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ABSTRACT

The need to upgrade programs and services in rural communities is rapidly moving toward a critical juncture. A rural telecommunication network could act as an equalizer through: serving information needs of people in the fields of entertainment, education, health, governments, business, and industry; or serving special populations such as the aged, handicapped, gifted, linguistically different, migrants, and veterans. This paper focuses on well-funded experiments and demonstrations which failed to take root in rural isolated soil, showing that there appears to be little which survived the initial injections of outside federal, state, or foundation funding. Problems are identified as the following: available dollars are usually for capital expenditures, seldom for programming and "software"; regulations require a "teacher of record" present in the classroom; non-technical problems (institutional and personal) are often critical; inherent conflict exists between the need for programs which can be fitted to the individual schedules of teachers and the need for large scale programming which can take advantage of economies of scale; and there is an institutional perception that telecommunications and delivery systems are a part of the problem, rather than a part of the solution. (AH)

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TELECOMMUNICATIONS IN RURAL AMERICA:

SPECIAL POPULATIONS

SPECIAL PROBLEMS

Submitted to
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Telecommunications in Rural America

July 8, 1980

by Public Service Satellite Consortium

Abstract

The disproportionate shortage of health, education and other public services in rural areas is a national concern. In his State of the Union Message, sent to Congress in January 1979, President Carter emphasized the need to address the pressing problems of rural America. In his message, the President pledged to help rural Americans to:

- overcome the problems of isolation;
- promote economic development;
- meet basic human needs;
- protect the quality of rural life;
- assure equity in the administration of Federal programs for which rural Americans are eligible; and
- build a more effective partnership among Federal, State and local governments and the private sector in meeting locally defined rural development priorities.

Telecommunication technology is now being applied on a regular basis to better serve the information needs of people in the fields of entertainment, education, health, government, business and industry. The impact has also been felt by special populations: the aged, the handicapped, the gifted, the linguistically different, the migrants and the veterans. Inject a rural element, however, and the needs and problems are compounded while services diminish.

It is unlikely that telecommunications will be utilized extensively in rural America in the absence of fundamental organizational changes. Use of appropriate labor-saving technology probably would result in productivity gains, but first there must be coordinated planning and agreement on the basic objectives which are to be addressed in the public service.

New alternatives for better serving rural communities must be sought. Only through increased use of telecommunications can equal opportunity be extended to all Americans on an economical basis. The national commitment must be met. Platitudes and good intentions no longer suffice. Innovative ways to resolve the critical issues impacting on rural America must be pursued. The need to upgrade programs and services in rural communities is rapidly moving toward a critical juncture. A rural telecommunication network could be the equalizer.

July 8, 1980

by Public Service Satellite Consortium

Introduction

The decade of the seventies witnessed technological advances in the U.S. which vastly increased productivity in almost every area of human endeavor. The momentum for change was felt throughout but a void remains in rural America. Rural communities, even those with new found prosperity, continue to be technologically undernourished.

The late Peter Goldmark envisioned the creation of a "wired nation" by 1980 that would bring urban centered events to rural America. Mr. Goldmark visualized satellite transmission of health, educational, business communications and other information services that would revolutionize rural America. It hasn't happened.

Few argue that new technologies in telecommunications offer significant possibilities for improving the living conditions of rural Americans. These technologies have the potential not only for providing rural households with more entertainment and public affairs programs, but also for alleviating some of the serious problems inherent in the delivery of education and health services to rural communities.

In Alaska, for example, it has been demonstrated that in emergency situations, paraprofessionals can use telecommunications for obtaining guidance from physicians--guidance which would otherwise not be available. One radio physician team can consult and direct as many as 50 paraprogessionals, each of whom could oversee separate villages of 100 to 200 people.

Advanced education and health-related technologies are in the early stages of development. The emphasis continues to be on demonstration, and as a result has not been available to the public on a general basis. In fact, most rural communities including those in Alaska have never been exposed to new advances in telecommunications in any significant sense (significant defined as continuing operational services).

In most cases where efforts have been made to improve services to rural areas using telecommunications, a government agency has footed the

bill. Low population density has made the development of telecommunications in rural areas relatively unattractive to profit-oriented firms.

