

# RURAL ECONOMIC DEVELOPMENT AND COMMUNICATION TECHNOLOGY

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## HEARING

BEFORE THE

## JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

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MAY 22, 1991

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# **RURAL ECONOMIC DEVELOPMENT AND COMMUNICATION TECHNOLOGY**

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**THURSDAY, MAY 22, 1991**

CONGRESS OF THE UNITED STATES,  
JOINT ECONOMIC COMMITTEE,  
*Washington, DC.*

The Committee met, pursuant to notice, at 2:13 p.m., in room SD-628, Dirksen Senate Office Building, Hon. Paul S. Sarbanes (chairman of the Committee) presiding.

Present: Senator Sarbanes.

Also present: Debra Silimeo, press secretary; and Chad Stone and Dee Martin, professional staff members.

## **OPENING STATEMENT OF SENATOR SARBANES, CHAIRMAN**

Senator SARBANES: The Committee will come to order.

The Joint Economic Committee meets this afternoon to discuss the subject of the links between rural economic development, communication, and information technologies. This Committee has had a long-standing concern about economic conditions in rural America and in the broader issues of the economic prospects facing different regions of the country. The Committee has done some interesting work in the past on that question.

This hearing is part of a continuing examination of the complex issues facing rural America that the Committee first started about three years ago. Seeking fresh perspectives on these issues, the Committee, in conjunction with the Congressional Research Service, invited more than two dozen distinguished experts to participate in a hearing and symposium on rural economic development in the 1990s. The papers that were presented and the discussions that took place over the course of that symposium underscored the tremendous challenges facing rural America.

For the Nation's rural areas, the last decade was one of severe economic stress that was aggravated by our trade and competitiveness problems. By every major standard, rural economies fell further behind their urban counterparts, actually a reversal of the trends of the 1970s when the gap between urban and rural economic progress was narrowing.

This decline took place against the background of profound technological changes in our society. These changes have been especially dramatic in computer and telecommunications technology, which many experts suggest could have an even greater impact on the way we live and work than the automobile did at the turn of the century, which is saying a lot about the impact that it might have I might add. This may be especially true with respect to economic conditions in rural America.

A recent New York Times article titled "Where Phone Lines Stop, Progress May Pass By," notes: "In isolated regions, the limitations have become especially critical in the last few years, as computers and conference calls have become standard tools of business communication.

"Many places facing these problems could meet the same fate as the Old West, the story quotes communication consultant Edwin Parker as saying. "Rather than being bypassed by highways and railroads, they will have been bypassed by technology."

The challenge of this decade is not just to halt the decline of rural economies, but to strengthen them and to assure balanced economic growth throughout the Nation. Technology holds the promise of overcoming the barrier of distance and ushering in a new future for rural areas.

With this in mind, the Joint Economic Committee asked the Office of Technology Assessment to examine the potential socioeconomic effects of information technologies on rural economic development.

The OTA study, which is being released today, suggests that communication technologies can contribute significantly to the economic prospects of rural areas if we are creative in making use of the technologies. The hearing today will provide an opportunity for the Office of Technology Assessment to present its findings and to discuss the suggestions made in the report.<sup>1</sup>

We are very pleased to have as our witnesses Linda Garcia, Project Director for OTA, who will present the OTA's findings; George Connick, President of the University of Maine at Augusta and Chairman of the Advisory Panel counseling OTA on the report; and Phillip Mink, General Counsel, Legal and Regulatory Reform Project, Citizens for a Sound Economy Foundation.

Senator SARBANES: And with that by way of opening, I am going to turn to Ms. Garcia to present the findings.

Speaking of technology, Pavlov should have done his experiments in the Congress. He could have used real, live humans to work on. [Laughter.]

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<sup>1</sup> A copy of the study, *Rural America At the Crossroads: Networking for the Future*, can be obtained from the Joint Economic Committee's publication office, or from the Office of Technology Assessment.

I think probably I ought to vote and come back rather than start and then perhaps not even have enough time to take your statement. That way maybe we can have some continuity. So, we will adjourn briefly, and I will go to the floor and vote. I will return promptly, and then we will proceed with your statement.

[Recess.]

