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ABSTRACT

In the history of Federal involvement in rural areas, communications has played a significant role. However, at the moment, the future of rural telecommunications looks bleak. Although the extent of interest within the Federal government is wide, the intensity of interest is low, particularly at the highest levels. This paper provides: (1) a review of the specific interests and capacities of the various Federal agencies actually or potentially concerned with rural telecommunications; (2) an assessment of the specific roles that various Federal agencies and other interested parties might play in rural telecommunications; and (3) a description and appraisal of the merits of various scenarios by which different plays might be combined into a broad effort. Information is from several interviews with Federal government officials and other interested individuals, along with a review of recent legislative initiatives. Among the Federal agencies discussed are the: Department of Agriculture; Appalachian Regional Commission; Office of Telecommunications Policy; Department of Commerce; and Health, Education, and Welfare. (NQ)

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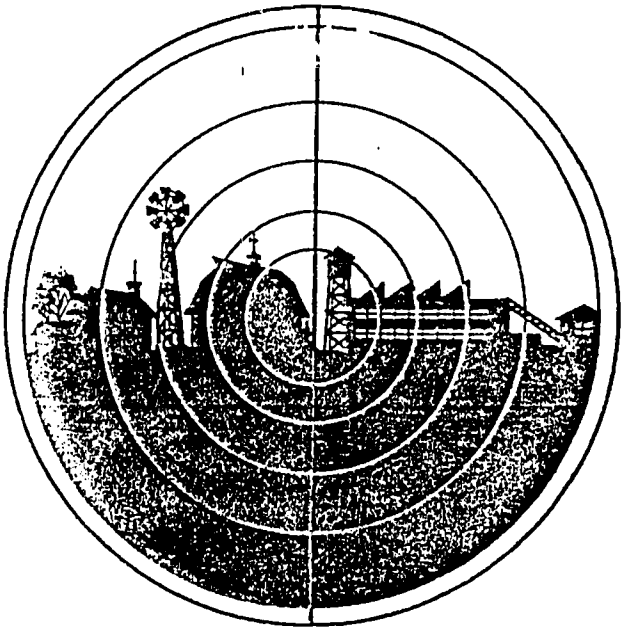

November 15, 16, and 17, 1976

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RC 009683

Communications and Rural America

Purpose

In April 1976, the Office of Technology Assessment (OTA) of the U.S. Congress issued a staff report entitled *The Feasibility and Value of Broadband Communications in Rural Areas.* The purpose of the conference is to extend this effort by:

- Considering a broader range of communications technologies which might be used to meet rural needs.
- Further examining the question of whether system demonstrations aimed at achieving economic viability are needed and if so, identifying the kinds of demonstrations which might be undertaken.
- Further examining whether rural interests have been adequately considered in existing Federal communications policy.

The outcome of this effort will be a report incorporating the information and points of view presented at the conference.

Congressional Interest

The conference is being held in response to a request for additional information on rural communications from Senator Herman Talmadge, Chairman of the Senate Agriculture Committee, as approved by the 12 member Technology Assessment Board of the U.S. Congress. Senator Pastore of the Senate Subcommittee on Communications subsequently joined Senator Talmadge in support of the conference. It is intended that the conference will be of value to the U.S. Congress in its deliberations on communications policy.

Conference Dates and Organization

The conference will convene for 3 days, November 15–17, 1976, with about 60 invited participants. For the first 2 days, participants will be equally divided among three panels which will meet in parallel. Each panel will concentrate upon a specific topic addressed in the OTA report as follows:

- Panel 1. Rural Development and Communications.
- Panel 2. Technology, Economics, and Services.
- Panel 3. Federal Policy.

On the third day, participants from all three panels will meet together to exchange and synthesize findings and explicitly address the question of rural system demonstrations.

Cosponsoring Institutions

The National Rural Center is cosponsoring Panel 1 (Rural Development and Communications). The Aspen Institute is cosponsoring Panel 3 (Federal Policy).

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OPTIONS FOR FEDERAL ROLE WITH REGARD TO ADVANCED TELECOMMUNICATIONS SYSTEMS AND SERVICES

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DISCUSSION PAPER FOR PANEL 3

OTA CONFERENCE ON COMMUNICATIONS AND RURAL AMERICA

November 1976

Prepared by

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OPTIONS FOR FEDERAL ROLE WITH REGARD TO ADVANCED TELECOMMUNICATIONS SYSTEMS AND SERVICES

Introduction

This paper is intended as a companion piece to a discussion of federal regulatory policies as they apply to rural telecommunications being prepared by Henry Geller, also of the Aspen Institute Program on Communications and Society. Because of time constraints it was not possible to conduct exhaustive research as a background for this paper. The investigation consisted primarily of several dozen interviews with federal government officials and other interested individuals, along with a review of recent legislative initiatives. As a result, this paper is impressionistic rather than definitive, but it will hopefully lay a foundation for assessing alternative federal roles with regard to advanced rural telecommunications systems. It should also supply a useful inventory of the attitudes and capacities of federal agencies on whom reliance would have to be placed for carrying forward any rural telecommunications program of the sort suggested by the Congressional Office of Technology Assessment (OTA).

Background

From the Northwest Ordinance at the beginning of the Republic, through the establishment of the Department of Agriculture in 1862, down to the passage of the Rural Development Act of 1972, the federal government has acknowledged a special concern for rural areas and has upheld the appropriate-

ness of a federal role in providing social and economic services to those areas. In some cases, as with the development of agriculture experiment stations and the Tennessee Valley Authority, it has been determined that the private sector cannot adequately meet certain rural needs and that the federal government itself must become a service provider. In other cases, as with the Rural Development Act, the federal government has undertaken to provide a catalyst for private initiatives. The need for and propriety of such federal involvement has been confirmed despite America's progressive transition from a dominantly rural to a dominantly urban society.

In this history of federal involvement in rural areas, communications has played a significant role. At the end of the 19th century, Postmaster General John Wannamaker and Congressman Tom Watson of Georgia conceived the notion of rural free delivery. Historians have amply recorded that, together with the mail order catalogue and the daily newspaper, this service cut through the isolation of American farm life. Equally valuable was the amendment to the Rural Electrification Act in 1949 which allowed the Rural Electrification Administration to provide low interest loans to rural telephone systems. In the first case, the federal government took a major hand in actually providing communications services to rural areas. In the second case, it provided guaranteed loans and technical assistance to help rural communities help themselves. Both cases, however, evinced a strong federal commitment to communications as a means of enhancing economic development, social service delivery, and the general quality of life in rural areas.

Now it has been suggested by the Office of Technology Assessment that the federal government might consider taking a further step concerning improved rural telecommunications. OTA points out that advanced, so-called "broadband", telecommunications systems have the potential to provide improved health, education, culture, and economic opportunities to millions of Americans in sparsely

populated areas. The OTA report suggests that the federal government might encourage these developments by a program of demonstration projects designed to determine the feasibility of integrated broadband rural telecommunication systems that would deliver a multiplicity of services. This recommendation is premised on a number of critical assumptions: for example, that the switched landline telephone plant now in place in rural areas cannot be pressed into adequate service; that software for the desired services exists or can be readily developed at acceptable costs; and that the federal government could play a useful role in helping to bring new rural service configurations into being. Each of these assumptions is in fact challenged by at least some of the federal agency experts we have interviewed.

This paper assumes that the technical and economic questions will be addressed in the preparatory work and discussions of Panel 2 of this Conference. The broader political question of the appropriateness of any federal role in promoting advanced rural telecommunications systems deserves some introductory exposition here. That is the subject of the next section of this paper. The following section contains an assessment of the specific roles that various federal agencies and other interested parties might play in rural telecommunications. Next the paper describes several scenarios by which different players might be combined into a broad effort. It concludes by appraising the merits of these various scenarios.

