Chapter 6

The Role of the Federal Government: Orchestrating Cooperation and Change

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The Role of the Federal Government: Orchestrating Cooperation and Change

Findings

The Federal Government can play an important role in rural economic development. To do so, it must exercise leadership and make rural development and the use of communications technologies in the development process a national priority. The diversity of rural conditions across the Nation means that the development goals set by the Federal Government must be broad, allowing for more specific goals and strategies to be formulated and executed at the State and local levels. In addition to vision, the Federal Government must provide a commitment of financial and technical support.

Many players at the Federal, State, and local levels must be involved in a holistic rural development strategy. Competition for turf and economic rewards hinders the cooperation among players necessary for economic development and the efficient use of communication technologies in rural areas. Many stakeholders have never had to deal with one another before, and there are no incentives to do so now. Given the important role of communication in society and the growing market value of communications systems, the stakes involved in providing communication services are higher than ever before. As a result, stakeholders vie to take the lead in configuring and controlling the communication infrastructure since often only one network is economically feasible given economies of scale and scope. With divestiture and the unbundling of the communication infrastructure, there are also many new players competing for a piece of this highly lucrative communication market.

As part of its role, the Federal Government must help to orchestrate the kinds of changes and cooperation among Federal and local agencies needed for economic development to take place. Working through existing organizations, such as the U.S. Department of Agriculture's Rural Electrification Administration, Rural Development Administration, and the Cooperative Extension Service, it must increase the incentives for cooperation at the local level, and make it more costly for those who fail to work together.

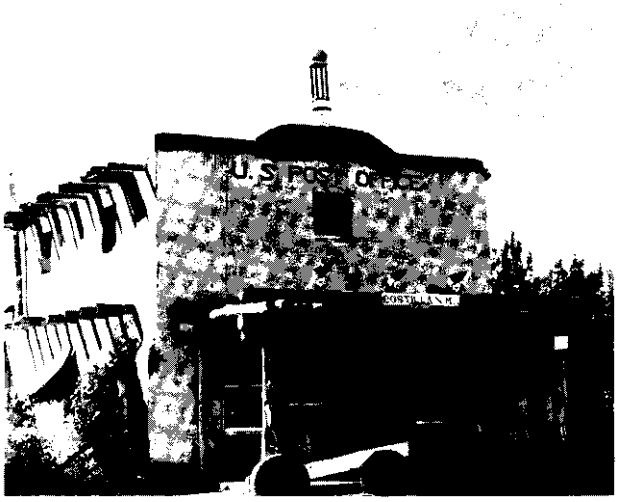

Photo credit: Russell Lee

The post office in Costilla, NM in 1939.

Introduction

The Federal Government has consistently taken steps to promote ruralAmerica's well-being throughout American history. In the earliest years, government policies were designed to encourage farming and successful settlement. To link the rapidly expanding Nation, the Federal Government developed a rural infrastructure, fostered a public education and library system, and promoted the dissemination of public information and news. To meet the needs of the industrial revolution, it promoted rural electrification and the transfer of industrial technology to rural applications.

The Federal Government set up a variety of organizations to implement its rural policies. Among these, for example, were the Postal Service, the Department of Agriculture and Cooperative Extension Service, the system of public schools and land-grant colleges, and the Rural Electrification Administration.

As rural communities continue to struggle for their survival, the question is raised as to what role the Federal Government should play in assisting them today. To provide an answer, it is necessary to consider the traditional goals of Federal rural policy; how well it has been executed; what organizational

resources are available to the Federal Government and the demands likely to be placed on them; who are the key organizational players and decision-makers; what are their stakes; and how might they best work together.

From Farm Policy to Rural Policy

Federal policy, in the earliest years of the Republic, was designed to establish a Nation of small farmers. It set the tone of rural policy for many years to come.[1] Concern about farmers and farming became the justification for Federal support of rural areas. Rural well-being was equated with successful farming, just as rural policy was viewed as an aspect of farm policy. This perception became so entrenched that rural policy has failed to keep pace with major demographic changes.[2] Although farmers now constitute somewhat less than 2 percent of the Nation's population, farming continues to be the major beneficiary of Federal rural policy (see box 6-A). These policies and perceptions are likely be superseded again as the Nation moves forward into the information age.[3]

Thomas Jefferson, the leader of the Republican Party and later President, was the individual most responsible for pursuing profarm policies.[4] Jefferson not only loved farming; he also believed that an agrarian environment fosters honesty, self-sufficiency, and egalitarianism.[5] As President, Jefferson opened the land for settlement by small farmers. To secure these areas, Jefferson dislodged foreign governments and Native Americans. He also opposed land speculation to allow settlers to establish themselves on the frontier. Subsequent administrations continued to support farmers for the most part.[6]

While Federal land policy was successful in securing land for small farmers, a more proactive Federal policy was required to assure these farmers success. In 1862, the Federal Government established the Department of Agriculture and the land-grant college system,[7] which were designed to provide this kind of support. A variety of assistance programs were administered through the Department of Agriculture including the land-grant college

Box 6-A—Farm Spending and Rural Spending

In fiscal year 1987, $29 billion was spent on development programs for all of rural America, while $22.4 billion was spent on agricultural price and income support alone. Furthermore, a large proportion of agricultural subsidies were spent supporting the least needy farmers. In 1987, the wealthiest 15 percent of farmers received over half of direct government agricultural subsidies.

SOURCE: **U.S General Accounting Office, *Rural Development: Federal Programs That Focus on Rural America and Its Economic Development,* briefing report to the Ranking Minority Member, Subcommittee on Conservation, Credit, and Rural Development Committee on Agriculture, House of Representatives, GAO/RCED-89-56BR, January 1989, p. 29.**

[1] As described by Forest MacDonald: "They. . set out to secure the frontiers of the United States by expanding the country's territorial domain into the base wilderness, and they succeeded so well that it became possible to dream that the United States could remain a nation of uncorrupted farmers for a thousand years to come. " Forest MacDonald, *The Presidency of Thomas Jefferson (Lawrence,* KS: University of Kansas Press, 1976), p. 163.

[2] As Swanson notes, "It was the financial crisis in farming during the mid- 1980s which, ironically, provided the need for a revised rural development policy. Since part of the problem was the assumption that farm well-being determines rural community well-being, the reintroduction of rural development in the context of a farm crisis has had the effect of reaffii this assumption." Louis E. Swanson, "The Rural Development Dilemma," *Resources, summer* 1989, p. 15.

[3] Louis Swanson, ' 'Dilemmas Confronting Rural Policies in the U. S.' Paper presented to the National Rural Studies Committee Meeting held in Cedar Falls, Iowa, May 17-18, 1990.

[4] Jefferson's Vision, in harmony with major religious values and personal interests, may have been vital in turning America toward an agrarian democracy. A much different result occurred in Argentina, which had a similar frontier of rich vacant lands settled by European immigrants. Argentina, however, was claimed by a landed aristocracy, leaving farm people unschooled, powerless, and physically isolated. In the U.S. South, too, the tobacco, rice, and cotton ''slavocracy' presented a discomforting antithesis to the emergent ideal of agrarian democracy. Don Hadwiger, "A History of Rural Economic Development and Telecommunications Policy, ' contractor report prepared for the Office of Technology Assessment, January 1990.

[5] As noted by Griswold, "No one believed so implicitly [as Jefferson] in a causal connection between the occupation of farming and the political system of democracy, and no one, before or since his time, has given that belief a greater impetus among his countrymen." Whitney A. Griswold, *Farming and Democracy (New* Haven, CT: Yale University Press, 1952), p. 19.

[6] Hadwiger, op. cit., footnote 4. This farm bias reflects, in part, the political power Of the farm community, which became erg-d in the late 19th century. During this period, many farmers suffered severe hardships due to drought, low commodity prices, high freight costs, and increased real costs of borrowed money. In response to such adversity, they organized farm organizations such as the Grange, Greenbacker, and Alliance.

[7] Sandra S. Osbourn, *Rural Policy in the United States: A History* (Washington, DC: Congressional Research Service, The Library of Congress, 1988), 880487 WV, p. 15.

system, agricultural research, agricultural extension, and vocational training.[8]

Federal policymakers began to distinguish rural problems from farm problems only at the turn of the century.[9] Commissioned by the Roosevelt Administration to investigate why rural areas were falling behind urban areas, the Country Life Commission found that the problems of the countryside could not be overcome simply by focusing on agriculture. Accordingly, the Commission recommended that Federal assistance ". . . should be designed to forward not only the business of agriculture, but sanitation, education, homemaking, and all interests of country life. "[10] In releasing the Commission's report, President Roosevelt called for the establishment of a Department of Country Life 'fitted to deal not only with crops, but also with the larger aspects of life in the open country. ' '[11]

Farming remained the focus of the Federal Government's policy response despite the growing awareness of the complexity of rural problems .12 This emphasis was nowhere better illustrated than in the case of the Agricultural Adjustments Act, which was passed as part of the New Deal. This Act made the Federal Government essentially responsible for the economic and social well-being of rural Americal.[13] It sought to stabilize farm prices by controlling commodity surpluses, to forestall mortgage foreclosures and improve access to credit, and to improve farmers' prices and incomes in relation to other businesses.[14] A Even though the Act was viewed as a temporary response to the farm crisis, most of the programs it established still exist.

A strong interest in rural problems unrelated to farming did not reemerge until the Administration of President Eisenhower. In a special message to Congress, Eisenhower called for a program to help low-income farmers. But unlike previous programs that focused exclusively on farm income support, Eisenhower's program looked to off-farm employment as part of the solution, and acknowledged the need to address problems of health and education. Because it conceived of the 'rural' problem broadly to include health, education, and other human services, the Eisenhower Administration also needed a mechanism for interagency coordination. To this end, the President established an interdepartmental committee-the Committee for Rural Development Program-chaired by the Under Secretary of Agriculture and comprised of the Under Secretaries of the Interior; Commerce; Labor; and Health, Education, and Welfare; the Administrator of the Small Business Administration; and a member of the Council of Economic Advisers.[15]

Subsequent Presidents, until the time of President Reagan, followed in these footsteps. Under President Kennedy's Administration, programs were extended to take into account the entire rural economy and community.[16] President Johnson, who described rural poverty as "America's unfinished business," fostered rural economic development as part of his Great Society program.[17] He claimed that

[8]Ibid.

[9]A major impetus for rural improvement came from the progressive movement under the leadership of President Theodore Roosevelt, Woodrow Wilson, and Robert LaFollette.

[10]As quoted in Wayne D. Rasmussen, *Taking the University to the People: Seventy-Five Years of Cooperative Extension* (Ames, IA: Iowa State University Press, 1989), p. 44.

[11]U.S. Residents, 1901-1909 (Roosevelt). *Report of the Country Life Commission: Special Message From the president of the United States Transmitting the Report of the Country Life Commission, Senate* Document No. 705, 60th Cong., 2d sess. (Washington, DC: U.S. Government Printing Office, 1909), p. 6.

[12]This emphasis was perpetuated, inpart, because farmers maintained their political power even while their standard of living continued to deteriorate.

[13]Osbourn, op. cit., footnote 7, p. 24.