Excluding, for a moment, consideration of rural America, the use of communication satellites for delivery of programs and services is very much a reality. The $50 billion plus investment in the space program is now being applied on a regular basis to better serve the information needs of people in the fields of entertainment, education, health, government, business and industry. The impact has also been felt by special populations: the aged, the handicapped, the gifted, the linguistically different, the migrants and the veterans. Inject a rural element, however, and the needs and problems are compounded while services diminish.

When we speak of rural populations, we generally think of communities with populations under 2,000, based on census criteria. However, any analysis of ruralness must include such factors as limited accessibility to conventional modes of transportation to population centers and limited accessibility to communications systems.

Television in rural areas is a good example. Though 98% of all American households receive at least one television channel, as many as 1.2 million rural households are outside the broadcast areas of conventional TV. Those rural families who do receive television programming overwhelmingly receive less than the urban share of channels. A large majority of rural households (14 million, 70%) receive three or fewer channels. By comparison, 65% of all households, mostly in urban areas, receive five or more channels. Overall, including service from translators and cable, the typical rural household receives 50%-60% of the television signals received by urban households. Public television is usually what rural communities don't receive.

Ironically, the low population densities and attendant social service needs make the use of telecommunications in rural areas attractive, particularly in the areas of education and health. It's exciting to talk about, but difficult to implement. This situation is further complicated by the exodus from cities to rural areas. Since 1970, population growth has been greater in rural areas than in urban areas of the U.S.

Introduction. . .

An interesting observation is that many designated rural areas are in reality bedroom communities for a metropolitan community. In an attempt to escape the blight of the city; for a variety of reasons--bussing, smog--families with means are able to live in rural communities while continuing to work in the city. Although their property taxes support the rural schools, this sudden influx has created a burden on existing facilities. It has also presented problems for the schools because the demand for services that were available in the city are not available in rural districts. The focus of this paper, however, will be on rural isolated communities not on bedroom communities designated as rural.

An important dimension of the increased demand and concomitant burden on community facilities is the fact that the median age of the population in growing rural communities is almost two years less than declining communities. Thus, more families with younger children (who will attend school for a longer period of time) are moving into rural areas.

Ironically, large numbers of families that have moved to the country to get away from the city experience a different type of trauma in the transition and ultimately migrate back to suburbia. The rural poor do not have this option.

Rural Telecommunications Network

Why not a rural telecommunications network? In a very simplistic sense a rural satellite network would be feasible if the demand for a specific set of communication services was sufficient to induce a commercial supplier to offer the proposed combination of services at the right price. It does not require another feasibility study to determine that in rural areas, the demand cannot overshadow the price of development. Fewer voices coming from rural America translate into bad potential market surveys.

Rural Telecommunications Network. . .

At the present time, no common carrier appears prepared to provide comprehensive broadband service to rural America. The Bell System now serves 80% of the U.S. population and about 40% of the U.S. geography. Some 1300 independent telephone companies serve 20% of the population and about 60% of the geography. Rural America is essentially served by a large number of small, independent telephone companies, and in the last year the growth of cable systems with satellite earth stations have created an ad hoc rural network for certain program services. Phenomenal growth of telecommunication systems--phone or TV--is catalyzed by population density because the modus operandi, motivated by profit, is subscription service. Telecommunications technology in a dense population quite logically promises more income per capital-outlay dollar. By comparison, much more investment is needed to wire rural America, and the subscription potential is less.

For a broadband (essentially television) rural interconnection network to be feasible, most entertainment and non-entertainment telecommunications services considered desirable by the rural community would have to be conjointly packaged and packaged so most rural areas are attracted. (This could mean a combination of program/information services as apropos to rural Appalachia as to the Northern Rockies--admittedly a difficult package to conjoin.)

In addition to the service package, the legalities of carriage must be faced. Appropriate linkages must be established between the Bell System, the company which becomes principal investor in the rural interconnection network, and the independent telephone companies which now serve most rural communities. Present regulations prohibit a single owner from controlling both the cable TV franchise and the telephone company in a community.

Many proponents of rural telecommunication development feel that federal regulations have been a barrier. For example, the FCC bars cross-ownership of telephone and cable lines. This regulation is presently under review. Although waivers are available in communities where competitive provision of telephone and cable television services is not feasible, the FCC's case-by-case approach and waiver criteria may have discouraged new development.

Constraints

The structure of the present system of public services in rural America, both economically and programmatically, may not be consistent with the requirements of a rural telecommunications network. A classical problem -- too much autonomy, fragmented decision making, piecemeal services. Implementation of a comprehensive information network may face organized resistance and probably will take years to accomplish. The problems encountered in facilitating change are institutional in nature. The lack of a well-developed organizational mechanism to accomplish meaningful change has no doubt impeded progress.