Initial Observations

There are certain background considerations that must be borne in mind in approaching the question of the federal government's role in the field of rural telecommunications. These quickly emerge in most discussions with government officials and independent researchers. Taken together they set the frame of reference within which most observers believe the agenda of rural telecommunications development must be set. These considerations are

as follows:

1. There are very real questions in the minds of government officials and private researchers who have dealt with rural and urban telecommunications experiments about whether it is worthwhile to continue further experimentation, even of the sort proposed by OTA, as opposed to commencing the regular delivery of services by advanced telecommunications. Many individuals believe that the technical feasibility of most near-term telecommunications service applications has been adequately proven, that the economics of these applications can easily be worked out in paper and pencil studies, and that, in principle, there seems no reason to doubt that communities can be organized to make use of new service delivery modes. Their conclusion is that the time has come for the actual applications of telecommunications to social services and to economic development, rather than for further demonstration projects, no matter how elaborate.

Against these voices are ranged other individuals equal in experience who believe that demonstration projects are still essential if the problems of rural telecommunications are to be intelligently addressed. They point out that the government would have to allocate vast sums in order to introduce rural telecommunications services across the board, and that this is unlikely to happen on the basis of the few fragmented studies conducted to date. In their judgment, there are still too many unknown factors to permit confident projections from our present experience; those who would forego demonstration projects are simply showing impatience with the necessarily slow and careful progression of the intellectual and political processes in this field.

The dispute between these two groups of experts is essentially political in character. Those who would opt for a full-fledged service program have judged that anything less is likely to prove inconclusive and to be handicapped by inter-agency squabbling, failures of coordination with state and local governments or with private industry, and a generally low level of federal commitment. Those who favor a demonstration program believe such an exercise

is necessary to educate constituencies and to develop the cooperative framework in which long-term solutions, involving players other than the federal government, can be found. It will be up to policy makers to choose between the two points of view.

2. Whichever choice is made, any program whose goal is the delivery of expanded services to rural areas via telecommunications will find a widely varying range of interests in such a program among existing federal agencies. These range all the way from the interest of the Rural Electrification Administration, which devotes a major part of its resources to the field of rural telecommunications and which would like to expand the scope of its operations, to the interest of the Department of Housing and Urban Development, which has sponsored some experiments in this area in the past and where one or two people would like to stimulate future institutional commitments. Somewhere in between lie the interests of such agencies as the Office of Telecommunications Policy -- which sees rural telecommunications as a priority but does not now see itself as taking an active hand in experimenting in the area -- and of the Department of Health, Education and Welfare, which has several bureaus conducting moderate levels of experimentation in rural telecommunications along somewhat parallel lines. In short, there is both potential and active government interest throughout this area; what is needed is a point of focus and of coordination to put these disparate interests to work.

3. There is a wide consensus among knowledgable people that a number of government agencies should be included in any large-scale demonstration project or service-p[illegible]sion program. This is partly because there are so many interested agencies (and related constituencies) that it would be politically infeasible to ignore them. It is also partly because it would be wasteful to neglect the available expertise within the government wherever it is located. Primarily, however, there are two other reasons why a

variety of government agencies must be included in any rural telecommunications scheme. First, as will be more fully set out below, no one government agency has all of the different kinds of expertise or the mandate necessary to carry out a substantial rural telecommunications program alone. Some agencies are skilled in hardware development and applications, others in social service delivery, still others in economic development or in inter-governmental cooperation. Second, even if there were one single agency with the necessary mandate and experience, the notion of a comprehensive rural telecommunications project inevitably entails dealing with a vast array of government regulations that are not primarily targeted at rural applications or at telecommunications projects. If the project is to demonstrate the economic feasibility of a rural telecommunications system or service, it may be necessary, for example, to alter a large number of HEW regulations that restrict the purposes for which government funds in social service areas can be released. Past, even fairly modest, telecommunications experiments have been overwhelmed by this mass of red tape. Possibly, the needed adaptations could take place through a Congressional mandate to a particular agency to override the regulations of others. More realistically, it is likely to come about through some kind of cooperative multi-agency structure.

The need for cooperative action in this field is not limited to the federal government. If a federal initiative is taken, coordination with state and local government authorities will be imperative. Indeed, some experts in this field believe that unless the initiative comes in the first instance from the state or local level, any project is doomed to failure. At the very least, most experts agree that a close working relationship with the offices of the state governors, the state economic development offices, the state education and health commissioners, and the state public utilities boards, togetner with their local equivalents, is essential.

4. Although many government agencies are interested in some phase of rural telecommunications, this field is not central to the concern of any government agency, with the possible exception of the REA. Most communications-oriented agencies are more involved with the nationwide issues of telephone industry structure and broadcast regulation than with the more restricted issue of service to rural areas. Similarly, most agencies concerned with rural development or with social services do not see communications as a major factor likely to bring about change in the future. Within almost all major agencies, there are some who see a natural mating between telecommunications systems and rural problems. For the most part, however, these agencies are not prepared without further high-level stimulation to take the initiative in this area. Most are not currently planning to devote any substantial part of their funding to rural telecommunications.

5. All these considerations lead to the conclusion that if there is to be significant development in the field of rural telecommunications, some individual or agency must take the leadership in conceiving inter-agency projects and pulling together the different levels of government needed to implement them. A few agencies are interested in playing this role; others might play a lead role but seem disinclined to do so at the present time; still others are unlikely ever to take the lead but are willing to cooperate in joint projects and would be useful partners for any leadership agencies. The strengths and deficiencies of the various agencies will be explored shortly.

6. One reason why rural telecommunications has had such a low priority in federal policy and is progressing so slowly is that although, as noted, many individuals and agencies in the federal government believe that there should be a federal role in this field, many also disagree. On the one hand, most people who are experts in this area believe that the federal government does have a wider role to play. They are found in all agencies and at all but the highest levels of authority. Their argument is that rural areas

badly need help to improve social service delivery, economic development, and the general quality of life. Telecommunications can contribute toward solving these problems, but it is unlikely that private companies on their own will become providers of all the desired services in sparsely populated areas: The research, development and capital costs are simply too high in light of the size and configuration of the market. As a result, it is up to the federal government either to provide advanced telecommunications services itself or to offer some form of subsidy to private firms or local cooperatives. Government officials who take this point of view argue that the situation with regard to advanced telecommunications is essentially the same as it was with regard to telephone service thirty tears ago. In that case, it was apparent that, even with rate-averaging, national telephone companies would not serve sparsely populated areas adequately. These people argue that advanced telecommunications may be as much a vehicle for constructive change in rural areas as the telephone once was and that the federal government should follow the same logic in this area that it followed with regard to the telephone.

Other government officials hold a different point of view. They may take one or more of the following positions: (1) that rural areas, because of their limited population, do not deserve as high a place on the national agenda as urban areas; (2) that unaided commercial firms should and will provide adequate telecommunications to rural areas; (3) that telecommunications cannot help these areas; (4) that they have no special telecommunications needs; or (5) that it is too early to decide these issues. Proponents of these positions do not generally have as much experience with rural telecommunications as those who take the opposite point of view. Nevertheless, the influence of their thinking seems to be one of the reasons why rural telecommunications policy has not advanced faster in the United States.

Essentially there is a stalemate of two American traditions. The first is that, previously mentioned, of RFD and REA, and the second is the tradition

of leaving the provision of important services primarily to private industry. To the extent that this is an empirical question (i.e., insofar as it deals with whether commercial firms are likely to supply advanced telecommunications services to rural areas) there is simply not enough evidence available to judge between these two contending camps. There is rhetoric but not much reality to the claims of what telephone and cable and satellite entrepreneurs may or may not do on their own to bring new services to the countryside. Plainly, the unit costs of providing commercial service to scattered households are very high.