[14]After World War I, farm prices dropped precipitously, setting off a trend that continued for more&~ a decade. To provide relief, Congress twice passed the McNary-Haugen Farm Relief Bill, but President Coolidge vetoed it. Uncles President Hoover, the Agricultural Marketing Act of 1929 was passed. It created a Federal Farm Board that tried to stabilize prices by buying and selling farm commoditiesOsbourn, op. cit., footnote 7.

[15]Osbourn, Op. cit., footnote 7, pp. 30-32.

[16]Responding t. this shift in goals, Secretary of Agriculture Orville Freemen made the rural development program the centerpiece Of his department. He created an Office of Rural Development, a Rural Areas Development Bored of department officials, and a public advisory committee. In addition, the interagency committee for Rural Development Program was replaced by a Rural Development Committee, whose membership was upgraded from the level of undersecretary to Secretary. The Secretary of Agriculture was named chair. Osbourn, op. cit., footnote 7, pp. 33-34.

[17]Lyndon Johnson's ruralpolicy was quite comprehensive. "A national policy for rural America with parity of opportunity" was its stated goal. The key elements were: national economic prosperity to increase employment opportunities; full access to education, training, and health-care services to expand earning power; and economic development of smaller and medium-sized communities to insure a healthy economic base for rural America. See Osbourn, op. cit., footnote 7, pp. 37-40.

during his administration 184 measures providing assistance to farmers and rural communities were signed. President Nixon, too, supported a rural policy, although he wanted to shift much of the burden for its implementation to the States.[18] President Carter went the furthest in developing a comprehensive plan to address rural needs. His Administration sought to institutionalize rural development policy at the national level with the passage of the Rural Development Policy Act (Public Law 96-355).[19] There was little chance for policy implementation, however, since shortly after the Act's passage President Carter lost the Presidency to Ronald Reagan, who strongly opposed an activist rural policy. He believed such matters are better left to the States and private sector.[20]

The Bush Administration is implementing mechanisms to better coordinate and focus the Federal rural development effort.[21] While the direction of these efforts is promising, the coordinating and leadership mechanisms are still in a formative stage. And the Administration does not yet have, and is not close to preparing, a government-wide rural development strategy; at most, it has laid down some general principles.[22]

The time is ripe for refocusing rural policy. Rural communities are, today, once again undergoing major structural changes-the transformation to an information society, the shift to a global economy, the problem of environmental constraints. In light of these trends, it is particularly important to consider what role communication and information technologies can play in fostering rural economic development.

Insufficient attention is being paid to this issue at present. Although the Federal rural economic development legislation enacted by the 1Olst Congress acknowledges the importance of telecommunications and provides a specific role for communications in the development process, the bill takes a cautious approach.[23] It does not provide a clear vision of the role of technology as a central force in the development process.

Establishing a formal goal of promoting rural economic development through telecommunications will signal a commitment and serve as a criterion against which policy choices can be weighed and policy actions evaluated. Moreover, a goal statement would provide a basis for allocating and coordinating institutional responsibilities and

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[18] As described by Osbourn, op. cit. footnote 7, p. 46. See also, U.S. President, 1969-1974 (Nixon), Special message to Congress on sharing Federal revenues with the States. Public papers of the Presidents: Richard MNixon, 1969 (Washington DC: U.S. Government PrintingOffice, 1971), p. 668.

[19] This Act sought to achieve four basic goals: meet rural citizens' basic needs; provide employment and business opportunities; address rural problems resulting from distance; and promote thestewardship of the Nation's resources and environment. Osbourn, op. cit., footnote 7, pp. 53-58.

[20] Osbourn, op. cit., footnote 7, p. 67.

[21] See later discussion of "Federal Policy Execution," pp. 148-149; U.S. Department of Agriculture, *A Hard Look at USDA's Rural Development Programs,* report of the Rural Revitalization Task Force to the Secretary of Agriculture, June 30, 1989; Economic Policy Council, Working Group on Rural Development, *Rural Economic Development for the 90s: A Presidential Initiative*, January 1990; and U.S. Department of Agriculture, Office of the Under Secretary for Small Community and Rural Development *Signs of Progress: A Report on Rural America' sRevitalization Efforts* (Washington, DC: USDA, January 1989).

[22] A national advisory commission t. USDA recently issued a report outlining some general principles. For example, the commission concluded that:
as rural America is diverse, so are its problems;
. neither farm policy nor any other single-issue policy can sufficiently address the needs of rural America;
• there is currently no defined rural development policy;
. rural development is important for the economic efficiency and security of this country.
The commission recommended that the Federal Government:
- review all its policies to determine their effects on rural areas;
- improve information about rural conditions and development strategies;
- adopt a comprehensive approach to rural development. . . that process must assure a holistic approach to rural development policy within the Federal government. . .
- adopt a strategic approach to rural development;
- foster better cooperation among rural development participants;
- incorporate flexibility in its policies relating to rural areas;
- promote innovation and experimentation in the pursuit of rural development;
- make education a major component of rural development policies.

For further details, see National Commission on Agriculture and Rural Development Policy, *Future Directions in Rural Development Policy (Washington DC:* USDA, December 1990).

[23] The Rural Economic Development Act of 1990 seeks to assure that modern communication technologies are available in rural areas by making it easier for rural telephone providers to borrow money from the Rural Electrification Administration(REA) and the RuralTelephone Bank to modernize their networks. The Act further envisions the use of communication technology to achieve other economic development goals, such as improving educational and medical resources.

for determining the efficiency and effectiveness of specific programs. Setting goals is particularly important today, given problems of balancing the budget. With the pie shrinking, current program beneficiaries, trying to secure their "fair share," will most likely lobby intensely against efforts to rethink or redirect program priorities. Opposition such as this will be less successful, however, if there is a clear vision of the role that telecommunication plays in promoting economic development.

Establishing formal goals is, however, one of the hardest policies to implement. Policymakers avoid setting goals precisely because they focus on the question of how scarce resources should be distributed among groups and organizations.[24] By not questioning goals, or by speaking of them only in the broadest sense, decisionmakers can be held less accountable to those stakeholders who are losers in the goal-setting process. It might be especially difficult to set this kind of goal because there continues to be a lack of awareness of, and skepticism about, the role that new communication technologies can play in the development process.

Past Federal Roles

The Federal Government has played two major roles in implementing its rural policy-one as the provider of infrastructure, the other as the provider of information and education. It is useful to consider the Federal Government's performance in these roles, since both are still relevant today.

Infrastructure Building

Today's communication networks are often compared to earlier transportation networks.[25] And many people call on the Federal Government to play a greater role in their development, similar to the one played in developing canals, railroads, and highways. It is wise to draw on this previous experience in considering the role the Federal Government might play in developing a rural communication infrastructure. Support for Federal infrastructure projects was never universal. Thus, the government generally assumed a major role only when it became clear that the private sector would not do so.

The same values that led Jefferson and Jackson to support small farmers made them oppose a Federal role in infrastructure building. From their perspective, "the best Government is that which governs least.' '[26] In time, however, the farmers who had benefited from Jefferson's policies became politicized, and they voted to commit their governments to regional and local transportation projects. State and local governments thus became the crucial actors in building the Nation's infrastructure.[27] They enacted friendly civil laws; arranged for public grants, loans, and stock purchases; and granted land for yard facilities and rights-of-way. Many citizens also invested their savings in what has been described as a ''speculative orgy of highway, canal, and railway building.' '[28]

The Federal Government also became a reluctant sponsor of rail development, under pressure from the States. During early rail development, the Federal Government offered a tax subsidy in the form of

[24]Herbert Simon, *"on* the Concept of Organizational Goals,'' *Administrative Science Quarterly,* vol. *9, No.* 1, June 1964, p. 3.

[25]See fo, example, peter Westermeyer, *Electronic Highways: An Introduction to Telecommunications in the 1990s* (London: Allen & Unwill, 1990).

[26]For example, the Jeffersonians and Jacksonians rejected plans put forward by Secretary of the Treasury, Alexander Hamilton, to build a national banking system and otherinfrastructure—believing that it would favor the gentry class. Later they opposed national development plans put forward by Whig party leader Henry Clay, Speaker of the House. Clay wanted to construct national roads and canals and, ultimatelynational railroads as well. Jefferson and Jackson, in denying these initiatives, encouraged State and local governments to undertake this development. President Jackson, by decentralizing the financial system, provided investment capital for the hinterlands. Hadwiger, op. cit., footnote 4, p.7.

[27]Jefferson did approve an act to establish a ''Cumberland highway" from Cumberland, Maryland across the *mountains* to Ohio. Subsequent Congresses provided funding obtainable as 5 percent of the proceeds from public land sales. When Resident Monroe vetoed road appropriations, the management of theCumberland road was transferred to the States through which it passed. TheCumberland, however, fell into disrepair as did several other ''highways" when canals and then railroads provided superior transport. Roads were then used mainly for loctraffic and were maintained by local govemments. U.S. Congress, *Report of the Joint Committee on Federal Aid in the Construction of Post Roads* (63d Cong., 3d seas., 1941), pp. 240-241.

[28]The State of New York financed construction of the Erie Canal to link the Hudson River with the Great Lakes, which quickly became a principal route for Western migration, drawing Western settlement into a Northern pattern. The Erie drastically reduced freight rates to and from the hinterlands and made the Port of New York the Nation's major commercial centerHadwiger, op. cit., footnote 4, p. 8. Given the Erie's success, New York as well as several other States, including Pennsylvania, Maryland, and Ohio, joined with private corporations to finance vigorous development of canals and other internal improvements. This speculative effort collapsed with the panic of 1837. Most of the roads and canals were soon superseded by railroads, the new communication technology.

tariff reductions on materials. After 1850, it made large land grants to the States for the purpose of financing railroad construction. And in the 1860s, the Federal Government began to distribute land grants for transcontinental roads as well.

The telegraph was another communications system inaugurated with Federal assistance. In 1834, Congress authorized funds for Samuel F.B. Morse to build a demonstration line between Washington, DC and Baltimore. But Congress refused to nationalize the telegraph, as Morse requested, preferring that the private sector finance and deploy it.