Senator SARBANES: The Committee will come back in order. I understand that Congressman Arme y, who is the ranking Republican member, is not going to be able to make the hearing, but he does have an opening statement for the record. That will, of course, be included in the record.

[The written opening statement of Representative Arme y follows:]

## WRITTEN OPENING STATEMENT OF REPRESENTATIVE ARMEY

Good morning. I am pleased to welcome our panel of witnesses today to discuss the role telecommunications technologies can play in promoting rural economic development. The release today of the Office of Technology Assessment's report **Rural America at the Crossroads: Networking for the Future** marks the culmination of a process the JEC started over three years ago with hearings on this important topic. I would once again like to commend Chairman Sarbanes for assembling a balanced and distinguished panel which will provide a great deal of insight from varying perspectives on this important issue. I want to thank Ms. Garcia and all the OTA staff for their efforts in producing this important study.

Advanced telecommunications facilities and services can play an important role in the economic development of rural communities as they provide the means for communities to bridge traditional economic barriers associated with distance, limited access to information, and economies of scale. Falling costs in telecommunications offer an escape for rural Americans from their geographic isolation without removing them from the places in which they choose to live.

I am very concerned that the OTA call for Federal government to "orchestrate cooperation and change" not be considered advocacy of a national rural industrial development policy for telecommunications. It is essential to remember that the quest for

profits is the best incentive available to assure that new technologies will be developed in rural America and underserved areas of rural America offer profitable opportunities for service expansion. Private market entrepreneurs are developing promising new telecommunications technologies which offer exciting new potential for rural communities to achieve competitive equality with urbanized areas.

Current policies of the FCC, the federal courts, and state regulators act to restrict and retard the competitive process. Congress needs to examine how to ensure a more competitive telecommunications industry while putting into place policies to prevent anticompetitive activity.

The Federal government should as a matter of policy coordinate its many agencies and bureaus to provide a unified response when addressing economic development in rural America. It does not follow, however, that by-passing state and local policy-makers, businesses, taxpayers, and consumers to impose a national rural policy is warranted, let alone necessary or desirable. Indeed, a national rural policy would simply become a government driven vehicle to promote the bureaucratization of telecommunications in rural America.



Senator SARBANES: Ms. Garcia, we are happy to hear from you.

**STATEMENT OF LINDA GARCIA, PROJECT DIRECTOR, TELECOMMUNICATION AND COMPUTING TECHNOLOGIES PROGRAM, OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS**

Ms. GARCIA: Thank you, Mr. Chairman. I would like to thank you for the opportunity to report the findings of our study, *Rural America at the Crossroads: Networking for the Future*.

This study was undertaken at the request of the Joint Economic Committee and Senators Charles Grassley and Orrin Hatch. Noting that the widespread deployment of communications and information technologies were going to affect how all Americans live and work, the Committee asked us to examine in particular the impacts on rural areas, and I'd like to briefly just review for you some of our findings.

First, we identified that there is a serious cause for concern about the fate of rural areas. Rural communities have played a central role in American life. Politically, they have served as the centerpiece of the American democratic process. Economically, they have provided the labor, food, and other natural resources that both fueled and sustained our industrial revolution. They now comprise 24 percent of our Nation's population and 28 percent of our labor force, and they continue to be a source of inspiration and sustenance. In the minds of many, these communities reflect and reinforce the traditional American values of community and individualism. Increasingly they are viewed as a haven from some of the intractable problems of urban development.

Notwithstanding their basic strengths, there are many reasons and signs that raise concern about their futures. These include a loss of economic viability, a decline in income, high unemployment rates, low work force participation, and a high level of migration from rural areas. Thus, we find that per capita income in rural areas is lower than in urban areas, and that the communities that are considered to be the most rural are also those that are worst off. Rural poverty rates are also much higher than urban poverty rates.

There's a number of forces that contribute to the problems that beset rural areas, and because they are structural in nature, we feel that it is very unlikely that they will be easily reversed. One of the most important of these is the dramatic shift toward a service economy away from the production of primary and manufacturing goods. Since rural areas are very dependent on these declining sectors, they are especially vulnerable to this shift. Equally important is the emergence of a global economy. With the rise of the newly industrialized countries, rural areas are facing intense competition in resource extraction and manufacturing from abroad.