Most federal government activity in this area has not advanced the debate very far. It has consisted primarily of experiments to determine the technical feasibility rather than the commercial viability of delivering services to rural areas via advanced telecommunications. Little has been done to explore the appropriateness of a general promotional role for the federal government, possibly because this is as much a philosophical as an empirical issue. It may well be the absence of a debate on that issue, however, that is holding back rural telecommunications development. In all probability the debate will not occur until someone takes a major initiative in the area, and the body of this paper discusses how that might come about.

7. Assuming the propriety of some federal role in promoting rural telecommunications, the question remains what form or forms that role should take. Again there is remarkably little in the way of a developed consensus on this point. Most agencies concur that government should subsidize (perhaps by low-interest loans) rather than directly own telecommunications hardware. They also agree that applications should be closely integrated into existing federal, state, and local programs, that any projects should begin with careful planning phases including needs assessment, technology projection, and program design, and that state and local jurisdictions should be carefully consulted in advance and make substantial financial contributions to future projects. They agree that experiments should be carried out for a long enough period

of time for them to be carefully evaluated. Finally, they agree that to the maximum extent possible reliance should be placed upon private industry, that government should provide or subsidize a service only when industrial initiatives are very unlikely, and that when government does become involved it should, where feasible, build in provisions that will make it possible for industry to take them over in the long run. On the whole they find the model of REA (soft loans) more appropriate than that of RFD (government delivery of services). Since this is a widely held consensus, we will take it for granted that these conditions should be attached to any service or demonstration program. But this is about as far as the consensus goes.

Little thought has been given to exactly how government would help in the provision of social services, economic development programs, or cultural amenities. In particular instances, should it contract with private industry, provide loans, or go into the business of doing these jobs itself? Should its goal be full telecommunications service to each home, to local centers or some combination? Exactly what services should be provided? What mix of technologies (cable, satellite, telephone, broadcast, translators) in what configuration should government promote in what areas of the countryside? These issues have been inadequately discussed.

For the most part, the vision that federal agencies have of rural telecommunications projects is limited by their past experiences. They see such projects as fairly straightforward extensions of their existing programs. For example, REA would make loans for cable television projects on much the same terms that it makes loans for telephone service, and the Public Health Service would integrate tele-diagnosis into its existing outreach services. This may seem to make good sense, but it neglects the possibility that the capacity of the new technologies may make possible or even necessary the development of radically new kinds of programs.

This paper will also neglect that possibility, because consideration

of it involves a lengthy analysis of the technology itself which is beyond the paper's scope, because it would require voluminous examination of a myriad of programs, because there has been so little experience with integrating advanced rural telecommunications projects into government programs that there is little evidence on which to base evaluations, and because such evaluations would be unrealistically far ahead of the current policy debate. Rather this paper will present policy options as federal officials see them. As a result. this paper will primarily be concerned with how the limited and presently compatible interests of agencies can be combined in the foreseeable future. This is not a case where agencies can be seen on a collision course somewhere down the rails. It is a case where one should be grateful to get any agency past the starting line. In short, in the field of rural telecommunications the policy options are how to organize government to explore the policy options.

8. Because rural telecommunications has had such low priority, because those interested in it are so widely scattered and because there has been no debate on the essential issues underlying a federal role, it can safely be said that there is no federal government policy as a whole in this field, with the exception of the policies to support RFD and REA. As will be seen, a few agencies have small programs in rural telecommunications and to the extent that they stand by these programs, they could be said to collectively make up a government policy of sorts. Most of these programs are scientific experiments or limited funding efforts, however, and there has been very little attempt to coordinate the activity of different agencies or to set long range goals.

We must turn now to a review of the specific interests and capacities of the various federal agencies actually or potentially concerned with rural telecommunications, in order to see how a new program and policy in this field might be structured.

Possible Federal Participants in Rural Communications Projects

Leadership Agencies

1. Department of Agriculture. Since the topic under discussion is rural telecommunications, it is natural to turn to the Department of Agriculture as one source of potential leaderhsip. The Department is, of course, the lead agency for rural programs, and it does in fact have bureaus interested in communications. The primary communications bureau is the Rural Electrification Administration. Since 1949, REA has been making low-interest loans to rural telephone companies, concentrating its attention on small non-profit cooperatives. According to REA's legislation, however, it may make loans to profit-making entities as well. The definition of a "rural" area for REA is an unincorporated area or a town no larger than 1,500 individuals. Under these guidelines, REA-financed systems are now serving about 12 million people. These systems, consisting of 896 phone companies in 46 states, receive not only funding from REA but also considerable technical assistance and guidance.

REA is interested in broadband communications and has experience with some of its applications. It is installing coaxial cable on an experimental basis to consolidate some telephone systems, and is looking at the potential of satellites for interconnection and fiber optics for rebuilding plants in the future. In addition, it has long had the problem of how to deal with telephone service to remote areas in Alaska and may well wish to participate in future satellite demonstrations there.

REA could be a catalyst in another way for the development of integrated telecommunications systems in rural areas. A highly regarded report by the Denver Research Institute in 1973 suggested the development of "rural television authorities" as means of bringing service to sparsely populated areas. These authorities would make use of a combination of cable, translator and microwave technology to deliver moderate-capacity telecommunications services, and DRI took pains to show that integrated systems of this sort covering wide geographic areas are technically and financially viable. The DRI report laid heavy emphasis on the role of rural cooperatives in bringing the "rural television authority" into being. REA has had extensive experience in dealing with these cooperatives; and if, after further evaluation, the DRI scheme proves valid, REA could play a leading role in bringing the scheme to reality -- through appropriate technical assistance and low interest loans.

The Act under which REA operates, however, presently forbids it from extending assistance to the development of advanced, non-telephone communications systems. Some waiver or modification of this restriction would be needed for the agency to assume a leadership role.

REA itself would like to take on that role. It has a number of assets, including a system of field offices in place; and it has decades of experience with rural America. On the other hand, it is primarily a hardware-funding organization, with a little experience in the funding of any kind of programming. REA would like to get into this field, but it would probably be most effective as a lead agency if it were married to another existing body of expertise that complements its own.

A second Department of Agriculture agency that has some interest in telecommunications is the Farmers Home Administration. FHA makes low interest loans and provides guarantees for the construction of community facilities as well as for development of business and industry in rural areas under a variety of different programs. It has made two loans for rural cable television systems and is considering a number of others. FHA's stated attitude toward rural telecommunication systems is that if the community or business can show that such a system is economically sound, it stands just as good a chance as any other project of getting funded. Contrary to popular reports, cable television systems as such are not considered low-priority items for FHA. In fact, FHA would like to see more elaborate cable schemes including cable systems that would provide education, news, health, and safety services in addition to entertainment.

Like REA, however, FHA is primarily a hardware-financing organization; it is not prepared to get involved in the development of services via telecommunications. In addition FHA, at least under its present leadership, does not want to take the lead in rural telecommunications or indeed in steering rural development in any particular direction. The agency likes to think that initiatives primarily come from local communities, channeled through its state offices. In addition, FHA does not have the strong tradition of technical leadership that REA has. In short, given its present direction, it is an unlikely leader in rural telecommunications.

The third agency within the Department of Agriculture that is often mentioned as a possible leader is the Rural Development Service.

This agency was set up under the Rural Development Act of 1972 to coordinate government activities in rural areas. It would like to be the leader in any kind of rural activities, but it has only a small staff and they are kept extremely busy manning the agency's referral service and putting together rural projects of a fairly conventional nature. RDS is certainly a promising organization, but at present it has no particular expertise that would make it a suitable headquarters for a communications project.