The Federal Government also played a critical role in assuring the deployment of electricity and telephones to rural areas. Most urban citizens had access to electric service by the turn of the century, but America's farmers were not served until much later. Even by 1935, fewer than 12 percent of America's farms had electricity .29 Private utilities were unwilling to provide service to rural areas because demand seemed low and the technical problems high. At first, the Federal Government sought to assist and encourage private industry rather than displace it. But President Roosevelt was unimpressed by industry's response, so he created the Rural Electrification Administration.[30] REA bypassed the municipal and private utilities. Instead of cooperating with them, it built its own network with "grass roots" support. REA's goals were ambitious: universal, high-quality service, rapid deployment, and low rates. It was quite successful in achieving them. Few rural cooperatives defaulted, since usage rose so quickly. By 1940, 30 percent of all farmers had electricity. By 1950,77 percent were served, and by 1959, 96 percent. Rural cooperatives also played an important role in economic development, facilitating the movement of industrial, commercial, and nonfarm residents to rural areas.[31]

Despite (or perhaps even because of) these successes, REA had its detractors. After 1950, the private utilities' lobby sought to shut it down. They

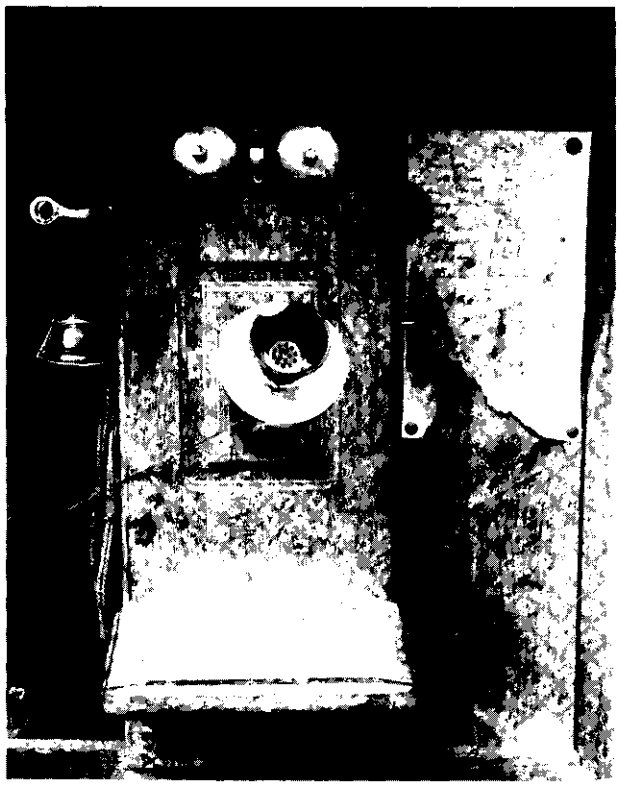

Photo credit: Russell Lee

An old-fashioned telephone used for communication in a gold mine in Mogollon, NM, 1940.

claimed that REA was no longer needed because its job was virtually complete. To gain support for their position, they portrayed REA as "socialistic" and unfairly competitive. But REA had its own political support. The National Rural Electric Cooperatives Association (NRECA) provided a powerful grassroots voice. Moreover, REA was well situated in the protective environment of the Department of Agriculture. It was also a "favorite" of many rural Congressmen.

Looking for a new mission, REA welcomed the task of deploying telephones to rural areas, which were still largely unserved by telephones in the late 1940s.[32] Legislation permitting REA to play such a

[29] During the first quarter century, farmers had not pressed for electricity. Their main interest was in raising commodity prices. Nor apparently was the research-extension system troubled by the delay in modernization caused by lack of rural electricity.

[30] John D. Garwood and W.C. Tuthill, The *Rural Electrification Administration: An Evaluation* (Washington, *DC:* The American Enterprise Institute, *1963), pp. 4-5.*

[31] Rural electric cooperativ,= aggressively recruited and served industrial, commercial, and suburban co nsumers, which had the effect of increasing the number of consumers each year, from 5 million in 1960 to 12 million in 1987. U.S. Department of Agriculture, Rural Electrification Administration *A Brief History of Rural Electric and Telephone Programs (Washington DC:* USDA, REA, 1989).

[32] Interestingly, 39 percent of all farmers had obtained rudimentary service by 1920 (erg- by neighborhood cooperatives), but due to hard dines, this service was allowed to deteriorate, and by 1940 only 25 percent of farm residences had working telephones. U.S. Census, compiled by U.S. Congress, House Committee on Agriculture, 1949, p. 2.

role was first introduced into Congress in 1945, where there was substantial support. However, strong opposition from the independent telephone companies and private utilities prevented its passage. A compromise bill was passed in 1949 with President Truman's passive support. In accordance with the compromise, REA was permitted to form rural telephone cooperatives such as had been used in rural electrification, but the "independent" telephone companies were given the right of first opportunity. As it turned out, most REA loans went to the independents. Some telephone cooperatives were also undercut by Bell companies, which moved quickly to offer modern services in contested areas .33

REA was able to achieve high-quality, state-of-the-art service, working mainly with the "independents. ' To serve widely scattered rural residences, REA pioneered technology to reduce size of wire, its cost of installation, and its vulnerability to lightning and icing. REA borrowers replaced party lines with one-party service. Rates were standardized and comprehensive "area' coverage was provided. By 1980, 94 percent of all farms were served by telephones .34

The Federal Government's support of highway building began as early as 1932, when Congress enacted a penny-per-gallon gas tax.[35] The rationale and the means of financing the Nation's highway system were distinct from other infrastructure projects. Presidents Hoover and Roosevelt both believed that massive spending for road construction would provide jobs during the depression.[36] President Eisenhower justified Federal support for highway construction on national defense grounds.[37] To finance this road-building program, Eisenhower set up a Highway Trust Fund to be replenished from increased highway user taxes.[38]

Highway construction had a profound-even if often unanticipated-effect on rural America. Road building brought rural and urban areas closer together, forcing many small communities to deal with urban values for the frost time. Highways also facilitated massive rural outmigration. They were also a precondition for agricultural specialization, which in turn reduced agriculture's labor needs, inducing many farm people to seek urban jobs. At the same time, highways contributed to population decentralization. Nonfarm employment expanded in the hinterlands along freeways and other modern roads. Industrial belts grew up in the towns and countryside along highways, especially in the Southern and border States. The Nation's midsized cities, linked by freeways, also grew. In addition, express highways allowed people to exercise a preference for residence in smaller communities.[39]

Looking backward, it is clear that the Federal Government was an indispensable backer of the Nation's infrastructure, providing venture capital and other incentives when private capital was unavailable, and even doing the job itself, when required. Public policy undoubtedly enabled the timely and widespread development of each new communication system, and these systems facilitated the rapid settlement and integration of America's rural heartland.

This retrospective account not only describes the historical basis for government involvement in infrastructure building, it also suggests some models for action that the Federal Government might adopt

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[33]Dan F. Hadwiger and Clay Cochran, "Rural Telephones in the United States, ' *Agricultural History,* vol. 58, 1984, p. 232.

[34]USDA, REA, op. cit., footnote 31, p. 7.

[35]Road planning began after 1905, when automobiles became numerous. By 1915, 39 States had created highway departments. Road building gained an impetus in State legislatures, where farm organizations and rural groups often controlled decisions. During the 1920s, the States constructed 1.3 million total miles of improved roads. Mark H. Rose, *Interstate Express Highway Politics,* 1941-1956 (Lawrence, KS: The Regents Press of Kansas, 1979), pp. 4-7.

[36]Hoover's recovery agency, the Reconstruction Finance Corporation, lent $300 million to the States for road construction. Between 1934 and 1937, the Roosevelt Administration spent $28 billion for road construction. The U.S. Bureau of Public Roads, located within the U.S. Department of Agriculture until 1939, envisioned a 30,000-mile "expressway system' to speed traffic, eliminate urban and rural decline, and create jobs. But President Roosevelt came to view highway building as a poor way of creating jobs, and he feared that the development of a "superhighway system" would unbalance the Federal budget. He began to cut back on road-building as the Nation prepared for World War II Hadwiger, op. cit., footnote 4, p. 28.

[37]During President Truman's Administration, road-building failed to keep pace with increased road use. There was no consensus about the Federal role. Rural Senators Milton Young (ND) and John Stennis (MS) sponsored increases in road appropriations including $100 million for farm highways. However, at the same time, the U.S. Chamber of Commerce opposed farm highways, characterizing them as "national socialism." President Truman cut back on road construction during the Korean War, even as road use was sharply increasing. Rose, op. cit., footnote 35, p 40.

[38]This Fund was established by the Highway Act of 1956. Its passage inaugurated a period of accelerated highway improvement.

[39]Hadwiger, op. tit., footnote 4, p. 29.

today. REA is a particularly useful model, given its past success in encouraging technology deployment in rural areas. Recent analyses suggest that advanced technologies will not be quickly deployed to rural areas without some form of government intervention. REA could assume the role of helping to finance and facilitate the development of Rural Area Networks, just as it took on the additional task of providing telephone service. Most important, REA could help rural communities and development agencies serving rural areas sort out their communication needs and explore new ways of meeting them.

With its successful lending experience and technical expertise, REA could play a key role in launching experimental approaches to deploying technology. REA could establish forums and discussion groups of community leaders, communication providers, and communication users to consider rural communication needs, and explore how communication systems might be designed to meet these needs. In a more proactive mode, REA might conduct research and development to investigate new and creative ways of deploying advanced communication and information technologies to rural areas and/or provide financial support for demonstrations and trials of such strategies. REA could serve as an honest broker between borrowers and potential users. It could also provide loans and technical assistance to groups of users and providers who undertake cooperative ventures.

To play this kind of an expanded role, REA will need much greater resources. The REA telephone program staff has dropped from a high of 500 to 149 employees. And the remaining staff has little familiarity with rural development in general. So additional staff and staff training are essential. REA will also need greater political support if it is to be successful. REA's very existence has often been in dispute. Most recently, the Reagan Administration claimed that REA has outlived its mandate, since universal service has been achieved and rural telephone companies are financially sound. For REA to get a new mandate, therefore, may require Congress to redefine the notion of universal service in the context of an information age.

The Rural Economic Development Act of 1990 includes measures to expand REA's role in several respects. It creates a new REA Assistant Administrator for Economic Development to carry out REA programs that involve rural electric and telephone systems in community and economic development. It provides the REA Administrator with additional powers and assigns duties to provide advice and guidance, establish and administer pilot projects and demonstrations, and act as an information clearinghouse for dual development-related activities of REA borrowers. REA's technical assistance role is strengthened across the board. Finally, the Act reaffirms the continuing importance of the REA loan program, and calls on it to play an even greater role.

Promoting Information Dissemination, Science, and Education

The Federal Government's role in promoting information dissemination, science and technology, and education has its origins in the Constitution: the First Amendment guarantees freedom of speech and press; Article I, section 8 authorizes the Federal Government to grant intellectual property rights; and Article I, section 8, paragraph 7, permits the Government to build postal roads.[40] The Federal Government took advantage of the postal provisions to subsidize the distribution of news in the late 1700s.[41] After the Civil War, the Federal Government played a major role in the development of libraries[42]

[40] The American attitude towards information dissemination differed radically from that in Europe, where the ruling monarchs regarded it with considerable alarm. However, building a Nation required the establishment of communication links, the development of a unified market, the forging of a common culture, and the building of a democratic policy. The widespread flow of information was essential to accomplish these tasks.

[41] See Richard B. Kielbowitz, "Newsgathering by Printers' Exchanges Before the Telegraph," *Journalism History*, vol. 9, summer 1982, pp. 42-48; and Samuel Kernell, "The Early Nationalization of Political News in America," Studies *in American Political Development* (New Haven, CT: Yale University Press, 1986), pp. 255-278.