Not all trends, I'm glad to say, are negative. Tremendous advances in communication and information technologies, and radical changes in the way that these technologies provide services have occurred, along with this shift toward a service-oriented economy. OTA believes that these developments hold some promise for rural areas, because communication technologies reduce some of the burdens of distance and space—two factors that have traditionally disadvantaged rural areas. With modern communication technologies, rural communities will find it easier to address some of their problems. For example, a business using advanced telecommunications in rural areas can link to other businesses, access new customers, access major markets, just as a business operating out of an urban area.

Whether or not rural communities can take advantage of these technologies, will depend in part on whether and on how quickly—and I emphasize how quickly—they have access to the necessary infrastructure. In evaluating the communication needs of these communities, we need to think not just about what kind of activities they do now, but also—and increasingly more so—what their competitors are doing, whether these be businesses in urban areas or in other countries. Ironically, just when modern telecommunication is taking on such an enhanced role in business, the regulatory structure that once provided rural areas equal access is coming unraveled. The breakup of the Bell system and the shift toward deregulation has undermined the subsidy system that once supported rural services. We feel that this development could have serious consequences for rural areas. If they are not to suffer further decline, we think that new concepts and new designs for rural systems need to be found. While we believe this to be possible, we also think it will be a very difficult task.

The problem is that rural communities with their low population densities and long distances have to overcome the very high cost of bringing in modern services. The key, we think, is to combine the demand for services from different users in the community, creating sufficient economic clout to justify the deploying of technologies there. Recent technological advances provide a number of opportunities to do this. Most important is the unbundling of the communication infrastructure, the subsequent development of new network architectures, and new technologies and applications.

Before divestiture of the Bell system, network designs and regulatory models were the sole province of AT&T and federal/state regulators. This is no longer the case. Technological innovation and regulatory flexibility now allow the mixing and matching of network designs and business relationships to fit the needs of individual users. This is a particularly important event for rural areas that were forced in the past to accept network architectures and regulations based on a universal design. Just as businesses are taking advantage of these developments to create their own customized networks, so we think might rural com-

munities. However, whereas many businesses are establishing their network along functional lines, rural networks could instead be configured around the geographical boundaries, and the needs of an entire community.

In our report, we developed this notion of what we call a rural area network, and it is illustrated in Figure 1 of my prepared statement. A rural area network would link many users in a community, including small businesses, educational institutions, libraries, health services, and government services. For many rural communities, this combined demand would equal that of a modest corporation or large business, and thus make it economically feasible to use technologies such as fiber optics. RANs could also become networks within networks by being linked statewide through educational and State Government networks whether they exist now or are in the planning stage.

RANs we think have a number of distinct advantages. Because they provide for economies of scale and scope, they will help to foster deployment. Because they require sharing, they will help to foster the cooperation and community ties that are needed to bring about economic development. They require the participation of a number of users, and therefore they may help to assure that technology deployment strategy is very closely linked to economic development strategy. They would also help to overcome a problem of lack of technical expertise, which is prevalent in rural areas, because there would be only one network. And they also would create market power for rural communities that would induce communication providers to be more responsive to rural areas than they have to date.

As I noted, creating a rural area network such as this will certainly not be easy. There are a number of obstacles that need to be overcome before these kinds of networks can be integrated into development strategies. One of these problems is regulatory. Regulators often base their actions on current conditions rather than on the projection of future needs. They are unaccustomed to and, in some cases, they are prohibited by law from considering communication needs in the context of economic development. Regulators generally look at the needs of an individual subscriber on a service-by-service basis, and therefore they are generally opposed to taking any kind of proactive policies to encourage deployment. Moreover, federal regulators, because of their concerns about antitrust issues, have been uneasy about allowing the collaboration among communication vendors and users that is necessary for comprehensive development programs. federal and state jurisdictional issues also create an uncertain environment that could stifle innovative approaches to serving rural areas.