All of the Department of Agriculture agencies would be glad to cooperate with each other and with agencies in other departments on rural communications projects. All of them feel, however, that their mandates make it more appropriate for them to become engaged in implementing on-going services than in conducting demonstration projects as suggested by the OTA report. Moreover, there has not been much in the way of expressed legislative support to date for the involvement of Agriculture in these fields. The Rural Caucus and the House and Senate Agricultural Committees have not -- up until the commissioning of the OTA report -- involved themselves in communications as an instrument of rural development. Despite these and the other drawbacks mentioned above, the Department of Agriculture, and the REA in particular, could take a lead position in developing a rural telecommunications program.

2. Appalachian Regional Commission. The ARC has had its ups and downs over the last few years, but it now appears that support for it has more or less stabilized in Congress and that the agency is here to stay. The strength of ARC is in its close ties to state and local governments in the Appalachian region. This provides it with a strong

political base as well as a built-in sensitivity to the actual needs and interests of its largely rural services area. In the past it has concentrated on regional growth centers, but it is now extending its activities more broadly. In much of its work, it has coordinated the activities of a variety of federal, state, local and private agencies and organizations, and it has authority to preempt inconsistent regulations of othe agencies. Finally, ARC has the advantage that its federal co-cha'.man reports directly to the President.

ARC is very interested in telecommunications for rural areas and has been involved in several projects. For example, some of its funding has gone for translator systems, and it has provided assistance in developing certain kinds of programming for cable television systems. The main involvement and interest of ARC in rural telecommunications, however, involves satellites. The Commission participated in the first round of the ATS-6 experiments. The programming was primarily educational, its duration was for only nine months, and like much of the rest of the ATS-6 program it received mixed reviews. With ATS-6 now returning from India, and the Canadian-American CTS experimental satellite scheduled for operation, ARC would like to conduct more extended satellite experiments. It sees satellites as particularly suited for rural areas because of the distance-insensitivity of satellite transmission costs. ARC's plans for ATS-6 involve at least 15 sites and would require substantial planning and investment for the system by local and state governments, which over a period of four years would, hopefully, take over most of ARC's activities and would run the system on a on-going basis. In short, consistent

with the OTA report, ARC is contemplating a large demonstration project that might become economically self-sustaining; and they believe, on the basis of their cost estimates from the first round of ATS-6 experiments, that this is possible. (The exact programming for the ARC satellite project has not yet been determined, although there is interest in health, education, safety, human resources, government and industrial projects.)

Alternatively, ARC is looking at the possibility of provision of services by mixes of hardware including translators, radio and cable in the areas where it is available. (The agency tends to downgrade the effectiveness of rural telephone systems for service delivery.) It might, in fact, be a good agency to begin development of the "rural television authority" notion mentioned above through a series of experiments, although this possibility was not discussed with its staff.

ARC does not have its own money to put into its projected satellite or other telecommunications activites. At present it is operating under a $250,000 planning grant from the National Institute of Education. It hopes to get its projects funded up to $22 million over a four year period by NIE. Aside from a lack of funds, ARC suffers from a lack of manpower. The agency says that its primary strength is at the local level, and this is undoubtedly true. But a great deal of national planning and coordination is needed to bring off a large rural project, and the staffing for this is simply not

available at ARC at the present time. Finally, ARC is not a national organization and any project it conducts would have to be confined to one or more of the Appalachian states.

If the objective of a rural telecommunications program were simply to engage in one or more demonstration projects, ARC would probably be a reasonable lead agency. In this case, the program would proceed on the assumption that it is better to concentrate on one fairly well organized rural area than to try to put together the local cooperation needed to experiment in a variety of areas. ARC has experience in communications, a good political base, a willingness to lead, experience with coordinating agencies, and good local connections. The importance of the last of these considerations should not be underestimated. Most experts agree that unless there is a strongly perceived need for innovative telecommunications services at the grass roots both experiments and services are doomed to failure. ARC more than any other federal agency has the mechanisms in place to begin the long and difficult task of ascertaining local needs and desires and designing programs to suit them. It would probably not be perceived as imposing ideas upon rural areas to the extent that other agencies would, although with care other agencies could overcome this handicap.

On the other hand, ARC has often been criticized for not being as effective as it should be. A common criticism is that it does not provide enough national leadership and that it often serves as little more than a federal lobby for its state and local constituents. Regardless of the merits of this criticism, it is certainly true that while the

communications staff at ARC has a reasonable amount of technical and programming expertise, that staff is extremely small, and building it up to the necessary level to establish national leadership might be as much trouble as starting from scratch in some other agency. Finally, although ARC is interested in the provision of a variety of different services via a variety of different technologies, it primary experience and -- in the estimation of many observers -- the primary focus of any telecommunications demonstration it might operate would be in the area of education. This is all the more likely if most of its funding comes from the NIE.

Nevertheless, because of its strong interest in the field and its well-developed system of cooperation with state and local agencies, ARC would be a strong candidate for participation in any multi-agency consortium to conduct a telecommunications demonstration program.

3. Office of Telecommunications Policy. On paper, OTP looks like the natural lead agency for a rural telecommunications program. Indeed, many federal officials interviewed suggested that they would like to see OTP take the leadership. Because of its location, in the Executive Office of the President, it should be able to raise the salience of rural telecommunications (or of any other communications subject in which it takes an interest) throughout the government and to coordinate the activities of other interested agencies. Indeed, the recommendations of the 1968 Rostow report, which were influential in establishing OTP, and the provisions of the Executive Order that gave OTP its mandate, both stressed the importance of its role as coordinator of Executive branch activities in the telecommunications field. One might argue that the weakness of many telecommunications demonstration activities in the past

has been that they have been conducted by mission agencies in fields such as health care and education rather than telecommunications. Past experiments have had indifferent results, it might be said, because the problems of developing viable telecommunications policies and systems were not adequately appreciated or dealt with. OTP's expertise is primarily in telecommunications, and this would seem to be a good perspective for a coordinating agency in any rural communications program.

Despite these reasons in support of an OTP lead role, the officials interviewed at that agency expressed reluctance to undertake it. They pointed out that the agency is extremely small, that it has been losing personnel for more than a year, and that it is under a mandate from the Office of Management and Budget to become even smaller. The manpower is simply not available for a major coordinating effort. In addition, they take the view that, compared with other problems such as the future regulation of telephone competition and of cable television, rural telecommunications does not stack up very high on the priority list to which OTP must assign its limited resources. Moreover, some officials are skeptical about whether telecommunications can in fact provide very much in the way of expanded services for rural areas, and they are particularly skeptical about the role of rural cable. On the whole, OTP is willing to do something in this area, and there is some interest in developing more paper studies to better evaluate the potential of rural telecommunications. But under the existing leadership there seems little possibility that the agency will undertake the orchestration of an inter-agency effort for either experiments or service delivery.

It should be pointed out that the whole question of OTP's future function and location is very much up in the air. A recent management study commissioned by OTP suggested several alternatives meriting further study. These include: a new, independent agency outside the Executive Office of the President; a bureau headed by an Assistant Secretary in an existing cabinet Department; or a new Department of Communications. Each of these alternatives, as well as a continued agency in the Executive Office of the President, would under the recommendations receive substantially expanded staffing for policy analysis and coordination. Until action is taken on such proposals, it seems unlikely that OTP or any successor agency will consider that it has the political support or the resources to fulfill the unmet responsibilities of its own Executive Order.

4. Department of Commerce. There are three agencies within Commerce that may be considered as having an interest in rural telecommunications. The first is the Office of Telecommunications. This is primarily a research arm which, among other things, provides technical and analytical assistance to the Office of Telecommunications Policy. OT has a well-qualified staff of analysts in Washington and Boulder, Colorado, who for example are preparing the resource papers for Panel 2 of this OTA conference; t it is not within their mandate to conduct applications experiments or to orchestrate inter-agency service provision. Primarily, they are a technical and economic research office with expertise

that any telecommunications project could use, but they are not constituted to act as a leadership agency.