[42] In the United States, libraries have always been regarded as popular educational institutions. Like the public schools, they derived their support from the public education and reform movements that developed after the Civil War. Traveling libraries were founded to bring news and reading materials to rural areas where book deposit stations were set up in grange halls, neighborhood stores, fire stations, and women's clubs. In cities, libraries were established not only to provide access to books but also-like the settlement houses-to provide a haven and adult education programs for a growing number of working-class immigrants. These libraries developed rapidly during the post-Civil War period, and even continued to thrive in the depression years. See V. H. Mathews, *Libraries for Today and Tomorrow* (Garden City, NY: 1976).

and the American public school system.[43] Towards the turn of the century, it became more activist in promoting science and technology especially through the university system.[44] These policies reflected the notion, so prevalent in the United States, that education and knowledge have distinct public benefits and play an essential societal role.[45]

These overriding values helped structure the Federal Government's response to the farm crisis that followed the Civil War.[46] The Federal Government sought to help farmers adjust to the structural changes in the economy by developing and transferring modem technology to agriculture.[47] Working through the Department of Agriculture, the Federal Government eventually established four different types of complementary programs:

- land-grant colleges;[48]
- supporting research on agricultural problems at agricultural experiment stations;[49]
- making basic information on farm and home problems available to people through the extension service;[50] and
- providing vocational training on agricultural problems, home economics and industrial subjects.[51]

The Country Life Commission, established under President Theodore Roosevelt, also advocated Federal assistance in bringing ''both information and inspiration" to all farmers. There had already been a number of experiments for providing education and information to rural communities, and the Commission recommended that these activities be ''nationalized. '[52] Among these were DeamanKnapp's

[43]The American commitment to public schooling grew in the wake of the Civil War. This commitment was SO intense that it gave rise to a national crusade to establish public schools. Concerned about the problems of reconstruction in the South, the influx of Catholic immigrants, and the advent of industrialization in the North, Americans saw public schooling as a way of preserving the social, economic, and political order. See Rush Welter, *Popular Education and Democratic Thought in America (New* York, NY: Columbia University Press, 1%2); and David Tyack and Elisabeth Hanson, "Conflict and Consensus in American Public Education " *America's Schools: Public and Private, Daedalus*, summer 1981.

[44]If should be noted that just as democracy was closely associated with farming, so too was it linked with technology. A democratic polity was thought to be a prerequisite for advancement in applied science, while technological achievements were expected to provide the physical means of achieving the democratic objectives of political, social, and economic equality. See Hugo A. Maier, ''Technology and Democracy, 180(1869,'' *Journal of American History,* vol. 43, p. 625. For a discussion of the evolution of the university system, see Edward Shils, "The Order of Learningin the United States From 1865-1920: The Ascendancy of the Universities," *Minerva*, vol. 18, No. 2, summer 1978.

[45]Contrasting the attitude of Americans towards education with that of Europeans, Alexis de Tocqueville, the well-known commentator on American society, noted in 1831: ''Everyone I have met up to now, to whatever rank of society they belong, has seemed incapable of imagining that onecould doubt the value of education. They never fail to smile when told that this view is not universally accepted in Europe. They agree in thinking that the diffusion of knowledge, useful for all peoples, is absolutely necessary for a free people like their own, where there is not property qualification for voting or for standing for election. That seemed to be an idea taking root in every head. "Alexis de Tocqueville, *Journey to America,* translated by George Lawrence, J.P. Meyer (cd.) (New York, NY: Anchor Books, 1971).

[46]As Wayne Rasmussen has described it: "The revolution generated by the Civil War catapulted the nation's farmers not only into a new era of mechanization but also into a world of complex social and economic forces that were too volatile and powerful for individual farmers to confront by themselves. It seemed that the appearance of more complex and productive tools intended to guarantee the farmer's survival had made that survival more complex." Wayne D. Rasmussen and Paul S. Stone, ''Toward a Third Agricultural Revolution,'' in Don. F. Hadwiger and Ross B. Talbot (eds.), *Food Policy and Farm Programs,* proceedings of the Academy of Political Science (New York, NY: The Academy of Political Science, 1982), p. 179.

[47]The idea that knowledge could improve agriculture was first putforward by agricultural societies composed of well-to-dogentlemen farmers, farm journalists, and some educators. Such citizen advocacy was bolstered by public agencies and private agricultural interests that acted in mutually supportive ways. These public agencies included the U.S. Department of Agriculture and the land-grant colleges. The private interests included general farm organizations as well as commodity groups. Rasmussen, 1989, op. cit., footnote 10, pp. 8-22; also David E. Hamilton, "Building the Associative State: The Department of Agriculture and American State-Building," *Agricultural History, vol. 64,* pp. 209-218.

[48]Democratic and populist, the land-grant movement called on the universities to extend the benefits Of education to all segments of society. Responding to the Nation's rapid industrial and agricultural development, it called on the universities to expand beyond their traditional role of training gentlemen as preachers, lawyers, and doctors, and-through appliedresearch—to develop the more practical applications of education. Provided under the Merrill Act of 1862, land-grant colleges, open to students of all backgrounds, were established to provide education in fields such as agriculture, engineering, home economics, and business administration. Unlike traditional colleges, land-grant colleges were not isolated communities. Through their agricultural experiment stations and their service bureaus, their activities were designed to serve the State. For a discussion see Clark Kerr, *The Uses of the University* (Cambridge, MA: Harvard University Press, 1972).

[49]The Hatch Act of 1887 authorized the establishment of agricultural experiment stations to be funded with the proceeds from the sale of certain public lands. In addition, it authorized annual grants of $15,000 for the purpose of testing, research and publication, and dissemination of scientific information under cooperative arrangements between the States and the Department of Agriculture. SeeOsbourn, op. cit., footnote 7, p. 15.

[50]The Smith-Lever Extension Act of 1914 called for the Government to disseminate among farmers useful information on crop and livestock production, soil management, marketing, and rural sociology that had been produced in the agricultural colleges.

[51]The Smith-Hughes Act of 1917 provided for Federal grants-in-aid to be matched by State contributions for promoting instruction below the college level in agriculture and the trades.

[52]Hadwiger, op. cit., footnote 4.

"demonstration farms," on which farmers could learn by watching and doing, and "movable schools,'' such as George Washington Carver's Tuskeegee mule-drawn wagons full of new seeds, farm machinery, and dairy equipment, as well as boys' and girls' clubs through which it was hoped parents could be educated.

One promising and widely used idea was to employ an "extension agent' in each county to work directly with innovative farmers. The Smith-Lever Act of 1914 authorized partial Federal funding for an extension service in all rural counties. The costs were to be shared by the States, the counties, and by county organizations of innovative farmers, called farm bureaus. Comanaging this new agency were the U.S. Department of Agriculture and the land-grant agricultural colleges. On the campuses, extension and experiment stations formed a partnership. Still another partnership developed between the county extension agency and the county farm bureaus; the county agent organized the farm bureaus, which in turn formed State and National farm organizations, thereafter becoming Extension's link with political supporters as well as farmers. Later on, extension people helped start other farm organizations, called commodity organizations. The experiment stations also formed links with the farm bureau and with the commodity groups so they could better understand the research needs of producers. Leadership for this public-private network was recruited from graduates of the agricultural colleges. Within a few decades, this elaborate network of players had achieved its goal of modernizing farming. Moreover, the quality of farm life had been improved through access to home economics and other farmer information services.

Despite its many successes, the Extension Service has been criticized throughout its history for being elitist, and catering to the most innovative farmers. Moreover, it has found it difficult to move from the goal of agricultural efficiency to the broader goal of community development. Under President Roosevelt, for example, leaders in the Department of Agriculture tried to develop policies aimed at multiple goals. But this initiative was opposed by the farm bureau, which feared that the Extension Service might lose control at the grassroots level.[53] And State extension services found it hard to shift their resources from agricultural to rural development because of the resistance of farm and commodity organizations. Moreover, the partnership between scientists and extension, which was so successful in modernizing agriculture, often opposed efforts to renounce conventional agricultural practices that might endanger health or the environment.[54]

Photo credit: Mark G. Young

The Page Co-op Farm Bureau endures even as the county shifts away from agriculture.

As rural areas face the challenge of moving into the information age, the Federal Government must continue to play a major role in information dissemination, research and development, and education and technology transfer. At present, there is little Federal research being conducted that focuses on the complex relationship between communication technologies and economic development. More is needed to avoid the kind of mistakes made in the past when trying to deploy technology to achieve social or economic ends.[55] There is also a need for assistance in transferring technology to economic development applications and for providing up-to-date information about these technologies.

[53] Richard Kirkendal, *Social Scientists and Farm Politics in the Age of Roosevelt* (Columbia, MO: University of Missouri Press, 1966), Pp. 195-217.

[54] Ibid.

[55] The USDA Economic Research Service (ERS) conducts research on the rural economy, including business, educational, and financial needs of rural development. However, only a very small percentage (about 5 percent, down from 10 percent a decade ago) of ERS's budget is allocated to rural topics, due to budget constraints and competing priorities (the bulk of ERS's research is on agricultural commodities, trade, conservation, and the like). ERS could establish a research focus on rural telecommunication and information services or industries, and on the business, educational, and financial requirements of a robust rural information economy.

Having successfully played these roles in the past, the Cooperative Extension Service (CES) appears uniquely suited to help introduce information-age technologies to rural areas. Knowledge is rarely transferred passively. Moving innovations from development to production is not a one-way process. The experience and understanding of potential users is as important to the process as is expert knowledge. Thus effective technology transfer requires outreach programs based on mutual trust and respect, similar to those administered by the Cooperative Extension Service.[56]

At present, CES provides education, information, and technology transfer on numerous topics relevant to farming and agriculture generally. The scope extends to many topics relevant to rural development, and could be further broadened to specifically include information technology applications for rural development. CES has the advantage of an extensive State and county network of land-grant colleges, extension agents, and field experiment stations through which to disseminate information and education.

CES has interpreted its statutory mandate as extending to the general health of rural America, and has now developed its own rural development strategy, in coordination with U.S. Department of Agriculture and government-wide rural revitalization initiatives.[57] Indeed, the CES rural strategy predates these other initiatives. The CES approach to rural development emphasizes the importance of local leadership, the health of the local community, a well-educated rural citizenry, and strong cooperation among governmental and private sector participants in the development process.[58]

CES is developing a communication and information technologies strategy, to be completed by early 1991. The strategy could serve as a vehicle to focus USDA and perhaps government-wide efforts for technology transfer in rural areas. CES is already experimenting with the use of electronic media—including online databases, compact optical disks, videodisks, videoconferencing, and computer networking-to carry out its education and information dissemination fictions.

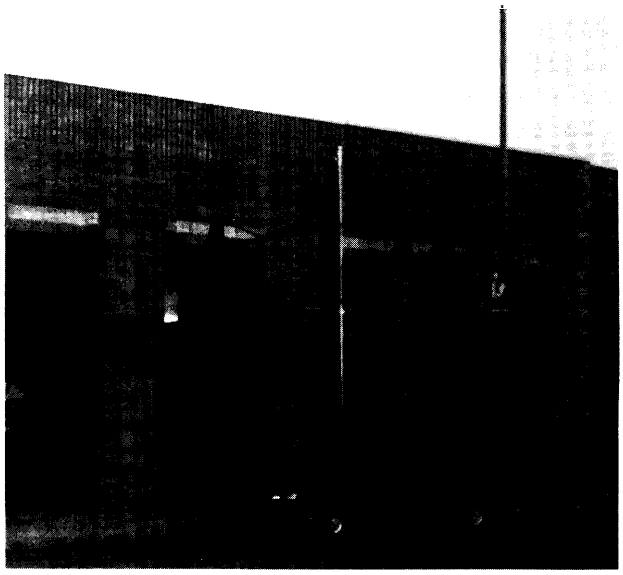

Photo credit: Mark G. Young

The Penal Oreille County Library, led by its energetic and visionary director, is a major information center for the town of Newport, WA.