Programs and services in rural communities reflect priorities in non-technical areas; e.g., housing, water, energy, jobs, roads. Although telecommunications technology could alleviate some of these problems, it has not been seen as an important priority in its own right. Telecommunications must be interpreted as a tool to solve problems, not as another problem.

Although there is agreement that federal funds are available to support rural telecommunication, there are numerous problems that have to be resolved before funding can materialize. Most federal monies are funneled through state agencies and then to local agencies. Funding restrictions on capital outlays, duplication of efforts by different social service agencies, and the fickle nature of federal funding patterns perpetuates demonstrations and stifles ongoing, continuous services. Those who have worked in rural telecommunications recognize the need to change attitudes of decision makers regarding technology. There is still a feeling that telecommunication alternatives are not yet viable possibilities, other than for demonstration. There is a reluctance to invest in hardware when people perceive the system as experimental. There is a feeling that innovation, per se, does not necessarily improve quality or reduce costs. A very good case and tremendous patience will be required to aggregate the resources and requirements of the public service community.

Satellite Communications

Communication satellites would definitely play a critical role in the creation of a rural telecommunications network. Satellite communication has several characteristics that make it very attractive to organizations which are concerned with health care, education, library service, public safety, business and industry. These advantages are most apparent when the organization is attempting to deliver services over large, sparsely populated areas, where distance-insensitive satellite service is a significant factor.

Satellite systems are also flexible. New points can be added to a network by installing an earth station, without regard to the difficulties of distance and terrain which plague the installation of terrestrial systems. This feature is particularly important in rural areas. The availability of smaller, simpler and less expensive earth stations, make this characteristic ever more attractive today.

Satellite carriers provide more flexible interconnection arrangements to owners of local broadband networks than terrestrial carriers. The advent of Cable Net II, hotel networks and other dedicated distribution systems offer the client in the population center a number of attractive alternatives. Broadly speaking, satellite carriers offer "bandwidth in bulk," while terrestrial carriers offer individual services.

Certain public services are not desired or required because people are not aware or because it has not been feasible to provide such services. Flood control was demanded as soon as people figured out how to do it. Broadcast news became a public requirement as soon as radio made it possible. Because of space technology, we have the communications capability to address a number of problem areas previously unattended: disaster relief, search and rescue, navigation, cargo tracking, monitoring of water supplies or forest fire conditions, and emergency medical service. Solutions exist and services are possible, but only public demand will stimulate the inertia to generate change.

Satellite Communications. . .

Every satellite system in existence has been formed around an organizational and financial backbone. The Intelsat system was able to expand quickly during the mid-1960's because NASA required reliable communications to support the Apollo missions. The domestic systems in the Soviet Union, Canada, and Indonesia were built to serve a defined government market for communications. The Marisat system was made possible due to the early support of the U.S. Navy. Closer to home, no one will argue that the Public Television Satellite System established WESTAR. Similarly the RCA/SATCOM network would still be in the red today without the cable system connection.

Advocates of a rural satellite network argue that subsidization is needed to establish the system but that recurring revenue from operational services would realize a self supporting enterprise.

Rural Education

Rural education is particularly amenable to the use of telecommunications technology primarily because of the inaccessibility and inequality which characterize the conventional education in rural America. Rural areas, by the very nature of their geographic isolation, have unique educational needs.

The Office of Technology Assessment study on "The Feasibility and Value of Broadband Communications in Rural Areas," found the two major factors influencing quality and access to education in rural areas are economic characteristics of the community and organizational structure of educational systems. The importance of economic characteristics lies in the fact that major financial support for education comes from the local community. Approximately half of all funds supporting public elementary and secondary education are obtained from local sources. State governments contribute an average of 42% and the balance comes from the Federal Government.

Although it varies from state to state, the Federal Government contributes only a small amount (roughly 10%) of support for education.

Rural Education. . .

Equal educational opportunities cannot be guaranteed for poverty areas when the federal contribution provides only 10% of an already shrinking educational budget.

Revenue for local school systems in nonmetropolitan areas is financed primarily by property taxes. However, 60% of the nation's substandard housing is in rural areas where only 20% of the federal housing assistance dollars are channeled. The disparity is obvious. There is a limited tax base to generate local economic support of rural educational systems. In addition, rural communities have a lower per capita income and a higher incidence of poverty than metropolitan areas.