A second agency within Commerce is the Economic Development Administration, which was established by the Public Works and Economic Development Act of 1965. This organization provides funding for both rural and urban projects aimed at creating jobs. Its typical rural project is the development of an industrial park and the facilities that go with it. The agency does conduct some experiments, but like its counterpart in the Department of Agriculture, FHA, it considers itself primarily responsive to local demands. It has a good field staff, and does provide some technological assistance. The agency has no interest in communications as such, but it has been suggested as a possible source of funds for rural cable systems. EDA has, however, taken the position that it will not provide loans or grants to cable systems that can conduct their own origination, (the most interesting kind for rural development) because withdrawal of funding for even the best of economic reasons might be considered as some kind of censorship. EDA is also skeptical about the economic development prospects of cable in general.

A similar attitude is held by the Small Business Administration. While cable systems might technically be eligible for small business loans, SBA has the same "censorship" worries that EDA does, and communications is not one of its major areas of interest.

On the whole, Commerce seems an unlikely lead agency for rural telecommunications, at least under present circumstances. While there

is relevant expertise in OT, that expertise does not run to management of the kind of applications envisioned by the OTA report; and in the areas of the Department that have experience with economic management, there is little knowledge of, or interest in, telecommunications. Of course, one of the major goals of a rural telecommunications system should probably be to promote the economic development of rural areas. In principle, Commerce should be interested in this and doubtless has some generalized expertise that might be applied. In fact, the Office of the Secretary is undertaking a study of cable television and of the role the Department might take in its development. It is still too early to say where this study may lead, and on the basis of present evidence, Commerce must be considered an unlikely agency to assume a dominant role in this area.

6. Health, Education and Welfare. The Department of Health, Education and Welfare is harder to evaluate as a potential leader in rural telecommunications than any other department. A number of small offices and individuals in various parts of HEW are interested in telecommunications activities, but for the most part their budgets have been low, and there has been only minimal coordination between them. Probably the most interested agency is the National Institute of Education. NIE has been involved in satellite communications for some time, and has put considerable funds into satellite experiments, many of which have involved rural areas. NIE is now planning a four-year satellite demonstration program making use of ATS-6, CTS, and commercial satellites. The exact dimensions of the program have not yet been worked out, but

apparently a great deal of emphasis will be put on assessment of the local needs to be served and of local commitments to funding of projects that can become self-sustaining. The kind of project that the Appalachian Regional Commission is putting together would fit well into NIE's plans, but ARC would presumably be only one of many grantees. While NIE has a good professional staff for coordinating activities in this field, most of the work would be done by outsiders in government or industry. Despite its strength and its interest, NIE's mandate does not run beyond the field of education. As a result it is unlikely to take the leadership in a comprehensive demonstration effort.

Another interested branch of HEW is the Office of Education's Educational Facilities Program. This program administers the Community Facilities Grants to public broadcasting stations. That program is primarily focused on upgrading existing facilities, which reach an estimated 80 percent of the American public. OE realizes, however, that eventually it will have to move to new technologies as a means of reaching the remainder. It is engaged in some regional planning for multi-technological systems, but it does not presently have the funds to implement any such plans. The Facilities Program is small, although its leadership is well-established. They believe that rural telecommunications will not become a high priority unless someone at a very high level of government takes an initiative with industry, and with local governments. The Facilities Program can see itself playing a useful role because the Act under which it operates does not restrict its authority to television grants. It believes that the first priority, however, should be a

strong planning program at the local level. Beyond that, the managers of the program realize that leadership will have to be supplied at higher and broader levels of government, and they seem to wish that someone else would take the requisite initiative.

In the health branch of HEW, there is a variety of agencies that have worked on rural telecommunications and that would like to do so in the future. There is some coordination between them, but the available funds and manpower are so limited in light of the magnitude of the problem that for the most part it has seemed best for each agency to go its own way.

The Lister Hill Center for Biomedical Communications is the HEW agency with the clearest mandate for activity. At present, it is not conducting any distinctly rural projects and is not planning any, although it has run experiments with radio communications in Alaska. Fundamentally, Lister Hill is a technological research and development agency, and its lack of emphasis on rural projects is a reflection of its attitude that the technologies it is developing will probably be applicable in all areas. Its staff of 17 professionals is hard pressed to keep up with technological work and has not looked at human factors beyond the human engineering necessary to evaluate telecommunications technology. Lister Hill is very much in the experimental business, however, and hopes to have a project on the CTS satellite with at least six ground stations and interactive video to experiment with the relative effectiveness of various modes of telecommunications in health care delivery. There are some doubts among members of Lister Hill's staff

that rural areas will ever be able to afford some of the highly advanced technologies they are dealing with, and they feel this makes it all the more valuable to look at the effectiveness of different levels of technological sophistication in health care delivery. Because Lister Hill is focused on technology and has limited resources and interest in rural areas, it is an unlikely leader in the rural field. The Center would, however, be glad to cooperate with other agencies.

The Health Resources Administration together with various branches of the Public Health Service have a number of individuals who have been interested in rural telecommunications for some time. They have commissioned some fairly elaborate studies by the Mitre Corporation and others and conducted a number of small demonstration experiments. They seem likely to do more in the future at a modest level, but their interest is primarily in "augmented narrowband communications" rather than broadband. At the present time, they are working on experiments rather than on the development of services, because they believe a great deal still needs to be learned. Despite the experience of these agencies in rural telecommunications, they seem unlikely leaders for a government-wide effort because of their own limited financial commitment, the low priority they assign to the field compared with other interests, and their own comparatively low bureaucratic level within the federal government. They would, however, be the invaluable health-oriented partner in any cross-agency effort.

The final and perhaps most promising agency within HEW that could have an interest in rural telecommunications is its own Office of Telecommunications. This is an extremely small bureau with a limited

budget and a mandate to coordinate the communications activities of other agencies within HEW. Given the limitations on its resources and the relative independence of the other agencies within the department, this coordination is necessarily limited. In the past, however, the Office of Telecommunications has been successful in putting together the ATS-6 program. It is continuing this experimentation as well as working with the Public Service Satellite Consortium -- a private organization established with government assistance to serve as a broker for aggregating a variety of non-profit service demands. Recently, the Office of Telecommunications has succeeded in getting an authorization for approximately one million dollars added to the Community Facilities Act for 1976 that would be used to experiment with applications of advanced communications technology for social service delivery. The Office of Telecommunications would administer these funds, and it is generally assumed that a large part of them would go to support the PSSC.

The Office of Telecommunications could potentially be a coordinator within HEW and an entrepreneur without. Given its present size and relatively low-level position in the bureaucracy, however, it is hampered in both tasks. A strong mandate and continuing support from the Secretary or from the White House might change the situation, but at the present time HEW's OT is not in a position to take government-wide initiatives.

In short, HEW has put some funds into rural telecommunications in the past and would like to make more substantial commitments in the future. It has the software and systems experience to promote social applications of telecommunications in the areas of health care and education. Its activities in these fields have, however, been highly fragmented, and rural concerns per se do not have high priority within the various bureaus. HEW could conceivably change this with suitably high-level direction, but at present it is unlikely to be a leader. In addition, unlike the Departments of Agriculture and Commerce, HEW does not have as a mandate the use of communications technology for economic development. As a result, any program conducted entirely within HEW would neglect a potentially very important range of communications applications.

Possible Partners

The six agencies just discussed either might be leaders in a comprehensive rural telecommunications effort or are frequently mentioned as leaders. There is a fair number of other agencies with interest in the field who might also be willing to cooperate if someone else took the leadership. The National Aeronautics and Space Administration, for example, was directed to get out of the communications satellite business a few years ago. Now there is pressure from various sources to reconsider this decision. A concerted multi-agency rural telecommunications demonstration project might draw on NASA if it extended to planning or launching of new test satellites; but the cost and lead-time would probably be excessive. Nevertheless, NASA could be a valuable partner in longer-term operational projects.