CES also cosponsors (with the National Agricultural Library) a Rural Information Center (RIC) that provides information retrieval and rural information briefs. Eventually, RIC will provide local follow-up through county extension agencies and database access in local offices. RIC now includes a Rural Health Information Clearinghouse Service through an interagency agreement with the Department of Health and Human Services. The concept is being extended to other categories of rural information.

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[56] Abbe Moshowitz, "Cooperative Extension: A Functional Model for Technology Transfer and Economic Development in Rural America," contractor report prepared for the Office of Technology Assessment May 1990.

[57] See, for example, U.S. Department of Agriculture, Cooperative Extension Service, *Revitalizing Rural America: A Cooperative Extension Service Response,* November 1986; special issue on ' 'Rural Revitalization,' *Extension Review,* Winter 1987; and "Revitalizing Rural America: Critical Issues & Cooperative Extension System Response," no date. Also see Northeast Regional Center for Rural Development New *Alliances for Rural Economic Development: Colloquium Proceedings,* co-sponsored by USDA and the National Association of State Universities and Land Grant Colleges (University Park, PA: Northeast Center for Rural Development, Pennsylvania State University, February 1989); Northeast Regional Center for Rural Development, *Cooperative Extension and New Alliances for Rural Economic Development: Five Case Studies,* prepared in conjunction with the USDA Extension Service (University Park, PA: Northeast Regional Center for Rural Development Pennsylvania State University, November 1989); and University of Missouri Extension Service, *Extension Responds to the Rural Crisis,* prepared in conjunction with the university extension services of Iowa, Kansas, Mississippi, Missouri, Nebraska, North Dakota, Oklahoma, and Vermont (Columbia, MO: University of Missouri Extension Service, July 1990).

[58] CES has a history of cooperation with other groups and agencies. For example, CES has an interagency memorandum of understanding with the Small Business Administration for the exchange of information and expertise on training rural small business managers.

If CES is to be truly effective in carrying out these tasks, it will need to upgrade its public image. Especially at the local level, it is still often thought of as a "worn out" agency, focused on agriculture to the exclusion of other kinds of development problems. Moreover, although Federal Extension Service officials are now more aware of the potential role for telecommunication technologies in the development process, there is still a large knowledge gap at the local level. Thus, if CES is to play an expanded role in introducing information-age technology in rural areas, it must be reenergize and develop greater technical expertise.

The Rural Economic Development Act of 1990 takes steps to enhance the role of the Cooperative Extension Service. Section 2346 establishes a rural economic and business development program within the Extension Service. Funds are provided for State and county-level CES rural development specialists to:

> ... assist individuals in creating new businesses, including cooperatives, or assist existing businesses, and to assist such businesses regarding advanced telecommunications, computer technologies, technical or management assistance, business and financial planning, and other related matters, and to assist community leaders in community economic analysis and strategic planning.

Rural development specialists would:

> ... provide advanced telecommunications, business management, computer operations, and other technical assistance to community leaders and private sector entrepreneurs and cooperatives.

The Extension Service is also directed to coordinate and cooperate with any similar service provided by other Federal agencies or programs.

Coordinating Federal Roles for Holistic Rural Development

Just as cooperation among local participants is critical to the success of a rural development program, so too is cooperation among Federal players. In fact, Federal coordination will facilitate local cooperation. Moreover, budgetary constraints make intragovernmental program coordination mandatory since money to create new agencies is scarce.

A holistic rural economic development strategy requires that many Federal agencies and programs be involved. Using communications technologies as a fundamental and uniting element of holistic rural development means that Federal players who previously had no reason to consider rural development must now take part along side the vast array of players involved already.

Federal Players

Over the decades, Congress and the executive branch have established hundreds of programs that contribute to rural development. Many were designed to carry out broad national objectives—such as retraining dislocated workers or rehabilitating deteriorated housing. They applied to all geographic places—urban, suburban, and rural alike. Other programs, such as REA and CES, were targeted primarily at rural concerns (see figure 6-l).

The complexity and magnitude of Federal involvement in rural issues are illustrated by the U.S. General Accounting Office's effort to catalog Federal grants, loans, and direct payments to rural America (see box 6-B).[59] GAO identified hundreds of programs, spread over the following categories:

- economic development,
- agricultural/natural resources,
- infrastructure,
- human resources,
- general entitlement, and
- special entitlement.

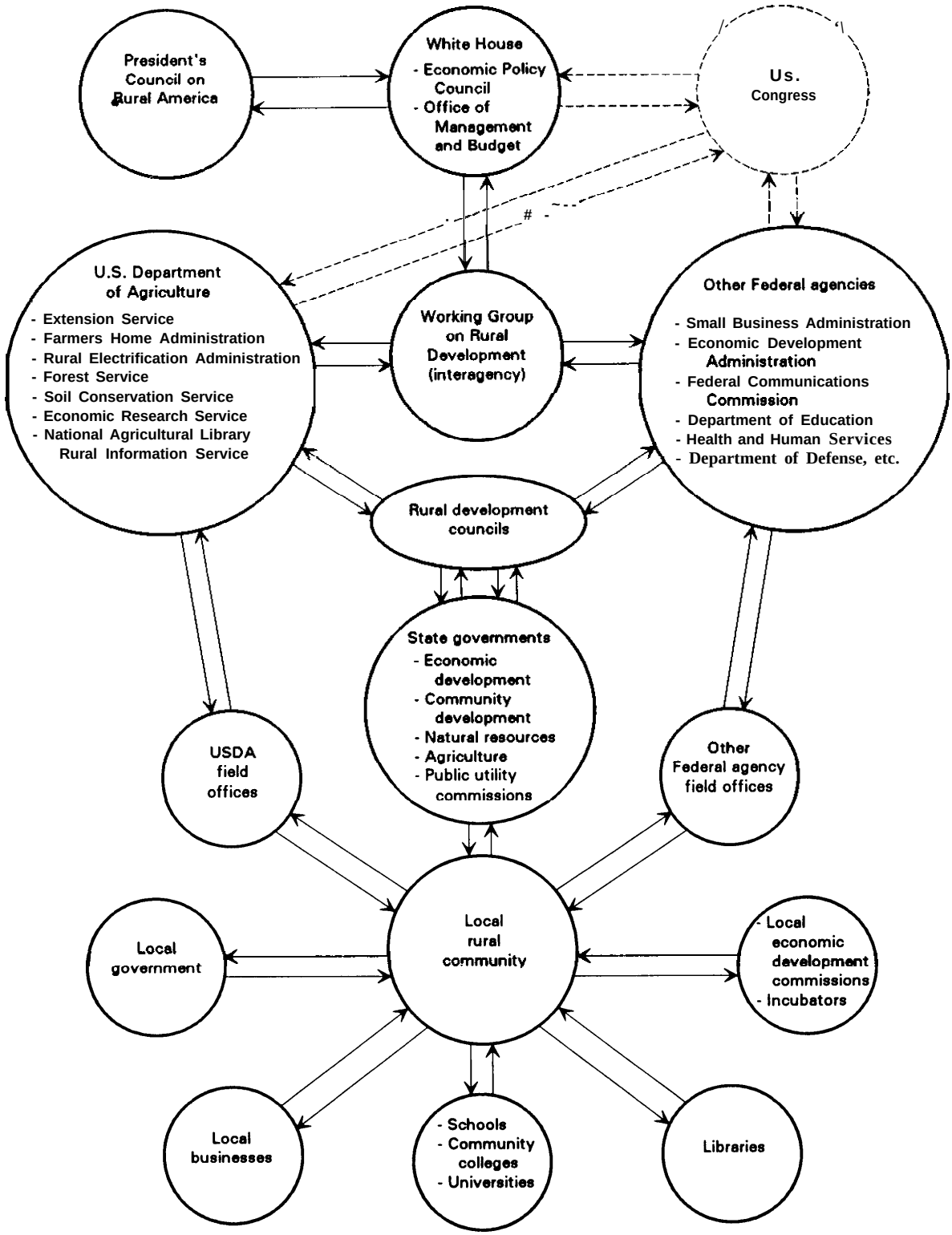
Intragovernmental Coordination

Even this brief examination of Federal programs affecting rural development reveals a complex web of agencies and activities. There is no overarching policy or clear direction to these efforts; each program reflects a partial strategy.[a] With so many different agencies and so many different programs

[59] U.S. General Accounting Office, *Rural Development: Federal Programs That Focus on Rural America and Its Economic Development, briefing report* to the Ranking Minority Member, Subcommittee on Conservation Credit, and Rural Development Committee on Agriculture, U.S. House of Representatives, GAO/RCED-89-56BR, January 1989.

[60] As Richard Long et al. explain, "The existing coordination within the Federal Government among policies and programs affecting rural development is generally due more to chance than to intentions." Richard W. Long, J. Norman Reid, and Kenneth L. Deavers, *Rural Policy Formulation in the United States (Washington DC:* USDA Economic Research Service, Agriculture and Rural Economics Division, April 1987), p. 27. And USDA officials and advisory groups concur that there is, at present, no coordinated governmentwide rural development policy.

Figure 6-l—Organizational Chart of Agencies Involved with Rural Development



The key players involved in rural development at the Federal, State, and local level, and how they relate to each other.
SOURCE: Office of Technology Assessment, 1991.

Box 6-B—Federal Roles in Rural Development

Using the functional categories provided by the General Accounting Office (GAO), it is illustrative to examine the focus of each category and list important programs.

Economic Development

GAO identified 29 Federal programs directed at economic development. **Rural regions received 18 percent of the $4.2 billion of funding from these 29 programs. Many of the government's economic development programs focus on small business development.**

The U.S. Department of Agriculture has been allocated the lead role in Federal rural development policy because many USDA bureaus and programs serve rural America. Within USDA, the most active economic development program is the Farmers Home Administration (FmHA). FmHA distributes assistance to rural areas through business loans and industrial grant programs. It focuses on job creation, rather than on promoting particular industries. FmHA also provides loans for community facilities and for farmers.[1] The Department of Agriculture also sponsors the Business and Industrial Loans program, which issues guaranteed loans.

The Department of Commerce's (DOC) Small Business Administration (SBA) and Economic Development Administration (EDA) each have numerous programs directed toward small business development in rural areas. About half of EDA grants are awarded to rural areas (as defined by GAO--counties with under 20,000 population outside metropolitan areas). EDA grants fund projects ranging local local revolving loan pools and industrial infrastructure projects to grants for local planning activities. SBA provides loans to individual businesses, small business investment and development companies, and State/local development companies; grants to small business development centers; and technical assistance to disadvantaged small businesses. According to GAO, SBA allocated about 17 percent of its resources to rural areas. The Department of Defense (DoD) also plays a role in rural economic development through its grants for Procurement Technical Assistance for Business Firms.