The second problem is one of knowledge and expertise. Rural citizens also lack the skills and experience necessary to use technologies for economic development. This contrasts sharply with urban areas where there is a critical mass of both technology and sophisticated users

that stimulates new applications and expanded use. If rural communities are to benefit from these technologies, they are going to have to learn how to design systems of their own, and this is no easy task, as any of us who have tried to install our own phone jack knows. Under the old Bell system, few subscribers were required or even inclined to develop or discover what their service options are. And so, today many are unprepared to sort out new technologies and services. Taking the time out from normal business hours to come to terms with information technologies is a mammoth task. Most rural businesses are small; job responsibilities are not specialized so that any one person can become a communication expert in his own right. As one rural businessman who we talked to told us, "I run my business on a shoe string. I supervise operations, keep the books. I even sweep the floor. When would I ever have the time to learn how to use communications strategically?"

Nor are there many people to whom rural businesses can turn for help. In a competitive environment, many communication vendors are focusing their energies on the more lucrative large business user. Among those who have supported rural areas in the past, such as the agricultural extension agent, the economic development official, or the local chamber of commerce, few recognize or even understand the economic development potential of new technologies. It is not surprising that when a rural business or community has been successful in deploying new technologies effectively, there has also been a knowledgeable, energetic, and visionary individual involved.

While new technologies have great potential, I need to caution that telecommunications is not enough. Technology alone cannot level the playing field for rural areas in meeting the challenges of urban and global competition. Many other barriers to economic development exist that are more immediate and more crucial. These include social problems such as low educational attainment, poverty, and poor health. Solutions to these problems are difficult to solve because of inadequate physical infrastructure and a lack of financial capital. If economic development is to be self-sustaining, these problems must be attacked through comprehensive community development programs; which include economic development and business growth as one goal, but that deal with social problems in conjunction. Communication technologies, however, could prove key to developing education, health, and social services for rural communities, and therefore in stemming further decline.

Failure to link the deployment of technology to a program for comprehensive economic development could actually harm rural communities. By all measures, whether they be poverty rates, income levels, or levels of educational attainment, rural areas begin from a disadvantaged position vis-a-vis urban areas. And as the history of communication clearly shows, under these kinds of circumstances, the mere deploy-

ment of technology alone can actually expose rural economies to urban competition and thus actually widen the economic gaps.

We believe the Federal Government can play an important role in encouraging the use of telecommunications for rural economic development as we have described it. First and foremost, it could provide vision and leadership by establishing this as a major policy goal. Establishing a formal goal, signals a commitment and provides a benchmark for weighing policy choices and evaluating actions. Failure to do so may result in inadequate funding and a lack of institutional and human support. An overly cautious approach to communication technologies could even undermine the chance to make a real difference. Where communication technologies have proved effective, it is often because they serve not only to be a more efficient means of providing a service, but also as a catalyst for innovation and for actually changing the ways that things get done. To create the critical mass in rural America that will be necessary for this kind of innovation, will require that the Federal Government make a significant commitment and even be willing to take substantial risks.

The Federal Government could also provide incentives for cooperation. To overcome the rural disadvantage, will require a major commitment on the part of individuals, businesses, educators, libraries, health care providers, and federal, state, and local governments. Such a comprehensive approach to economic and community development may seem threatening to a number of entrenched interests. New alliances may threaten established government agencies. Communication providers fear that efforts to pool user demand could lead to bypass of their systems. The cooperation required for rural economic and community development, based on shared communication networks such as a RAN, will not occur unless petty jealousies are put aside; and if this is to happen, the Federal Government will need to provide leadership, backed up by the organizational and financial resources to see it through.

A national program to encourage the use of technology for development will be less costly if existing organizations are given charge of its direction and implementation. There are a number of candidates that we propose, including a wide variety of agencies and institutions at the federal, state, and local levels. Each, however, is generally responsible for only one piece of this development puzzle. Thus, the problem for policymakers is not to create any new institutions, but to assign agencies tasks that match their existing strengths, and to assure that cooperation and coordination take place among them so that there can be a multi-dimensional and integrated development approach. There are at least three organizations that could be considered for a major development role. These include the U.S. Department of Agriculture, the Rural Electrification Administration, and the State land grant colleges and university systems.

In conclusion, let me say that in considering the Federal Government's role, it is very important to remember that whether rural communities experience development or decline is not just a local affair. All Americans have a stake in how well rural communities cope with and take advantage of the rapidly changing environment in which they find themselves. The kind of economic activity that occurs there can have a significant impact on the Nation's overall well-being and prosperity.

