up to tell them that they were fools. Indian people could not possibly build colleges.").

116. *Indian Affairs Hearings*, *supra* note 112, at 1.

philosophy.[117] It is important that TCUs continue to encourage their students to "think Indian," otherwise, as one tribal leader stated, "we'll end up being white people speaking Indian languages."[118] Therefore, although TCUs potentially are institutions that, with appropriate levels of funding, could help many Native Americans gain access to information technology, it is necessary for the schools and those working with them to respect the tribes' desires to preserve their culture and language.[119]

2. Opportunities to Increase Information Technology on Reservations Through TCUs

Many Native American leaders believe that information technology in tribal colleges represents a great "digital opportunity."[120] As the testimony of Dr. Gerald Monette, president of the Turtle Mountain Community College, before the Senate Committee on Commerce, indicates:

> Today, information technology is an integral part of teaching, learning, and research in higher education. Tribal colleges and other minority serving institutions, which are generally the nation's poorest and most isolated institutions, have the most to gain—or lose—in this new technological revolution. We must, therefore, develop strategies to ensure that our institutions have adequate technology infrastructures and that our students, faculty, and communities have the capacity to use technology to expand their knowledge, improve their daily lives, and fully participate in this nation's prosperity.[121]

Therefore, it is evident that many barriers exist that prevent TCUs throughout the country from being a perfect solution to the lack of access to information technology on Native American reservations.

Despite the problems faced by many TCUs, there are some recent projects centered on wireless technology that offer hope that development increasingly will occur at TCUs and thus allow many in their communities to gain access to technology. Wireless technology presents a possible solution because, as discussed previously, most reservations are located in very rural, remote areas with sparse populations. It is therefore not cost-effective for telephone companies to invest in lines to connect tribal lands. For example, EDUCAUSE, as part of the National Science Foundation-supported Advanced Networking Project with Minority Serving Institutions ("AN-MSI"),

117. *See* Dellinger, *supra* note 109.

118. *Id.*; *see also* Ambler, *supra* note 34 ("Tribal colleges demonstrate that students thrive when Indian people design their own appropriate education systems and when that system has a strong cultural foundation.").

119. *See* Dellinger, *supra* note 109.

120. *Technology Infrastructures Hearings*, *supra* note 106.

121. *Id.*

recently piloted a wireless technology program at four TCUs.[122] The AN-MSI project is designed to improve networking architecture, Internet connectivity, and technical support in remote areas, as well as help TCU administrators improve their technical knowledge.[123] Through the installation of a broadband wireless network for computing and telecommunications needs, the four TCUs involved in the project underwent an information technology makeover that established a wireless networking infrastructure.[124] This new infrastructure has improved Internet access at sites on the reservations and colleges and will make the TCUs the main Internet service providers for their reservations.[125]

In contrast to most higher education institutions, which typically rely on wired networking infrastructures, the AN-MSI project "seeks to demonstrate that wireless networking systems in place of wired systems can yield lower costs and higher quality service for remote, rural-based institutions."[126] Many in the industry believe that wireless networking is a very cost-effective way to extend Internet access and Internet-based telephone services in remote, rural areas because it eliminates the recurring wired-line costs.[127] This cost-effective wireless project offers a potential solution to the problem of lack of access to information technology on Native American reservations. As Dr. Monette further stated in his testimony before the Senate Committee on Commerce:

> [Through the wireless project] the colleges are weaving a wireless web of connectivity around our reservations, connecting institution sites, tribal offices, and K-12 schools to one another and the Internet through a high-speed backbone running between the college and existing Internet access points or state university systems. Goals of this new technology use are to enable each TCU to acquire and sustain affordable high-speed broadband

122. *Id.* (explaining that the National Science Foundation provided a $6 million four-year grant to EDUCAUSE that will expire in 2004); *see also* Ruth Suarez Zane, *Unwired Tribal Lands Poised for Wireless Innovation*, WIRELESS INSIDER, June 18, 2001, at 1, *available at* 2001 WL 5010436 [hereinafter *Unwired Tribal Lands*] (the four colleges are Fort Berthold Community College of New Town, North Dakota; Fort Peck Community College of Poplar, Montana; Sitting Bull College of Fort Yates, North Dakota; and Turtle Mountain Community College of Belcourt, North Dakota). For more information on the AN-MSI project, see its Web site at http://www.anmsi.org.

123. *See Technology Infrastructures Hearings*, *supra* note 106.

124. *See* Ronald Roach, *IT Networks Going Wireless at Tribal Colleges*, BLACK ISSUES IN HIGHER EDUC., Dec. 20, 2001, at 38.

125. *Id.* (stating that the new infrastructure has the capacity to allow reservations to establish new telephone systems).

126. *Id*.

127. *Id.* Dewayne Hendricks, president of the Dandin Group, the firm hired by AN-MSI to install wireless networks at the four campuses, explained that "one of the advantages of wireless systems is that recurring wired-line costs are eliminated, providing as much as a 25% reduction in Internet access expenses." Also, while "wired systems require an expensive and complete institutional buildout that has to anticipate future demand . . . , less expensive wireless systems are built robust enough to accommodate new users at marginal cost." *Id*.

> connectivity, and then to build a TCU access grid that will weave a common web around all of the colleges and Indian Country.[128]

Overall, for reservations that are located in sparsely populated, remote, rural areas, wireless networking is a cost-effective way to extend the Internet and other information technology to tribal communities.