Agriculture/Natural Resources

In addition to the extensive Federal programs aimed at agricultural commodities price supports, the Federal Government provides assistance to rural areas through its forestry and mining programs, which provided about $84 million in grants and payments in 1987. USDA administers the largest of the forestry projects. These programs provide grants and direct payments to encourage forest resource management, increased timber production, and the efficient use of wood and wood residues. The Department of the Interior (DOI) participates in rural development through its program for regulating surface mining.

Infrastructure

GAO lists 30 Federal programs that provide aid for rural infrastructure development, which include programs for community facilities, transportation, utilities, and public works. Nine agencies allocated $11.1 billion in grants, payments, loans, and other expenditures for such projects. The Department of Housing and Urban Development (HUD) administers several infrastructure programs, but it is unclear how much HUD funding goes specifically toward rural areas. USDA, through its roads projects, water and resource conservation projects, REA, and Rural Telephone Banks, participates extensively in rural infrastructure development. DOI, through its outdoor recreation programs, and the Department of Education (DOE), through educational facilities and library construction projects, also play significant roles in rural infrastructure development. Additionally, The Department of Transportation and the Appalachian Regional Commission (ARC) each offer extensive highway construction and improvement funding, which contribute to rural development. DoD participates in rural infrastructure development through its Corps of Civil Engineers Work Programs.

Human Resources

Rural areas benefit from a variety of Federal programs for human resource development, most of which have no specific rural orientation. GAO lists 36 programs, administered by 8 different Federal agencies, that provide about $13.6 billion in aid to rural areas. The Department of Health and Human Services provides funding for several national programs, such as community services projects, Head Start, and Migrant Health Centers. DOE offers rural

[1] Eligible community facilities include libraries, schools, town halls, community centers (if not used primarily for recreation), hospitals or medical clinics, and fire/emergency rescue stations. FmHA does not at present target or encourage funding for information technology, but computers and telecommunications equipment would be eligible if included as an integral part of community facilities. In certain cases, such as emergency, fire, police, and medical systems, computer systems have been considered to be community facilities and funded directly.

assistance through vocational and general education grant, which are not rural-targeted. USDA's Cooperative Extension Service offers several grants for vocational education, but rural areas only receive about 6 percent of CES funding for these purposes.[2] USDA also offers several housing assistance programs, which primarily benefit rural communities." The Department of Labor administers several worker training and retraining programs, along with its programs to assist dislocated workers. Given the changing nature of the rural economy, these programs will likely have continuing and growing importance for rural America. ARC offers small health and education programs, and HUD provides property improvement loan insurance.

General and Special Entitlement Programs

To the extent that people living in rural areas are eligible for the Federal Government's various entitlements programs, these programs affect rural development. None has a specific rural orientation. However, demographic trends would indicate that programs directed at the elderly, such as social security, Medicare, and retirement programs, would have a proportionally larger impact on rural areas due to their greater proportion of elderly. Similarly, programs aimed at coal miners and Native Americans would tend to have a greater impact on rural areas. In addition to these programs, rural areas also benefit from the Federal Government's public assistance programs, food stamps, Veterans assistance programs, and railroad workers programs.

Information Dissemination and the Promotion of Technological Applications

The Federal Depository Library Program is an important rural resource. Many of the 1,400 participating libraries are located at colleges and universities in small towns surrounded by predominantly rural areas. The U.S. Postal Service is also an important source of information dissemination and increasingly promotes information technology applications. More than half of all post offices are located in rural areas, and some now provide their communities with access to facsimile machines and electronic mail boxes.

New **Players**

If the Federal Government makes as a priority the use of communications technologies as a fundamental link in rural development, new governmental players must become involved in Federal efforts. As the national regulator of telecommunications, the Federal Communications Commission (FCC) will have to consider how its various policies affect rural development. FCC can also become involved in rural development issues through the Federal/State Joint Board. DOC's National Telecommunications and Information Administration, as the Administration's telecommunications advisory body, must also take a broader approach to examining telecommunications issues, to include their impact on economic development in general and on rural development in particular.

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[2]According to GAO, despite CES' rural charter, the majority of its funding does not go to rural communities because Program funds are administered to the land-grant colleges, which are generally not in counties designated as rural. Although the colleges themselves are typically not located in rural-classified counties, much extension work targets rural communities.

SOURCE: U.S. General Accounting Office, *Rural Development: Federal Programs That Focus on Rural America and Its Economic Development,* briefing report to the Ranking Minority Member, Subcommittee on Conservation Credit, and Rural Development, Committee on Agriculture, U.S. House of Representatives, GAO/RCED-89-56BR, January 1989.

within each administering agency, both inter- and intra-agency program coordination is necessary. But it will not be easy, as ''coordination is rarely neutral. ''[61] **To** accomplish such coordination, a national strategy and statement of intent is essential.[62]

The Federal Government has attempted various degrees of policy coordination and integration.[63] Eisenhower's Rural Development Program was one of the frost efforts to address rural development from a multifaceted perspective. It was not until the Carter Administration's Rural Development Policy Act of

[61]Harold Seidman explains, "to the extent that [cooperation] results in mutual agreement or a decision on some policy, course of action, or inaction, inevitable it advances some interests at the expense of others or more than others. " Harold Seidman, *Politics, Position, and Power: The Dynamics of Federal Organization (New* York, NY: Oxford University Press, 1980).

[62]Ibid. Seidman goes on to explain that, ' 'if agencies are to work together harmoniously, they must share at least some community of interests about basic goals. Without such a community of interests and compatible objectives, problems cannot be resolved by coordination."

[63]Long et al., op. cit., footnote 60; p. vi.

1980, however, that a comprehensive national rural policy was formulated. The Carter policy set four goals:

1. meeting the basic human needs of rural Americans,
2. providing opportunities for rural people to be fully and productively employed and providing a favorable climate for business and economic development,
3. addressing the rural problems of distance and size, and
4. promoting the responsible use and stewardship of rural America's natural resources and environment while preserving the quality of rural life.[64]

The Act included an Action Agenda with 200 specific programmatic actions, along with recommendations for strategies to develop the institutional capacity necessary for policy implementation. Despite its well-studied and comprehensive approach, however, the Carter policy did not make a strong impact on rural problems. Critics contended that it was ineffectual because, among other things, it:

- did not increase resources for rural development;
- did not rank in priority the 200 items on the Action Agenda;
- merely free-tuned the existing system, instead of making systemic changes; and
- was highly dependent on the efforts of a few key individuals, failing to develop sufficient influence with political and budgetary decisionmakers.[65]

The Rural Development Act of 1980 is instructive both for its successes and its failures. Praising it for its comprehensiveness, observers view the Act as 'a basis on which to build."[66] Its shortcomings suggest that nominal commitment is not enough. To be successful, a rural policy must be backed by the political and financial will of the Federal Government.

Federal Policy Execution

If the Federal Government takes a holistic approach to rural development, the problem of coordination will need to be addressed from a fictional, rather than an agency, perspective. To date, most rural development strategies have reflected the missions of various government agencies.

This division of responsibility along agency lines helps account for the limited contact between Federal telecommunication regulators and agency officials involved in rural development. The REA, with its historical legacy of successful rural development and its technological orientation, could play an important role in providing more cross-agency fertilization. In addition to the increased responsibilities granted to REA in the Rural Economic Development Act of 1990, the REA could be charged with acquainting Federal telecommunication policymakers with rural development concerns.

The Cooperative Extension Service could also play a coordinating role. The need for technology transfer and an educational component within a development strategy underscores the importance of integrating technological applications into workforce education programs, vocational programs, and general education programs. From its inception, the CES has provided technology transfer. With its ties to educational institutions, CES could coordinate the technology and educational components of any Federal rural strategy.

Bringing together all the various communities involved in rural development—horn health care and community services to local business development—will require a more broadly based coordinating body, connecting the various Federal agencies as well as State and local governing bodies and organizations. The current Administration has taken initial steps in this direction by formalizing its Working Group on Rural Development into an interagency committee as part of the presidential initiative on rural development.[67] With representatives of all cabinet departments (except Defense and Energy), the Small Business Administration, Office

[64] Osbourn, op. cit., footnote 7, p. 24.

[65] Ibid., p. 25.

[66] Ronald C. Powers and Edward O. Moe, 'The Policy Context for Rural-Oriented Research,'' Don A. Dillman and Daryl J. Hobbs (eds.), *Rural Society in the United States: Issues for the 1980s* (Boulder, CO: Westview Press, 1982), p. 14. Cited in Sandra Osbourn, ibid.

[67] Economic Policy Council, Working Group on Rural Development, *Rural Economic Development for the 90s: A PresidentialInitiative* (Washington, *DC: The* White House, January 1990).

of Management and Budget, Council of Economic Advisers, and various White House offices, this committee has the potential to crosscut many rural development issues. However, the committee emphasizes the economic and business dimensions of rural development, overlooking key human and social dimensions as well as the role of information technologies. Nonetheless, its existence and breadth of representation signal much potential for policy coordination.[68] Moreover, the committee has plans to establish Rural Development Councils in each State, starting with councils now being implemented in 8 pilot States, and eventually extending to all 50 States if the experiments prove successful. The State councils are intended to coordinate Federal activities at the State level, respond to State and local rural development needs, and strengthen Federal/State/local partnerships in rural revitalization. The councils include representatives from all major Federal agencies providing rural development programs to the States, and are staffed by a fall-time rural development coordinator (who is a Federal employee from one of the participating agencies).

The Rural Development Councils in turn will coordinate a series of rural development demonstration projects. These projects will target Federal resources into specific rural areas to meet defined needs in ways that encourage more coordinated, synergistic, responsive Federal assistance. These projects are intended to have both a local option and evaluation component. The purpose is to encourage innovation but in ways that protect local flexibility and choice, and ensure that the project results can be measured. Projects that work well can be replicated or adapted in other rural areas.

Also, as part of the Presidential initiative, the Rural Information Center, operated by the National Agricultural Library, is being upgraded to include a wider range of information and technical assistance on Federal rural assistance programs. And a Presidential Council on Rural America has been established to provide a high forum for rural development issues and a means to bring rural policy proposals into focus for the President and senior White House and agency officials. The Council has representation from State and local governments, not-for-profit organizations, small business, and a variety of industries relevant to the rural economy.

Finally, the USDA has been designed as the de facto lead agency for rural development, by virtue of the designation of the Secretary of Agriculture as chairman of the interagency coordinating committee and the President's Council. Many Federal agencies have programs that affect rural America; but USDA has by far the heaviest concentration of rural-relevant activities. USDA has appointed an Assistant Under Secretary for Rural Development, and supported the establishment of a Rural Development Administration within USDA.

Cooperating in Pursuit of Change

Undertaking any new approach has the potential for conflict. It entails giving up some things to gain others. Some individuals and groups will win; others will lose. New rural development approaches are no exception. Introducing information-age technologies into the rural development process will be especially difficult. These technologies have profound effects. They serve not only as a more efficient means of providing traditional service but also as a catalyst for innovation-for actually changing the way that things get done. Communication and information technologies also have their own mystiques; they can be very intimidating to the uninitiated.