Long-term sustainable development requires the continuing flowering of new centers of innovation. As we increasingly realize, this kind of innovation takes place primarily in relatively small local enterprises. Most rural areas, however, have been forced to play only a supportive role in this process. With their long distances from commercial centers and their sparse populations, these communities generally have been unable to assemble the skills, information, and capital that is required for development. However, as our report points out, these barriers will be much less formidable in the future. Equipped with communication technologies and the wherewithal to take advantage of them, we believe that rural communities can be viewed not as a potential problem, but rather now as an untapped national resource.

Thank you, Mr. Chairman.

[The prepared statement of Ms. Garcia follows:]

## PREPARED STATEMENT OF LINDA GARCIA

Mr. Chairman and Members:

Thank you for the opportunity to report the findings of our study Rural America at the Crossroads: Networking for the Future. This study was undertaken at the request of the Joint Economic Committee and Senators Charles E. Grassley and Orrin G. Hatch. Noting that the widespread deployment of communications and information technologies will inevitably bring major changes in the way all Americans live and work, the committee asked OTA to examine how these developments might affect economic conditions in rural America. Let me briefly outline for you our findings.

Causes for Concern: Present Day Conditions in Rural America

Rural communities have played a central role in American life. Politically, they have served as the centerpiece of American democratic thought. Economically, they have provided the labor, food, and other natural resources that fueled and sustained the industrial revolution. Now comprising 24 percent of the Nation's population and 28 percent of its labor force, rural areas continue to be a source of inspiration and sustenance. In the minds of many, these communities reflect and reinforce the traditional American values of community and individualism. Increasingly, they are viewed as a haven from the intractable problems caused by urban development.

Notwithstanding their basic strengths, many rural areas today show signs and symptoms that raise concern for their futures. These include a loss of economic vitality, a relative decline in income, high unemployment, low workforce participation, and a high level of migration out of rural areas. Thus we find that per-capita income in rural areas is much lower than in urban areas, and that the communities considered to be the most rural are the worst off. Rural poverty rates, having been on an upswing since the early 1970s, are also higher than urban poverty rates.

A number of forces underlie the problems that now beset rural communities. These forces are structural in nature, so they are unlikely to be easily reversed. One of the most important forces is the dramatic shift in the economy away from the production of primary resources and manufactured goods towards the provision of services. Since rural areas are more dependent on these declining sectors, they are especially vulnerable to this shift. Equally important is the emergence of a global economy. With the rise of the newly industrialized countries, rural areas are facing intense competition in resources and primary manufacturing from abroad.

#### The Potential of Telecommunications

Not all trends are necessarily negative. Tremendous advances in communication and information technologies, and radical changes in the way these technologies can provide services, have occurred along with the shift toward a more service-oriented economy. OTA believes that these developments hold promise for rural America, because communication technologies reduce the burdens of distance and space -- two factors that disadvantage rural areas. Rural communities with modern communication technologies can more easily deal



with their problems. Using advanced communication technologies, for example, a rural business can link to other businesses, or access major markets, just as easily as a business in an urban area.

#### The Problem of Access

Whether or not rural communities will be able to take advantage of these technologies for development will depend, in part, on whether, and how quickly, they have access to the necessary infrastructure. In evaluating the communication needs of rural communities, one must consider not only a community's own economic activities, but also -- and increasingly -- the activities of its competitors, whether they be businesses in urban areas or in other countries. Ironically, just when modern telecommunication and information technologies are playing an increasingly important role in business, the regulatory structure that once provided rural areas equal access to them is coming unraveled. The breakup of the Bell system and the shift towards deregulated services have undermined the system of subsidies that once supported rural services. This development could have dire consequences for rural areas. If rural areas are not to suffer further decline, new concepts and designs for rural telecommunication systems must be found. OTA believes this to be possible.