Certification issues can also restrict the use of telecommunication systems. Funding patterns perpetuate the traditional classroom unit which requires a certified person in each classroom to comply with funding regulations. Education is labor intensive -- more so in rural schools. Although telecommunications can help to alleviate the problem, it's a delicate issue. With cost containment becoming a major factor in our schools, something must be displaced to accommodate use of telecommunications as an alternative. The biggest line item in any school is personnel. A 5% line item transfer of funds may not significantly affect a large school district, but it can be devastating to a small school district. Similarly, 5% of a large school district's budget is theoretically enough to acquire just about any new technology, but 5% of an already limited budget won't buy much in a small rural school.

It is not uncommon for school districts to allocate 80% or more of their budget to salaries; and, because the total budget is relatively small in most rural districts, teachers often receive proportionately lower salaries. This, then, leaves 20% of the budget for all remaining expenditures, including facilities, equipment, programs and curriculum materials. Without subsidization, additional capital outlay for advanced technology is virtually impossible.

Educational Administration

Education has undergone profound internal alterations in the last decade. The impact on school administrators has been significant. With all the changes in society today, many of which intimately involve public education, school administrators are being confronted with a multitude of problems.

The most troublesome issues include enrollment shifts, a surplus of teachers, or inability to attract teachers, increasing specialization, civil rights, collective bargaining, accountability, discipline problems, desegregation, energy conservation, and new funding patterns. Perhaps the issue that is most familiar to the traditional administrator is parental concern for quality education. The "back to basics" movement is all too familiar to the school administrator.

A school administrator, particularly in a rural school, needs improved access to information. An occasional workshop for administrators is inadequate. The answer may be found in a rural telecommunication network. Such a system could provide relevant, up-to-date, and economical information to rural school administrators.

A rural telecommunication network with interactive computer capabilities could be used to monitor student progress and give options for further study. The rural information network could be used to reduce administrative paperwork. School administrators are burdened with reporting information to state and federal agencies on a variety of subjects: student and teacher personnel data, attendance data, and financial reports. While a centralized computer storage and retrieval facility normally is available to larger school systems, the rural school administrator still must operate a paper-pencil-mail delivery mode.

A rural telecommunication network could be used to facilitate communications between state agencies and school personnel. State agency planning and school service personnel need to communicate frequently with school personnel, counselors, administrators, school boards, citizen accountability committees, and teachers. The wideband distribution capability of satellite systems also offers an economical alternative to travel. State

and regional educational agencies could more readily interact with rural schools on topical issues, trends, and concerns.

Migrant Education

Rural schools are also plagued by the mitigating problems associated with migrant populations. Approximately 1.4 million people in the United States are migrant workers; that is, agricultural laborers who move to find work wherever there is a seasonal demand. These migrants include Chicanos, Blacks, Indians, Puerto Ricans, and Anglos. They move in three broad streams from Florida, Texas, and California through forty-seven states.

Predictions on the future magnitude of the "migrant problem" vary. At first glance, the migrant population appears to be decreasing as a result of the increased use of agricultural machines and the reduced need for field labor. A closer inspection, however, reveals that the migrant population is growing because single male workers are being replaced by entire families. It is unlikely that this population will decline for at least ten to fifteen years.

The problems and needs of migrant workers and their families probably have not increased in recent years, but the nation's concern for them has. The emergence of migrant spokesmen, a heightening consciousness of civil rights, and the publicity given to these issues, have all contributed to growing political pressures for programs to better serve migrant families.

The primary needs are common to all states with sizable migrant populations: adequate housing, basic health and nutritional services, appropriate educational opportunites, information regarding employment standards, and assistance. Although most states allocate resources to meet "primary" needs, funds are either unavailable or inadequate to address the educational needs of migrant children.

Those states with a substantial migrant poulation, of course, cannot overlook that group's special needs while other services are initiated and expanded. More effective use of telecommunication technology would expand and improve services and programs to the migrant population. The need for

a relevant program plan, however, is a prerequisite. To date, excluding isolated attempts to utilize mediated instruction, there has been little evidence of any concerted effort to apply labor and cost-saving technology to the problems inherent in migrant education.