The Department of Housing and Urban Development is in a similar situation. At one time it sponsored Dr. Peter Goldmark's "New Rural Society" experiments with telecommunications, but it eventually decided that this kind of activity was not central to its mandate. Nevertheless, there are some individuals in the agency who would like to get back into the field and who believe that the funds from the Community Development Act might offer a means of doing this. Outside leadership could strengthen their position, but their present ability to take an initiative is limited, and in the foreseeable future they could at best be partners.

The National Science Foundation has in recent years sponsored some extremely interesting experiments in social-services delivery via telecommunications, but all of these have been in urban areas. There is no reason, in principle, why NSF should not support rural experiments, but this does not seem to be high on its priority list. In addition, the head of NSF's communications program points out that its emphasis on carefully controlled scientific work makes it an unlikely lead agency, although it has a body of expertise that would clearly be valuable in any cooperative venture.

Similar comments could be made about other Executive agencies. The U.S. Postal Service, which is a quasi-government agency, is presently unsure where it should be going in rural areas. To a large extent, its interest in rural telecommunications may depend upon its involvement in electronic mail. The timing and scope of such involvement remains undecided at the present time. In addition, it is unclear to postal planners whether electronic mail in rural areas will ever be feasible.

If, however, some other agency were to take the lead in making improved broadband or augmented narrowband facilities available in rural areas, the Post Office undoubtedly would look on this with interest in making its rural-service plans. Present thinking is skeptical of both broadband and narrowband delivery capabilities, because of limitations on saturation and bandwidth, respectively. The Postal Service, a conservative organization, does not see itself as a promotional force for extending the reach or capacity of electronic delivery systems. It could, however, be an obviously important user of such systems and might be willing to participate in a demonstration program in that capacity.

Interest in rural telecommunications has historically been relatively limited on Capitol Hill. The House and Senate Communications Subcommittees are in favor of upgrading rural services, but promotional activities have not been high on their priority list, and they have been more inclined to take the subject up in the context of re-evaluating regulatory policy. The Senate Agriculture Committee is taking the OTA report and this conference as essentially their first venture into the telecommunications field. The same is true of the Rural Caucus. OTA itself has not previously included communications as one of its designated areas of inquiry. It seems clear that inspiring and sustaining new Congressional leadership interest is an important pre-condition to effective action by the Executive.

Other Interested Parties

Industries and trade associations in the communications field take fairly predictable stands on rural telecommunications. The cable television

people believe that rural cable has great potential and that government should help to promote it. The telephone people believe that narrowband communications is more promising that broadband, and they would like to see promotion in that area. All interests would be reluctant to get into bed with each other on any sort of government-industry cooperative program for rural telecommunications, and some are wary of any federal involvement that might seem to smell of government taking over areas that should be left to private enterprise. If pressed they generally admit, however, that there are some areas clearly appropriate for federal activities and that the appropriateness of a federal role in "grey areas" could be negotiated. Despite these concerns, none of the special interests place rural telecommunications high on their priority list with one exception. That exception is the Rural Telephone Cooperative Association, the lobby for many of the systems financed by REA. Aside from a general service program, this small active group plays a watch-dog role, and it is probably the major force pressing for improved rural telecommunications via federal involvement at the present time.

Evaluation

It should be clear from what has just been said that the observations about the federal role in rural telecommunications with which this paper began are justified. Many federal agencies have dabbled in this area, but practically none has a substantial commitment to it. There is no over-all federal policy for rural telecommunications, and in fact most

of the activity in the field consists of small-scale experiments. Moreover, there is no one agency that has the resources to move ahead in this area on a broad front, and no agency seems ideally suited for leading an inter-agency effort. Agencies differ so much in their perspective on this subject that one can say, over all, that rural telecommunications policy is drifting, although it may bob about from time to time. A great number of people believe that the federal government should play a role in the development of rural telecommunications, but no one seems likely to take the leadership if present trends continue.

One additional thing should also be apparent from the review of agency interests: None of the factors that restrict an active federal role in rural telecommunications is set in concrete. A different attitude by leadership at the Congressional, White House, departmental or even bureau level could turn this situation around substantially. The expertise and willingness to cooperate are present, and there is in principle no reason why imaginative federal activity in this area should not commence over the next few years. The only barrier is that individual leaders have not yet decided to give rural telecommunications high priority. Until they do, the situation is bound to drift on. In order to change it, there must be initiatives from either Congress or the Executive agencies. The following section will examine the likely consequences of continuing the status quo and of a variety of options to change it.

Options for Government

Status Quo

What will happen if there are no new federal initiatives? Some people believe that within the next two to three decades, telephone companies in the normal course of their operations will replace copper wires with optical fibers having a broadband capability. If this is true, the wired countryside may become a reality without government initiative. On the other hand, it is most likely that this process of replacement will take place mainly in larger telephone systems and that the commercial companies will forego wiring the countrywide with fiber optics, just as they refrained from wiring it with copper pairs. Much then will depend upon whether REA opts for funding the use of fiber optics and, as indicated above, this is not impossible. Nevertheless, it is a very long-term proposition and it is not to be relied upon as a solution to the problems of rural telecommunications within this century.

Even if fiber optics or other advanced hardware is deployed in rural areas, that will not guarantee that the necessary software for social and commercial applications of broadband technology will evolve. The question then becomes whether present tendencies, if allowed to continue, would result in multiple-service communications delivery systems. Certainly there are few indications of commercial firms who wish to engage in the research, development and marketing of such systems. Where, then, would the existing interests of government agencies lead us? In all likelihood, a continuation of present trends would result in REA gaining the authority to make low-interest loans to rural cable companies. This again, however, is a hardware solution, and it seems

unlikely that REA of its own accord would develop software. In addition, REA deals only with extremely underpopulated areas, and there may well be a gap between the population it serves and those served by commercial firms. Moreover, it is not clear whether REA could develop the necessary interconnect facilities (via satellite or terrestrial means) to aggregate large enough markets for advanced telecommunications applications. Nevertheless, REA together with FHA and the Economic Development Administration of Commerce potentially could help in the extension of cable service to most rural areas before the end of the century. However, such service in all probability would be fairly conventional, in the sense that it will have limited band-width, concentrate on entertainment and data transfer and provide little switched capacity. This sort of service might evolve because of the insistence of funding agencies that the applying systems have a clearly viable financial plan.

The possibilities that broadband communications software will be developed and applied in rural areas are more difficult to predict in a status quo situation than are the possibilities for hardware. Such a situation, strictly defined, would result in a plethora of small uncoordinated experiments supported by a variety of agencies. This would marginally improve our knowledge of the potential of broadband communications in both rural and urban areas. There seem few indications, however, that unless some major initiative is taken these experiments will lead to the substitution of communications for other modes of service delivery in very many areas. There are some indications that

senior officials in HEW and Commerce would like to pull together the various experimental programs underway or to actually implement some present knowledge in the foreseeable future. At the time of this writing, however, those indications are far too vague to be relied upon, and given the low priority of rural telecommunications, it is probably wrong to place a high likelihood on them.

These status quo possibilities should not be entirely disappointing. After all, as pointed out earlier, it can be argued that rural telecommunication should not be high on the national agenda and that developments (via REA and other likely funding) that would result in a broadband rural plant in place and considerable knowledge about how to use it by the end of the century may be about all the nation can or should strive for.* Nevertheless, there is the possibility that if this field moves too slowly it will lose all interest for policy makers. Twenty-five years may be too long a time perspective for achieving any national goal. With this in mind, let us turn to the possibilities of changing the status quo.