#### New Opportunities

Rural communities, with low population densities and long distances, must overcome the cost of bringing in modern telecommunication services. The key is to combine the demand for services from different users in the community, creating sufficient economic clout to justify the deployment of modern technologies and services. Recent technological advances provide a

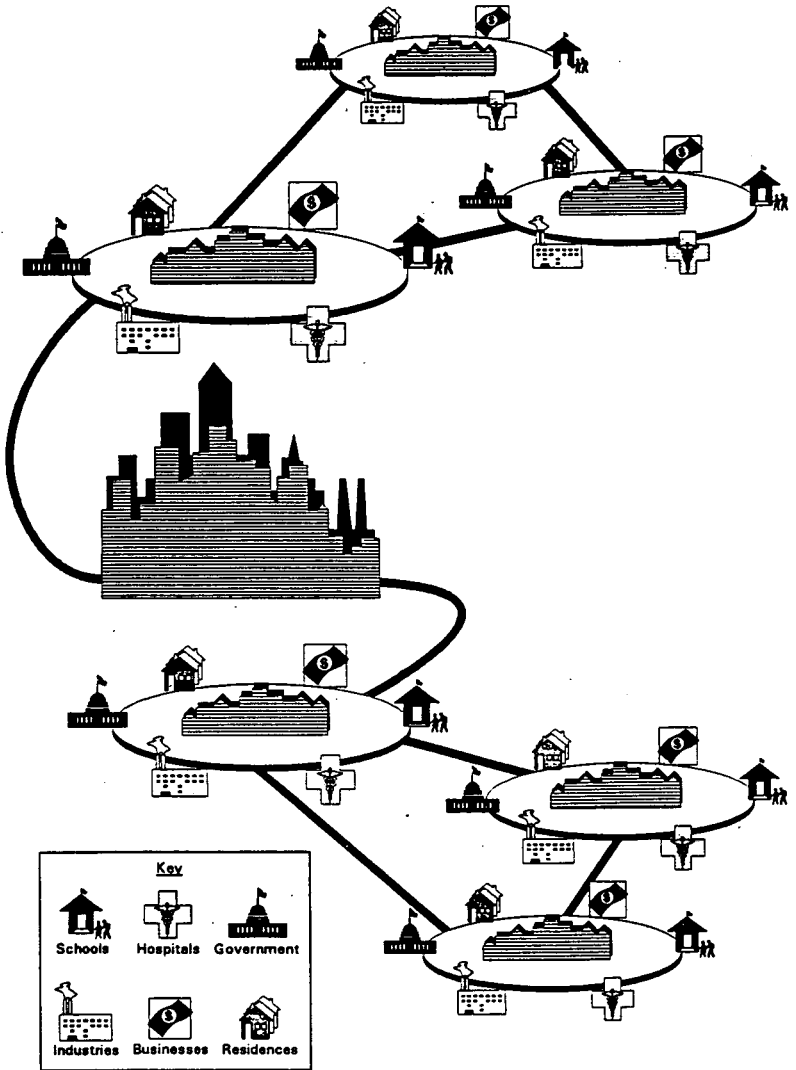
number of new opportunities to do this. Most important is the unbundling of the communication infrastructure and the subsequent development of new network architectures and new technologies and technological applications.

Before divestiture of the Bell system, network designs and regulatory models were the sole province of AT&T and Federal/State regulators. This is no longer the case. Technological innovation and regulatory flexibility now allow mixing and matching of network design and business relationships to fit the needs of the users. This is particularly important to rural areas, which have been forced in the past to accept network designs, services and regulations based on a universal design. Just as businesses are taking advantages of these developments to create their own customized communication networks, so too might rural communities. However, whereas many business networks are established along functional lines, rural networks could instead be configured around the geographic boundaries and needs of an entire community.

In our report, we developed this notion of a "Rural Area Network" or RAN. (See figure) A RAN would link many users in a community, including small businesses, educational institutions, libraries, health services, and government services. For many rural communities, this combined demand would equal that of a modest corporation or large business and thus make it economically feasible to utilize technologies such as fiber optics. RAN's could also become networks within networks by linking them statewide through State educational and/or State government networks that already exist or are planned.

RANs have a number of advantages.

Figure 1: Rural Area Network



SOURCE: Office of Technology Assessment

- o They allow the economic deployment of advanced technology to rural areas through economies of scale and scope.
- o By sharing the needs of business, education, health and government, they could foster cooperation and community ties.
- o The broad range of participation among shared users would link the technology directly to economic and community development strategies.
- o They would overcome limitations of technical telecommunication expertise found prevalent in rural areas by focusing on the design of one system.
- o They would induce communication providers to be responsive to rural needs as a result of the combined market power.