The Migrant Student Record Transfer System, an intersate system located in Little Rock, Arkansas, computes and analyzes information on the migrant population. The need for such a system is critical, since there is evidence that migrant children have been re-innoculated or re-tested because of a clinic's or school's inability to obtain updated records. Record keeping is a difficult problem. The migrant family does not usually announce its arrival or departure, creating an additional time lag between arrival, identification of needs, and commencment of service delivery. Immediate access to a comprehensive data base could enhance educational service delivery to migrant children by reducing duplication in record keeping and by providing continuity to the curriculum. Federal assistance is available but eligibility is essentially limited to local and state education agencies, thus diminishing possible impact on inter-state migrant requirements.

Fragmentation of services and programs at the state and local level further compounds the problem. In most states, it is unclear where responsibility for migrant services lies. The taxpayers in general, and employers in particular, are wary of providing additional services, which will entail restrictive state and federal regulations. Except in those states where migrants return after the harvesting season, the problem does, after all, disappear for much of the year.

In the face of these realities, relevant programs and services for the 500,000 migrant children seeking an education are rare. The lives of migrant children are commonly unstable, uprooted and chaotic; their school attendance is likewise sporadic and inconsistent. Ninety percent of these children never finish high school and their average education level is fourth or fifth grade.

Migrant Education. . .

The problem of providing services to migrant youngsters is national in scope, interstate in nature, and rural in application. There is little likelihood that the necessary programs will be adequately funded either by the Federal Government or by individual states. Migrants pose an unique and complicated problem because they generally cross several state boundaries. In addition, accurate data on their numbers and travel patterns are almost nonexistent. Intrastate workers -- those who may travel substantial distances but do not cross state lines -- may not be counted at all.

There is an obvious need for some mechanism to coordinate and aggregate the existing resources, and in turn provide a better means of service delivery to migrant populations. Appropriate use of telecommunications could dramatically upgrade the level of service to migrant populations. The same system could be utilized in a wide range of applications in rural schools.

Special Education

It has been well documented that individuals with mental or physical handicaps are often excluded from schools and educational programs, barred from employment, or are under-employed because of archaic attitudes and laws, denied access to transportation, buildings, and housing because of architectural barriers and lack of planning, and discriminated against by public laws. The American public, in general, is simply unfamiliar with and often insensitive to difficulties which confront individuals with handicaps. When by chance or circumstance the handicapped individual lives in rural America, the problems are magnified.

In the United States, there are an estimated seven million deaf, blind, mentally retarded, speech impaired, motor impaired, emotionally disturbed, multiply handicapped, or other health impaired school-age children. In addition, there are an estimated one million pre-school handicapped children who require special education programs. These children represent approximately 10% of the school-age population, and although the number of handicapped children receiving special education services has increased, only about 40% of these children are receiving an education which is

designed to enable them to approach their maximum capacity. Additionally, there are an estimated one million handicapped children who are totally denied access to a free public education. Further, there are an estimated 125,000 mentally retarded, emotionally disturbed, and physically handicapped children who live in state institutions where most education programs are inferior or nonexistent. The implications for the handicapped in rural America are evident.

Theoretically, any program or service for the handicapped available in the cities could be adapted for use in rural schools. But new methods for serving the educational needs of rural communities are needed. To support any comprehensive instructional delivery systems there must be an array of special services and programs. As teachers individualize instruction for pupils and as schools provide more instructional services for individual pupils, there must be an effective system for delivery of special information and materials to teachers and pupils. Services include special transportation, special seats, electronic communications equipment for health and education, consultative services, instruction for homebound students when necessary, public information, etc. Access to services and programs not readily available, or difficult to justify because of geographic constraints or low incidence, could be shared with other communities through use of telecommunications.

Gifted Education

The rural isolated gifted child presents another unique problem. Most schools cannot afford to single out one or two gifted children for special help; there may not be enough gifted children in the whole school to justify the extra time and expense of identification, let alone special treatment. In addition, many rural teachers, because of their relative isolation may not be aware of existing enrichment resources for the gifted and many schools interpret the symptoms of the thwarted gifted child as behavioral disorders.

Gifted Education. . .

Gifted children demonstrate a wide variety of exceptional talents, only one of which could be called "academic." Academic talent is widely accepted as a main characteristic of gifted children. Most teachers are already aware of, and to some extent prepared to cope with, the heightened intellectual or academic, ability of some children. But what about the highly creative or artistic child who is visually oriented, or the child who is performance oriented, who is physically expressive, or the child who has exceptional spiritual or social perceptivity?