Congressional Initiatives

There are three levels on which Congress might take the initiative to facilitate further development of rural telecommunications:

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* Under certain assumptions, one can be even more optimistic about the status quo option. If a substantial number of interested agencies decide that augmented narrow band technologies are the best way to develop rural telecommunications, it is quite possible that they could gain enough momentum after a few more years of experiments to begin introducing services on quite a wide scale. At the moment, however augmented narrowband technology is as underdeveloped as broadband, and most knowledgeable people appear to be putting their chips on the latter.

1. A modest experiment. In this scenario, Congress would be sufficiently interested in rural telecommunications to wish to move ahead faster than the status quo would allow but not sufficiently confident about the potential of the field to wish to appropriate funds for telecommunications services. In these circumstances (which are a possible outcome of OTA's efforts) Congress might want to proceed one step at a time, and the first step would be one or more modest experiments with multi-service rural systems, somewhat along the lines described by OTA. Congress might find, however, that this is a difficult approach to implement by itself. It would require selecting a lead agency that could coordinate various governmental activities and giving that agency override authority with regard to federal regulations. This is a very complicated task to achieve given the present confusion in this field. It would require, for example, the development of a high level of expertise on the part of Congressional staff members. Nevertheless, any activity along these lines would clearly signal Congress' interest in the area and might well galvanize responsive reactions in the Executive agencies that could lead to more ambitious projects.

If Congress were to take this modest initiative, which agency should it select as a leader? In all probability this would depend upon the personalities, interest and political connections of various administrators. Looking simply at the agencies as they are now, however, REA or the Appalachian Regional Commission are, as indicated in the previous discussion, probably the best possibilities for an inter-agency effort. Congress might, however, think it easier to mandate an intra-agency

effort, and in this case HEW would be the best option. It is not clear, however, that an HEW project in this field would be much easier to put together than an inter-agency project, because of the need for HEW to draw upon technical and financial expertise that it does not presently have on hand. Finally, Commerce could be a candidate for doing the job on the basis of OT's technical expertise combined with EDA's mandate for economic development. Basically, however, a modest Congressional initiative would probably have to leave it to the Executive to designate and oversee participating agencies.

2. Limited Service Initiative. Congress might wish to by-pass the complexities of an experimental program and simply reinforce some of the existing tendencies toward the actual delivery of broadband service in rural areas. There are a number of possibilities for limited service schemes that might be adopted. For example, REA might be given authority going beyond its mandate and help to develop cable systems in its present service areas. A new mandate might expand the areas within which REA could work, provide funds for satellite interconnection facilities, support technical assistance to "rural television authorities," and even encourage REA to develop software capability on a limited scale. By concentrating on one agency and granting a fairly straightforward expansion of that agency's existing mandate, Congress could greatly simplify its task, while being assured of sound management and a reasonable possibility of payoff. Instead of REA, EDA in Commerce or the Appalachian Regional Commission could be entrusted with similar initiatives in what would

probably be narrower fields. Alternatively Congress might give a mandate to begin delivering social services via telecommunications directly to HEW; but this would involve a difficult decision on the part of Congress as to exactly what services should be delivered, and it might be considered disruptive of on-going HEW programs unless that department went through a careful planning period.

Another possibility would be for Congress to build up the PSSC. In a few years that organization may actually be in the business of making use of state-of-the-art technology for social service delivery. Its leadership and track record to date are promising. Although more time will need to pass before it can manage very extensive service systems, it has succeeded in attracting membership from a wide variety of professional organizations and service providers in the health and education fields. This inevitably focuses its attention on reviewing the perceived needs of potential telecommunications users and gives it the kinds of contacts that may enable it to be a major force in the development of advanced services by the end of the decade. PSSC is designed as a coordination rather than funding mechanism, however, and there would have to be complicated discusssions with it and the organizations it might coordinate in the rural area before a formula for channeling the necessary federal, state, local and private funds to support even limited service programs could be worked out.

The problem with a limited service approach is that Congress might feel that it is premature and that there is no one agency in its present form fully capable of carrying it out. In addition, this approach

might be considered as yielding too small a payoff for the difficulties and funds required. Finally, Congress in adopting this approach might find that it must tie itself to certain agencies at an early point in time that it would not wish to have manage a more comprehensive program further down the line. Nevertheless, this approach has some appeal in light of the views of some experts that further demonstration projects will be subject to diminishing returns and that government must be prepared to plunge into service delivery on at least a modest scale if the rural telecommunications field is to be advanced.

3. National Commitment to Rural Telecommunications. Congress might take the attitude -- either now or after a period of some experimentation and/or limited service -- that a major initiative in this field is called for. Such an initiative might take place either through the passage of a comprehensive rural telecommunications act, through the broad extension of the authority of some one agency, or in the context of rewriting some fundamental piece of legislation such as the Communications Act of 1934. A possible objective of an initiative of this sort would be to set as a national goal the wide-spread availability of broadband communications to rural areas and their applications for social and economic purposes by the end of the century.

Congress could begin by giving either an existing agency or some new super-agency -- such as a federal authority, or a branch of a new Department of Telecommunications -- a mandate to present within a limited period of time, a specific 25-year program, including a description of how personnel and responsibility from other agencies would be coordinated or transferred to a new entity. Upon receipt of this report, Congress

could enact new enabling legislation that would allow the leadership entity to carry out its plans.

None of the three suggested "Congressional" scenarios seems particularly likely to take place as written. There are policy stalemates and practical complexities to be untangled, which will require joint Executive-Congressional action. Much can doubtless be accomplished by one or a few Congressmen or Senators who see an opportunity for public leadership and who hold the Executive accountable for coming up with a workable plan. It is to the Executive that we must now turn, for an appreciation of the responsive options available to it.

Executive Initiative

There are two ways in which the Executive branch might take the initiative in rural telecommunications. Each of these would probably require additional Congressional authority and would entail close working relationships with Congress.

1. Single Agency Initiative. Any of the possible leadership agencies mentioned above could take an initiative by themselves in rural telecommunications. For this, they would probably need additional Congressional authority, but that might not be too difficult to come by if the initiative was in the form of a limited experiment or modest service provision based on sound information about feasibility. REA might take the initiative in requesting from Congress the kind of authority mentioned in the discussion of Congressional initiatives for limited service. The Appalachian Regional Commission, with additional Congressional funds might extend the scope of its satellite demonstration

projects considerably to the point where they could easily make the transition into limited service. HEW could set up a strong intra-agency coordinator to pool its various experimental efforts in one or more large experiments or to promote the use of telecommunications on a limited basis for delivery of services under some of its existing programs. Alternatively it could put together a funding package for the PSSC, as described above. Commerce could combine the technical expertise of OT with the economic efforts of EDA to put together an economic development experiment or limited service. In all of these scenarios, experimentation seems more likely than service implementation in the near future because of the low priority accorded rural telecommunications.

Of the options mentioned, the REA and Appalachian Commission alternates are probably the best and most likely, because they are more in line with what the agencies are doing at the present time. Nevertheless, all of these scenarios have a serious weakness. As pointed out above, no one of these agencies really has the expertise and mandate to do an adequate job of promoting rural telecommunications by itself. As a result, the single-agency option -- while perhaps the most likely kind of executive initiative -- is in some ways the least desirable.

2. Inter-Agency Effort. If the thesis that no one agency is adequate to carry out rural telecommunications experiments or service delivery programs is correct, some kind of inter-agency coordination would seem to be the appropriate way for the Executive branch to take an initiative. There are two processes by which this might come about. First, it might be organized by one agency. In this case, the possibilities

are rather narrow. Only REA and the Appalachian Regional Commission are presently interested in playing this role. Of these two, REA is probably not a sufficiently high-level agency to exert the pressure needed to keep a coalition together, and the Appalachian Regional Commission may be too limited in its geographical focus as well as in its expertise for other agencies to consider it an appropriate leader. Experts on inter-agency projects generally stress that such efforts are extremely difficult to implement and are successful only if there is very high-level interest. Perhaps leadership at the Secretarial level from Agriculture, HEW, or Commerce could accomplish this. There appears to be very little interest at these levels, however, and even if there were, other agencies might be reluctant to commit themselves fully to something they would perceive as someone else's project.