How well information-age technologies can be integrated into economic development strategies will depend on how they are perceived by the key players. If the Federal Government is to successfully encourage the use of these technologies, it will need a clear picture of who these key players are; their relationship to one another; and their needs and aspirations.

The States as Agents of Development

Not since the pre-Civil War days of Jefferson and Jackson have the States been such important players in economic development. Their enhanced role stems both from the Federal Government's withdrawal in this area as well as from the recognition by State governments that if they are to successfully cope with the crises in their economies, they need to

[68] White House sponsorship of the interagency committee signals that "rural development" is an important issue that deserves high-level executive branch attention; stimulates Federal agencies to at least pay more attention to their roles in assisting rural development; and (combined with related legislative activity in Congress) gives visibility and support to rural development advocates in the executive agencies.

take a more entrepreneurial approach.[69] In apolitical climate such as this, the States will be critical in determining whether and how communication technologies are used in the rural development process.

The Federal Government first sought to disengage from rural development during the Nixon Administration. While supporting the overall goal of development, President Nixon believed its execution was the responsibility of the States.[70] Accordingly, he proposed legislation to consolidate 11 programs into a single rural development revenue sharing fund to be allocated by the States according to a formula. Congress, however, failed to approve this plan.

President Reagan was much more successful in decentralizing responsibility. He was opposed to a Federal rural policy as such, believing that all communities would benefit if Federal barriers to State, local, and private action were removed. In keeping with this "new federalism," the Reagan Administration challenged all of the ongoing Federal development programs. While the Administration could not eliminate these programs and the agencies supporting them, it did significantly reduce their Federal resources.[71]

The States acted quickly to fill this policy gap.[72] Taking on a new "entrepreneurial" role, they aggressively sought to encourage local economic development. Some States have even gone so far as to subsidize and co-invest in business ventures.[73] Whereas in the past, States tried to encourage development by importing businesses from afar, now they are trying more to create a national, and even global, demand for their local products and services.[74] This is a major shift in their development strategies, and it requires a more activist State role.[75]

Many States are also beginning to view telecommunications as an important development tool. Since 1982, 29 States have adopted legislation pertaining to telecommunications, some for the purpose of enhancing their development potential. A number of States-including among them New York, California, Maine, Minnesota, Michigan, Tennessee, and New Jersey—have commissioned studies and task forces to ascertain the potential of telecommunications for economic development.[76] State policies can only go so far, however, because State governments are limited in their telecommunication expertise.[77]

Active State participation and support will be essential to any Federal program intended to encourage telecommunication-based rural economic development. It is at this jurisdictional level that many development programs are coordinated and priorities met. Moreover, it is the State public utility commission that sets regulatory policies affecting

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[69] See for discussions, peter K. Eisinger, The Rise *of the Entrepreneurial State: State and Local Development Policies in the UnitedStates* (Madison, *WI:* University of Wisconsin Press, 1988); and David Osbourn, *Laboratories of Democracy* (Boston, MA: Harvard Business School Press, 1988).

[70] As Sandra Osbourn points out, "Nixon made it clear that the goal of establishing a sound balance between urban and rural America would be carried out in accordance with the requirement of a second goal: '. the restoration of the right balance between the State capitals and the national capital,'" Osbourn, op. cit., footnote 7, p. 46.

[71] Eisinger, op. cit., footnote 69, p. 85.

[72] The States first became involved in economic development in the period following the Great Depression. Many Southern States in particular tried to induce businesses to their areas with offers of land, cheap labor and capital, and tax benefits.

[73] Many States use a variety of small business management and investment programs to upgrade the quality of rural businessmanagement and improve the prospects for financing small business expansions or new starts. These programs are typically offered through extension services, economic development organizations, and small business development centers at community colleges and universities. An important function of these programs is to disseminate information on market opportunities, competitive activities, new technical or management techniques, and sources of financing. Computerized databases can be of immense value, for example, to locate the results of product or market research (organic agriculture, matchrural entrepreneurs with urban or suburban investors, and track trends in exports and imports of forest products.

[74] State-funded computerized databases provide a very highly leveraged way to interconnect rural economies with the national and even global economies. Some States are consciously working to build bridges between rural products and services and urban (and foreign) markets. This can take the form of urban-rural buyer-supplier agreements, regional public-private rural-urban partnerships, domestic-foreign joint ventures, export trading consortia for smaller firms, and the like. The rural economy is viewed not in isolation but in terms of how it can add unique value and capitalize on market sectors where rural activities can be competitive. This new approach to rural development requires much greater volumes and quality of information about competitive activities and opportunities, and on a timely basis. Online and ondisk electronic information systems can help make this a reality.

[75] Eisinger, op. cit., footnote 69.

[76] Paul Eric Teske, *After Divestiture:* Th, Political *Economy of State Telecommunications Regulation* (Albany, NY: State University of New York press, 1990).

[77] As Heather Hudson points out, 27 States have no professionals working on telecommunications. The average number of telecommunications experts in the remaining States is between 1 and *2. See* Heather Hudson, "Telecommunications Policy: The State Role, A National Overview," paper presented to the 18th Annual Telecommunications Policy Conference, Airlie, VA, October 1990.

rural economic development. Thus, it will be State governments that have to reconcile economic development and regulatory policies and goals. State governments also help develop the States' infrastructures. Increasingly, this set of activities is coming to include communication networks. As major users of telecommunication services, the States can leverage their market power on behalf of rural development. In addition, they can lead the way by using telecommunications to provide information and social services. Bringing State governments into the process will help assure their commitment to Federal programs. Many States are now in the process of devising comprehensive statewide development plans.[78] Acceptance of telecommunication-based approaches will be more likely if they are incorporated early into these plans.

Gaining State support for a Federal program will require establishing appropriate Federal/State institutional arrangements. The trend of late has been to distribute Federal funds using block grants. This approach is very popular with State governments. It provides maximum flexibility, allowing programs to be tailored to the particular needs of a State. It also provides for diversity, and the learning that comes from using different approaches.

There are, however, problems with this approach. The more that responsibility is shifted to the States, the more difficult it will be for the Federal Government to mount a major campaign, assert program control, or set national priorities. In particular, this approach would make it hard to assure a holistic development strategy that takes maximum advantage of new technological opportunities. Often States governments focus their development policies exclusively on the business sector, and thus on the regions of their States that offer the most promise in this regard. Moreover, officials in many States are not well versed in the use of technology for development purposes, nor aware of the new opportunities and choices that it presents.

If Federal finds were distributed through State governments or State economic development boards, it would be important to assure that they had the technical capacity to make educated decisions about its use. Moreover, some conditions might need to be set to assure that Federal goals were met. For example, it might be necessary to set aside a certain portion of funding for small, very isolated communities.

Photo credit:Mark G. Young

Hospitals, such as this one in Culpeper, VA, are important resources for rural economic development.

An alternative way of achieving flexibility at the State and local levels is to work through the Cooperative Extension Service. CES already has administrative units in all jurisdictions. And program activities vary from State to State. Subject-matter specialists, who are usually employed by a land-grant institution, aid county agents in the development of technical information; supervisors and State leaders assist in program planning, budgeting, and public relations. The role of the Federal Government is largely one of consultation and leadership rather than direct management or control.

Vision and Leadership at the Local Level

The local community is key to the success of rural development. Whatever the larger national interest in a strong rural America, the people directly affected are those living and working in rural areas. If rural education is to be strengthened, rural jobs created, rural health care improved, these changes will happen because rural citizens are motivated and

[78] The focus of State leadership will vary, and might include State economic development departments, State rural policy offices where they exist, State public utility commissions, and various statewide economic development councils and commissions. Ineffective State rural development planning office needs the support of the Governor, access to and cooperation from relevant State agencies and the State legislature, good rapport with local rural communities, and sensitivity to the need for local leadership and implementation.

Box 6-C—Livermore, KY

The importance of energetic, visionary, and dedicated leadership is especially important for economic development in rural areas. Without local leadership, the presence of good roads, sophisticated communications, and quality education can accomplish only so much. Even without such underpinning for a healthy economy, inspired leadership can go a long way in surmounting such obstacles. Such is the case in Livermore, KY, where the mayor has steered the community through the difficult years of a protracted recession.

Livermore is a small community of about 1,700 people in the western coalfield region of Kentucky. It lies on the banks of the Green River and is even passed by fiber optic wires though, as yet, the community has not yet been able to tap this resource. Livermore's economy struggles because several miles of county roads separate the town from any significant transportation arteries. Like many struggling rural areas, Livermore's economic straits are also related to its poor educational system, which drives away those with high aspirations for their families. Another problem is the difficulty in securing financing for small businesses.

Mayor Amber Henton is reknowned throughout much of the State for her efforts on behalf of Livermore. "Firecracker" and "livewire" were two adjectives used to describe her. She started out with the Federal Government during World War II before moving on to local politics, and this long experience as a civil servant, along with her savvy, is perhaps Livermore's most valuable asset. With her deep understanding of Federal and State bureaucracies, Mayor Henton musters all available financial and material resources to secure important services for the town. Among her accomplishments, Livermore has constructed housing for senior citizens and is building a 10-acre industrial park along with a lo-acre recreational facility.

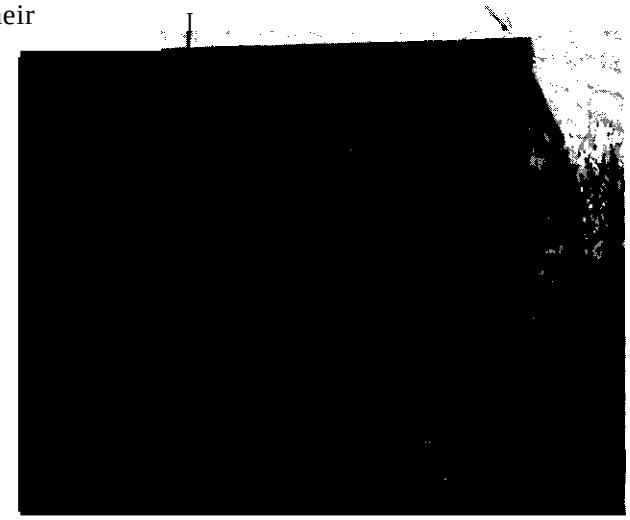

Photo credit: Mark G. Young

Mayor Henton's storefront office in Livermore.

SOURCE: ***Office*** **of Technology Assessment site visit, January 1990.**

have the skills and resources necessary to make rural development succeed.

Local communities in most rural areas are not presently equipped to provide leadership on comprehensive rural development in general or information technology in particular. Rural town and county governing bodies typically focus on meeting community infrastructure needs such as roads, schools, fire/medical facilities, water, and sewage. Many rural jurisdictions are hard pressed to meet even these basic needs, and do not have the staff or resources to undertake a broad-gauged economic development program. Many local governments are hindered by a piecemeal, narrow view of development, which is aggravated by competition over scarce resources and a general lack of awareness of the potential of information technology .79 In sharp contrast, most urban and suburban jurisdictions have fully staffed and funded economic development departments.