Telecommunications can be the vehicle for enriching the curriculum in rural schools. A variety of enrichment programs could be transmitted to any participating school. The interested child could elect to watch selected programs, providing a way for schools to bypass the additional responsibility of devising a new curriculum. Teachers in rural schools admittedly over burdened would be relieved of the extra pressure of developing special materials for the one or two students who seek special challenge. An interactive system would also enable a gifted student to converse with experts in the special fields of study.

New alternatives for serving the educational needs of rural communities must be sought. The national commitment to equal educational opportunity must be met. Platitudes and good intentions no longer suffice. Innovative ways to resolve the critical issues impacting on rural education must be pursued. The need to upgrade educational programs, services, and teacher training in rural communities is rapidly moving toward a critical juncture. A rural telecommunication network could be the equalizer.

Public Television in Rural America

The need to extend public television service to geographically isolated communities has been well-documented in the past; however, service has not been technically or economically feasible. In 1978 the PSSC, under contract to CPB, examined operational alternatives for extending or improving public

television service to rural communities in Wyoming, Montana, and the Appalachian region. The study, "Public Television Service in Rural America," was given impetus by recent developments in telecommunications technology.

A very simple rationale: high-powered satellite systems and lower-cost earth stations make it possible to receive television programs directly from the satellite in areas which are not served by existing public television stations. The public television satellite system provides an opportunity to initiate an operational scheme to extend public television to rural America.

As part of the study, data was compiled on technical and financial requirements for receiving public television using small earth stations in conjunction with mini-transmitters, cable systems, and translators. Community interest and willingness to support public television were also examined.

Findings from the study reinforced what was already known. Commercial television is now available in most rural communities because of cable and translator service. It may be poor or spotty, but it's there. Public television, on the other hand, is still not available in most areas of Montana and Wyoming. Public television in Appalachia is more prevalent, however, the signal quality is poor in many rural, isolated communities.

The study was completed to fulfill the contract with CPB. PSSC, however, was encouraged to proceed in developing an operational plan that would facilitate extending public television to selected rural communities in Wyoming and Montana. CPB committed funding for planning activities. The National Telecommunications and Information Administration's Public Telecommunications Facilities Program made encouraging sounds about funding equipment and facilities. Several other timely events provided additional impetus.

The public television satellite system, which interconnects the nation's public television stations via Western Union's WESTAR satellite,

became operational in 1978. The WESTAR signal covers all of the United States -- all of it, including rural America. Contributions from rural America helped pay for this system.

The proliferation of small earth stations and the de-regulation of licensing of receive only earth stations were other contributing factors. Another significant event was the December 8, 1978 FCC decision that allows translators to receive an FM microwave signal -- or essentially a satellite signal. Previously this was not allowed. It was also recognized that problems regarding program rights and distribution, as well as a number of regulatory problems which restrict public television distribution using small earth stations, translators, cable, and mini-transmitters would need to be resolved.

A more fundamental issue remained: dollars. There is now an expanded funding base to support telecommunications activities in rural America. The big plus could be the Public Telecommunications Facilities Program (PTFP). The facilities program, transferred from HEW to the National Telecommunications and Information Administration (NTIA) in the Department of Commerce, provides fund for facilities and equipment for the extension of public telecommunications services to as many citizens as possible. Telecommunications services are defined as noncommercial educational and cultural radio and television programming and related noncommercial instructional or informational materials.

Previously PTFP funds were earmarked exclusively for public radio and television station activiation or expansion. The new regulations provide greater latitude. It "permits for the first time Federal funding for the nonbroadcast distribution of noncommercial educational and cultural radio and television programming and related noncommercial instructional or information materials." It also "provides that not less than 75% of appropriated funds shall be available for the extension of public telecommunications services to areas not presently receiving such service." Other agencies will now be eligible. A community translator association is eligible; this was not so before.

Public Television in Rural America. . .

More importantly, the number one priority for PTFP specifically addresses the needs of rural America. "Priority I - Provision of Telecommunications Facilities for First Service to a Geographic Area." Within this first priority, three subcategories will be established: (a) "Projects to establish telecommunications facilities which include local origination capacity." (b) "Projects to extend existing telecommunications delivery systems." (c) "Projects to establish telecommunications delivery systems without local origination capacity."