B. Federal Government Projects

1. FCC's Bidding Credit Program

In addition to the potential of TCUs as service providers, the federal government, especially the FCC, should increase its efforts in trying to bring wireless technology to Native American reservations. In June 2000, the FCC established a bidding credit program that provided incentives to wireless carriers to serve tribal areas.[129] The program gives bidding credits to bidders who agree to provide services to tribal lands that are unserved or have telephone penetration rates at or below 70%.[130] While the FCC's bidding credit program does provide some incentive for increased wireless technology on reservations, the Native American community emphasizes that it is necessary for this type of program to help tribal entities provide their own services. For example, the San Carlos Telecommunications Utility owned by the San Carlos Apache Tribe, does not benefit from the FCC's bidding credits program.[131] The FCC program seems to favor incumbent, outside entities that do not have complex ownership issues.[132] Consequently, for a bidding credit program to be a successful solution to the problems facing Native American reservations, the government and tribal leaders must discuss ways to modify the program to benefit wireless carriers based inside the tribal lands.

2. Proposed Legislation: The Digital and Wireless Network Technology Program Act of 2003

Despite the problems with the FCC's bidding credits program and the Bush administration's proposed funding cuts to technology grant programs, efforts should be made in the federal government to bring technology to tribal lands, particularly to educational institutions.[133]

---

128. *Technology Infrastructures Hearings*, *supra* note 106.

129. Ruth Suarez Zane, *Wireless May Provide Internet Path for Tribal Lands*, ISP BUS. NEWS, June 25, 2001.

130. *Id.*; *see also* Zane, *Unwired Tribal Lands*, *supra* note 122.

131. Zane, *Unwired Tribal Lands*, *supra* note 122.

132. *Id.* The ownership situation of a carrier in tribal country is complex because assets determine bidding credits. Because a corporation like the San Carlos Telecommunications Utility is owned by a tribe, it has to add the tribe's revenues into the company, which prevents it from receiving bidding credits. *Id.*

Legislation proposed by Virginia Senator George Allen, the Digital and Wireless Network Technology Program Act of 2003, would provide up to $250 million in grants to help minority-serving institutions, including TCUs, improve technology instruction, equipment, and networks in order to ensure that their students are receiving the training necessary to compete in the current technology-driven economy.[134] If passed, the act would provide much needed resources for TCUs to bring the benefits of wireless technology to their reservations.

C. Privately Funded Programs

Because the Bush administration has proposed funding cuts to technology programs, Native American reservations looking to gain access to information technology may have to pursue private funding. The Bill & Melinda Gates Foundation's Native American Access to Technology Program ("NAATP") has successfully worked with tribes in the Four Corners area of Utah, Colorado, Arizona, and New Mexico to increase access to digital information resources while preserving local heritages.[135] The NAATP provides three main components to help tribes: equipment, training, and technical support.[136] Initially, each tribe that demonstrates tribal support for the grant is eligible to receive two to four computers, a laser printer, and Internet connectivity equipment.[137] Foundation staff then visit the reservation to help with the installation and provide training, including classes for community members and an opportunity to discuss what the community could do with the resources.[138] Each site also receives technical support for the equipment for three years.[139] A preliminary report on the evaluation of the NAATP efforts shows that the program is generally well-received and is having a positive impact on computer proficiency, literacy, and use.[140]

V. CONCLUSION

As demonstrated by a look at the legal history of the relationship between the federal government and Native Americans, as well as the

133. *See* Teri Rucker, *Broadband: Senator Promotes Bill to Boost Technology to Minorities*, NAT'L JOURNAL'S TECH. DAILY, Feb. 13, 2003 (stating that President Bush plans to cut funding for technology grant programs such as the Advanced Technology Program and the Technology Opportunity Program in fiscal year 2004), *available at* http://www.nationaljournal.com/pubs/techdaily (subscribers only).

134. *Id*.

135. *See* Dorr & Akeroyd, *supra* note 100, at 37–39 (discussing how NAATP aims to work with tribal leaders, librarians, and educators to preserve local culture and heritage and to provide opportunities for technology training through access to computers and the Internet).

136. *Id.* at 39.

137. *Id*.

138. *Id.*

139. *Id.*

140. *Id*. at 42.

evidence of lack of access to technology and infrastructure on reservations, there clearly is a great problem on Native American reservations that will not be easy to solve. The digital divide affecting Native American reservations is a significant problem and has a tremendous impact on the social and economic conditions on the reservations. Given the dire situation on reservations, including their remoteness and lack of basic infrastructure, a resolution will be difficult.

A lack of information technology on Native American reservations is closely related to the high rates of poverty and unemployment on remote, rural reservations. The unique relationship between reservations and the federal government, especially concerns about tribal sovereignty and cultural preservation, are key to understanding the current digital divide between Native American reservations and the rest of the country. Many obstacles exist that prevent technical development on reservations. The lack of information technology on reservations puts Native Americans at a disadvantage when they seek education or employment, for without access to such things as computers and the Internet, they often lack the tools and technical experience needed for many of today's jobs. At the same time, programs that work to bring technology to Native American reservations must continuously respect the tribes' desire to preserve Native languages, religions, traditions, and cultures.