To take advantage of information-age technologies, rural communities need visionaries and activ-

[79]In the more affluent cities and suburban areas, economic development programs are robust enough to include local trade missions to foreign countries, zoning and architectural requirements that ensure high-quality local construction, and provision of child care, adult education, and recreational programs as important adjuncts to a healthy local community and economy. Local governments in affluent metropolitan areas are usually heavy users of information technology at least for office automation and management purposes, and have access to extensive technical expertise both inhouse and from telephone and cable companies, computer retailers, and systems integrators, among others, who are selling to the local market. And in the major metropolitan areas, the opportunities to learn about telecommunications and computer are overwhelming. High schools, community colleges, local universities, vendors, and professional associations offer a potpourri of classes, seminars, and mini- to full-length educational programs on information technologies.

ists. Visionaries can help local communities understand what telecommunications and computers can do and translate the technical possibilities into the every day life of rural citizens. Leaders and activists are necessary to implement these ideas[80] (see box 6-C).

Visionaries come from many places. Institutions of higher education provide one important source. Many colleges and universities already have computer/communication networks that are electronically linked to other institutions, libraries, and databases, and research centers throughout the United States and even the world. The future development of a high-speed national research and educational network (NREN) will provide universities even greater access to computing and transmission capacity, and information services. In addition, the number of educational institutions using communication technologies to develop and share educational resources and materials is growing at a steady pace. Many colleges now deliver at least some classes over the air or online to students at distant locations.[81]

Having established their own communication networks, and successfully used them to meet their educational goals, educational institutions are knowledgeable in the use of communication technologies. As large users of communication services-often ranking second only to State government-they exert considerable market power. As in the case of a large business, the demand of a statewide university system can, by itself, justify the deployment of advanced technology even to a relatively remote area. Because of these strengths, educational institutions can play a key role in assuring the success of telecommunication-based development programs. Not only could they provide expertise, they could also leverage their market power to draw communication providers to rural areas.

Colleges and universities also provide a locus for many of the key players involved in development.

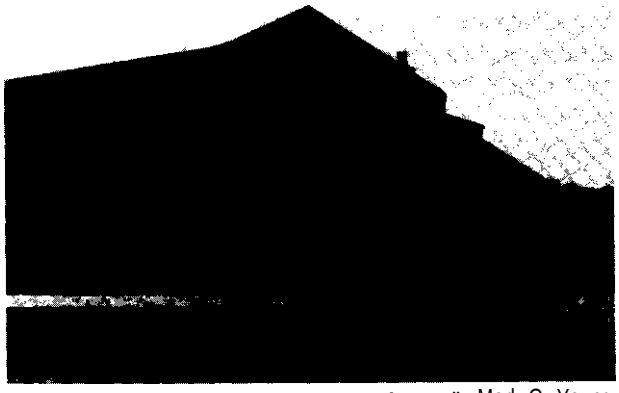

Photo credit: Mark G. Young

Owensboro Community College's Resource Learning Center in Kentucky. OCC, in conjunction with the local government, plans to employ telecommunications for a variety of social, cultural, and economic functions.

Businesses are now aligning themselves with educational centers to promote education, training, and research. They are also taking advantage of university online library systems and the growing number of applied research and development centers located at, or near, university centers. Similarly, many organizations involved in development are either housed at or near the university. For example, the Small Business Administration's offices are generally located on university campuses. So too are many Extension Service offices. Universities and colleges are also well connected to State governments, since many are governed by State boards and funded by the States. Thus, State systems of higher education could provide an impetus to the rural economic development process. Federal and State programs that do not provide a role for them will lose a powerful resource.

Another source of vision is the library community. Libraries are, by their very nature, in the information business. The larger public libraries and most college and university libraries already use information technology. It is not uncommon now for

[80] Successful long-term rural revitalization requires a commitment to developing leadership. This means providing opportunities for current leaders to expand their horizons, acquire or strengthen leadership skills, and learn more about the opportunities and challenges presented by emerging information technologies. This also means identifying persons with future leadership potential and providing them with the experience and training to build leadership capacity. Community colleges, small town state universities, professional associations, and Federal/State extension programa, among others, can all help bring special courses, seminars, and workshops to local leaders. These training activities can run the gamut from community organizing and coalition-building to fund raising to effective use of telecommunications and computers.

81 College-based activities run the gamut from sponsoring special courses or se* on telecommunications and rural development, to adding a rural development focus to existing courses (e.g., in agriculture, forestry, and business), and to conducting research (perhaps with Federal, State, and private sector funding) on rural development. Also, interested college and university faculty members are more likely to get involved in rural developmeas private citizens and thus provide visionary leadership in the community as well as the classroom. College and university students area still largely untapped resource. Faculty members can encourage student involvement in rural development issues by including site visita, field projects, user surveys, and the like as part of the curricula.

even small town college libraries to use both online and compact disk systems to search bibliographic databases. The library community as a whole is quite well organized and aware of the opportunities and challenges presented by electronic technologies. The challenge is to extend this energy and expertise to libraries and library users in rural America. This is already happening in some college towns and county libraries. But most rural libraries do not, at present, have adequate resources to provide leadership.[82]

Vision and leadership can also come from rural business communities. Businesses participate in local economic development programs through organizations such as their local chamber of commerce and their local Economic Development Administration (EDA) office. The quality and resources of such organizations vary considerably from place to place, as does their focus on telecommunications .83 As local businesses become more dependent on communication technologies, they will likely be more active in promoting technology deployment. However, when businesses view telecommunications as the harbinger of greater competition, they are often opposed to change.

If rural communities are to use telecommunications effectively, these visionaries cannot operate alone. They need to find common solutions to their diverse problems, given their limited size and scope. Such cooperation, however, may not be forthcoming. Although communication-based economic development programs are likely to have considerable long-term benefits, many stakeholders will feel threatened by such programs. Agency officials, at all levels, may try to protect their turfs, or be unwilling to gain the expertise needed for effective program implementation. Telephone service providers might be concerned that users, acting in concert, bypass their communication systems. State development officials may resent loss of control over development funding. heal development groups may resist newcomers seeking a share of development funding. An important role for the Federal Government, therefore, is to promote cooperation through incentives in the forms of grants and loans.

Educators have taken the lead in developing this kind of an approach. Under the Star School Program, for example, $33.5 million (in the form of 2-year grants) was provided on a competitive basis to partnerships set up to develop systems and programs for long-distance learning.[84] States must match the grant by at least 25 percent. These programs are intended to become self-sustaining. Taking advantage of a somewhat similar opportunity, the University of Maine/Telecommunications System used a 5-year, $4.4 million grant provided by the Department of Education under title III of the Higher Education Act, and matched by the State government, to help telephone providers pay for the upfront

[82]Federal and State governments can play a key role here, through funding and technical assistance to rural libraries anby providing relevant databases directly to rural America. Federal and State extension services and the Federal Depository Library Program are obvious candidates. Many government agencies already develop databases on research status and results, economic and demographic statistics, trade opportunities, and the like. The key is to find ways to make these databases available to rural libraries and hence to the rural entrepreneurs and activists. Ultimately, if rural America is fully wired (or cabled or dished) for digital data transmission and switching, rural citizens will be able to access remote online databases directly from their homes and offices, and download to compactdisks or other storage media, just as many urban and suburban citizens are already doing.

[83]For example, small information technology consulting companies are beginning to locate in rural areas. Atpresent, these companies still do most of their business in metropolitan areas, but they are ready and able to serve rural needs as the rural market develops. Also, in somrural regions, the small high-tech companies are banding together in consortia to share ideas, information market tips and the like. These high-tech consortia offer great potential to bring togetherresearch, educational, entrepreneurial, and economic development interests focused orrural America.

[84]The Star Schools legislation specifies two formats for the composition of eligible partnerships. In one, membership must include at least one State educational agency, State higher education agency, olocal education authority responsible for a significant number of poor or underserved students. Furthermore, this type of partnership is required to have at least two other institutions from a host of types, including universities, teacher training institutions, and public broadcasting entities. The other type of partnership must include a public agency or corporation already formed to operate or develop telecommunication networks to serve schools, teach training centers, or other education providers. All partnerships must be statewide or multistate. These requirements were meant to create new paths to improve the educational system by fostering cooperation among institutiona. For further discussion, see U.S. Congress, Office of Technology Assessment, *Linking for Learning: A New Course for Education OTA-SET-430* (Washington, *DC:* US Government Printing Office, November 1989), pp. 136-141.

costs of deploying a fiber network linking universities and community colleges throughout the State.[85]

Developing a grant program of this kind has a number of appeals. Ineffective, it would have a very high pay off. Moreover, it can lead to self-sustaining arrangements, if it generates cooperation and a group commitment among different players. The Federal Government could also maintain a good deal of program control, because grants would be provided on a competitive basis. Just as the Federal Star School Program stipulates the range of players that need to be involved in developing educational partnerships, and the amount of benefits to be targeted for low-income groups, so too a rural grant program could require that certain criteria be met. It assures cooperation and a holistic development perspective by requiring that a broad range of participants be involved in devising and implementing the development grant proposal.[86] And it could provide for equity and diversity, by setting aside a given proportion of funds for different kinds of rural communities. In addition, it could foster a statewide commitment by requiring a matching grant.

There are some problems with this approach. Many programs and partnerships developed under such a grantor loan program could prove threatening to rural communication providers and give rise to a number of tricky regulatory problems. There are also bound to be some failures with such an unconventional approach. The cost of failures can be reduced to the extent that something can be learned from them, and the experience gained can be built into subsequent grants. Moreover, the rate of failure is likely to be less if this kind of program is implemented in conjunction with the informational technology transfer approaches identified above. Some regulatory problems might also be avoided if plans are discussed regularly with State regulators. Conflicts with local communication providers will be minimized, if they are participants in the development of any grant proposals, and thus also have something to gain by their acceptance.

[85]The Department also supports nine regional educational laboratories, with 25 percent of each lab's resources targeted specifically to rural education (at congressional direction, $14M total for FY87-90). Information technology is a strong theme running throughout many rural projects, and also in math and science education projects directed at metropolitan as well as rural areas. The rural projects cover virtually every conceivable technology application for curriculum development, classroom teaching, and school management. Technologies include microcomputers, distance learning (via satellite, broadcast, and terrestrial transmission), computer conferencing, electronic bulletin boards, videodisks, and compact optical disks. In addition, the rural projects include development and delivery of innovative courses on career preparation and planning for rural students, ranging from building business entrepreneurial skills through hands-on "enterprise' experiences, to learning how changes in the global economy and technology effect job prospects, to identifying viable career paths for those who wish to continue to live in rural areas (or return to rural America after college military service). See U.S. Department of Education, Office of Educational Research and Improvement, "Thirty-One Rural Education Projects of Nine Regional Laboratories," no date. and *Regional Educational Laboratory Request for Proposal,* RFP-91-002, April 1990.

[86]Information technology investments in rural schools pay off several times over because many schools serve multiple purposes in the community. Distance learning and computer information systems used by students during the day maybe used for adult education and business development seminars in the evening. Rural citizens generally view the K-12 school system as one of the best hopes for the future of their children and community.

Appendix, Glossary, and List of Contributors