This leads to the conclusion that White House leadership is probably essential to get rural telecommunications moving. In fact, people in most of the agencies interviewed expressed this point of view. There are at least four mechanisms that the White House might use to get things started. First, it might, with the cooperation of Congress, strengthen and enlarge OTP with the explicit intention of giving it a mandate to work on rural telecommunications, among other projects. Second, the White House might ask the Domestic Council to coordinate efforts in this area. Third, it might, at least as an interim measure, set up a special commission or task force. Fourth, it might designate one Department (probably Agriculture) as a lead agency.

In any of these cases, the scenario would be essentially the same. The designated high-level individual in charge would begin by working with OMB and other Presidential agencies to put together some basic goals for rural telecommunications and to ensure a solid base of support within the White House. Having accomplished this, the leadership individual would probably convene a task force on rural telcommunications consisting of the Secretaries of the relevant departments. This task force would be given a specific mandate to develop plans for a inter-agency effort in rural telecommunications within a set period of time and to report back to the President. It would, of course, also be give a strong secretariat.

Upon receipt of the task force report, the President would probably request from Congress the authority either to establish a new agency for the development of rural telecommunications, incorporating the authority of the numerous existing agencies, or to give some lead agency within the White House or the departments the authority and funding needed to continue an inter-department effort. A continuing inter-agency effort, perhaps presided over by OTP, the Domestic Council or Agriculture, could conduct an experimental program over a period of years while keeping Congress closely apprised of its progress. Necessarily, such a program would have to place in the hands of the coordinating agency the authority to over-ride regulations of particular agencies, to negotiate with state and local governments, and to maintain a sizeable secretariat. Once the case for rural telecommunications has been made through experiments, the Executive could go back to Congress asking for authority to create a new agency or to strengthen an old one with the aim of sustaining service delivery.

By this process it should be possible to make substantial progress in the field of rural telecommunications within six to eight years. Various mixes of agencies could be included in such an inter-agency effort, but if it were considered desirable to work with a full range of technologies and services it would certainly seem necessary to have at least Agriculture, HEW, Commerce, NASA, and representatives of state and local governments. NSF might also play a role in advising on proper experimental procedures during the first phase. Of course the various phases could be mixed to some extent, with some areas of technology and applications moving along faster from planning to experiment to service than others as experience dictates.

Of the possible lead agencies, OTP would probably be best in principle, because of its broad mandate in the area of telecommunications. Its present uncertain status within the Executive would have to be resolved before it could take effective command, however. Domestic Council leadership would run into the problem of Congressional accountability. An independent task force could be structured so as to fall under Congressional supervision, but it would not normally enjoy the same degree of political authority within government as OTP or the Domestic Council. Designating a department as leader would avoid all of these problems, but it might engender the kinds of jealousies mentioned above.

How likely is the Presidential initiative scenario for rural telecommunications? It seems fairly unlikely: Given the political dangers, the limited size of the rural constituency and the low priority which even those who speak for the constituency give to telecommunications, it is doubtful whether any President would commit a substantial amount of time and political capital to such a project. There is a stronger possibility that rural telecommunications might get some White House backing if it were part of a general effort in the Executive branch and Congress to overhaul rural development or communications policies. An inter-agency process similar to that mentioned above might be involved in either case. In that event, rural telecommunications would be one phase in a comprehensive communications or rural development program, and the President would be required only to place telecommunications on the agenda; whether it was dealt with intelligently would depend upon the insight of those running the project. This is by far the most likely scenario for Presidential leadership in rural telecommunications but without comprehensive review of rural development and communications policy and the problems which revising them would raise, it is impossible to comment further on the scenario here. It is sufficient to say that those who are concerned with revising communications and rural development policies at the present time give rural telecommunications low priority.

Conclusions

At the moment, the future of rural telecommunications looks bleak. Although the extent of interest within the federal government is wide, the intensity of interest is low, particularly at the highest levels. None of the scenarios for moving things ahead mentioned above is entirely

satisfactory , and none would be easy to implement. The Presidential strategy is probably best because it involves a carefully considered approach to the problem which would bring all of the resources of government to bear on getting the job done in a rational and orderly fashion. Moreover, in some versions it would make one entity responsible for seeing the development of rural telecommunications through from the experimental to the operational stage, a mode of operation strongly favored by most experts on public administration. Finally, it would offer a fresh start in a field where most existing initiatives seem inadequate.

All that has been said in previous pages suggests that there are four big questions about rural telecommunications In summary they are: (1) What mix of communications technologies and services is most desirable for rural areas over the next decades, and with what technical and institutional mechanisms should it be provided? (2) What is the need for and propriety of a federal role in rural telecommunications? (3) What should be the nature of the role (e.g., experiment, limited service, or full service)? (4) What agencies organized in what way should be designated to carry out this work?

Until these questions are resolved it is unlikely that rural telecommunications will move ahead, but the questions cannot be resolved if this field continues to be of such low salience. Above all else, there is a need for some action to create greater government interest in rural telecommunications. This paper rejects the notion that an organic consensus on fundamentals will arise out of a mass of uncoordinated activity. The best thing that could happen would be for some leader at the federal level to actively advocate some particular plan for this field. This could start a national debate on rural telecommun-

ications and on the future of rural areas generally. Both have been neglected too long. We have no established national goals for communications in the countryside, no clear idea of where we should be in the year 2000. And we will have no idea until someone starts the political process moving by advancing a concrete vision of the future. As with so many other problems in government, the problems of rural telecommunications development come down to the need for leadership and OTA is to be commended for setting the ball rolling in this direction.

Having said this, the analyst should emerge from behind his mask and present his own personal answers to the big questions in this [illegible]. I doubt very much that private industry by itself will provide substantial broadband communications services to rural areas in the next decades. The potential profits are simply not great enough. I also think that, if selectively rendered, such services can be of great value. I do not want to see a countryside equal to major cities in amenities and their accompanying intrusiveness, but I do think that there are real and pressing desires for better health, education, safety, cultural and economic opportunities that should be met. Moreover, I think that those desires can be satisfied to some extent by telecommunications.

We in America have a traditional dedication to preserving a vigorous country life, and I believe that this together with the absence of a strong commercial response in rural telecommunications requires a federal role. Private initiatives should be encouraged in every way possible, and governmental ownership or management should be only a last resort. Nevertheless, we should not blandly assume that sooner or later industry

will do the job. This has been proved to be a false assumption in the past, and we can waste a lot of time adhering to it. We should have a hard look around and then move ahead with federal initiatives in those aspects of service where, in our best judgment, industry will not act at all or without federal stimulus. There is no point in temporizing. In the long run we may be better able to make this judgment, but as Lord Keynes said, "In the long run we are all dead."

Given the alternatives for moving ahead in this area, I would prefer a Presidential initiative for an inter-agency effort aimed at a full-service system, but realistically I would opt for a limited service concept administered by REA or ARC (or perhaps a cooperative effort by both). This is because I think that a full service plan can only be implemented through action at the highest level. I am not claiming that we know it all. I do believe, however, that we know enough that with a little more paperwork, we can judge what limited services are feasible. The details of how to implement them can be worked out as well or better by a commitment to service as by more experiments. The needs are there, and we should start meeting them with the best means available. Finally, I think those means should be broadband communications -- subject to countervailing evidence emerging from Panel 2 -- because that technology offers the greatest potential for future growth. Advanced narrowband service may be obsolete before it is even partially implemented, especially since this may take decades.