In the spring of '79, PSSC prepared and submitted a proposal for PTFP funds on behalf of 3 rural communities in Wyoming and 7 in Montana. The requested funds would be used to procure and install small earth stations and the associated electronics to enable each of the communities to receive and broadcast public television programs.

The plan was for PSSC to assist the communities in acquiring the necessary equipment. The earth station and mini-transmitter, however, would be licensed in the name of an appropriate community agency. Ownership of the equipment would also be in the name of a community agency. PSSC would provide the necessary assistance to license and install the equipment and, if needed, would provide subsequent maintenance support to the community, under a separate contract.

The proposal process was cumbersome. The task required to complete FCC forms to construct and license the earth station and the translator (min-transmitter) in each community was mammoth. There were over 500 pages of forms for each community. Such a requirement is enough to discourage even the most enthusiastic of communities. When even copying is a problem, it is unrealistic to expect a small rural community of a few hundred people to complete the forms without assistance. This has a direct bearing on funding because without forms the bureaucracy does not function.

The proposals were submitted, reviewed and accepted conditionally. However, a new problem was created by PTFP. The staff determined that the grants could not be made unless a program service was identified and approved. The applications had identified several programming sources, such as individual licensees, regional networks and the Public Broadcasting

Service basic feed. One station, KRMA in Denver, Colorado had agreed to allow its broadcast schedule to be utilized. But, by solving the program rights problem an economic problem, namely, the cost of a transponder was created.

In the short term, until a rural program service could be established on an individual channel, the only available program service would be the PBS basic feed. The grants were denied in 1979 with assurances that funding would be available subsequently if the program access issue was resolved. In early 1980 PSSC resubmitted the proposals on behalf of all ten rural areas. Concurrently PSSC petitioned PBS to allow unmanned small earth stations to receive public television programs directly from the WESTAR satellite. The Distribution and Support Service committee reviewed the request and directed the staff to study the implications further. The committee said it was concerned with efficiency, localism and precedent setting. To compound the PBS negative decision, FCC staff waffled and all ten applications were in jeopardy once again. It was assumed that the problem of licensing mini-transmitters had been solved. Initially FCC staff indicated there would be no difficulty licensing the low powered mini-stations since a precedent had been established in Alaska. Recently because of related licensing problems the FCC has refused to rule on such applications pending an exact rule making about low powered transmitters. Consequently because PTFP cannot reserve funds, the proposals were not approved.

Further study was not required, the implications were clear. Most rural communities do not receive public television. The ad hoc distribution system proposed by PSSC could have alleviated the problem. There is no sound explanation for the PBS or FCC decision. Establishing a precedent is not a valid reason. The inherent problem surfaces when one probes the politics in public broadcasting. The initiative for this activity came from CPB. They supported a study "Public Television in Rural America" in 1978. Subsequently, funding proposals and FCC applications for first time public television service were prepared and submitted. It was not designed as an experiment or demonstration. It would be an operational service though it would not be the ideal system. Scheduling would present minor

problems, and momentarily losing the signal between programs could be an aggravation, but the rural viewer has learned to cope with electronic adversity and would accomodate. When a signal is available they will watch it. It is also reasonable to expect that such problems would be alleviated as the service evolved. Unfortunately the bureaucracy prevailed and once again at the expense of rural America.

Conclusion

Ten small earth stations located in rural Montana and Wyoming cannot be construed as a telecommunication network. The experience, however, in attempting to solicit funds, acquire program rights and resolve regulatory problems will have proven invaluable if and when a rural telecommunication network is launched. The experience also suggests additional study. Certain questions need to be answered. *What are the major factors which will influence implementation of a rural telecommunications network? What commercial, noncommercial, and entertainment services appear to be most amenable to aggregation in rural America? What options are available to finance the network? What is the ability and willingness of rural users to pay for services?*

It is unlikely that telecommunications will be utilized extensively in rural America in the absence of fundamental organizational changes. Use of appropriate labor-saving technology probably would result in productivity gains, but first there must be coordinated planning and agreement on the basic objectives which are to be addressed in the public service.

Without diminishing the potential of telecommunications technology, adoption by public agencies is a slow process. When the setting is a rural environment, the pace of progress is even slower. The organizational and institutional factors which constrain adoption of new technology are complex but not insurmountable. Despite the inherent difficulties encountered in facilitating change and adopting innovation, telecommunications holds real promise for alleviating many of the problems in rural America.

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