#### Obstacles to Be Overcome

A number of obstacles must be overcome to develop rural area networks and to integrate them into development programs and strategies. One of these is regulatory. Regulators often base their action on current conditions rather than on the projection of future needs. They are unaccustomed to, and sometimes legally precluded from, considering communication in the context of economic development and have generally opposed proactive policies for technology deployment. Regulators have traditionally focused on the needs of individual subscribers on a service-by-service basis, and, because of antitrust concerns, Federal regulators are uneasy about allowing the collaboration among communication vendors and users needed for comprehensive rural development. Federal/State jurisdictional conflicts create an uncertain regulatory environment that can stifle innovative approaches to serving rural needs.

Rural citizens also lack the skills and experience necessary to use new technologies for economic development. This contrast sharply with urban areas where there is a critical mass of both technology and sophisticated users that stimulates new applications and expanded use. If rural communities are to benefit from new technologies, they will need to learn how to design their own systems. This is no easy task. Under the old Bell system, few subscribers were required, or even inclined, to explore their service options. Thus, today, many are unprepared to sort out the many options available to them in an industry environment driven by rapid technological change. Taking the time out from normal business operations to come to terms with information-age technologies is also difficult. Most rural businesses are small; job responsibilities are not specialized enough so that any one person could devote much time to become a communication expert. As one rural businessman told OTA: I run my business on a shoe string. I supervise operations; keep the books; and even sweep the floor. When would I ever have time to learn about how to use communication strategically?

Nor are there many people to whom rural businesses can turn for help. In a competitive environment, many communication vendors are focusing their energies on the needs of the much more lucrative large business users. Among those who have supported small rural businesses in the past -- such as agricultural extension agents, economic development officials, or local chambers of commerce -- few recognize or understand the economic development opportunities that new technologies offer. It is not surprising that when a

rural business, or rural community, has been successful in deploying new technology effectively, there has generally been a knowledgeable, energetic, and visionary individual involved.

#### Telecommunications Alone is Not Enough

Notwithstanding the opportunities that new communication and information technologies offer, technology alone cannot level the playing field for rural areas in meeting the challenges of urban and global competitors. Many other barriers to economic development exist that are more crucial and immediate. These include social problems such as low educational attainment, poverty, and poor health. Solutions to these problems are difficult because of inadequate physical infrastructure and lack of financial capital. If economic development is to be self-sustaining, these problems must be attacked through comprehensive community development programs that include economic development as one goal, but attack social problems as well. Communication technologies may prove key to delivering educational, health, and social services to rural communities, and may be crucial to stemming further economic decline for rural America.

Failure to link the deployment of communication technology to a program for comprehensive economic development could actually harm rural communities. By all measures, whether they be poverty rates, income levels, or levels of educational attainment, rural areas begin from a disadvantaged position vis a vis urban areas. As the history of communication technology clearly shows, under such circumstances, the mere deployment of technology may expose rural economies to urban competition and hence widen the economic gap rather than narrow it.

### The Role of the Federal Government

The Federal Government can play an important role in encouraging the use of telecommunications for rural economic development. First and foremost, it could provide vision and leadership by establishing this as a major policy goal. Establishing a formal goal will signal a commitment and provide a benchmark for weighing policy choices and evaluating policy actions. Failure to do so may result in inadequate funding and a lack of institutional and human support. An overly cautious approach to communication technologies could undermine the chance to make a real difference. Where communication technologies have been effective, it has often been because they served not only as more efficient means of providing basic services, but also as catalysts for innovation -- for actually changing the way that things get done. To create the "critical mass" in rural America that is necessary for such innovation to take place will require that the Federal Government make a significant commitment and be willing to take substantial risk.

The Federal Government could also provide incentives for cooperation. To overcome the rural disadvantage will require a major commitment on the part of individuals, businesses, educators, libraries, health care providers, and local, State, and Federal Governments. Such a comprehensive approach to economic and community development may seem threatening to entrenched interests. New alliances may threaten established government agencies. Communication providers may fear that efforts to pool the demand of users might lead to bypassing the existing communication systems. The cooperation required for rural economic and community development based on a shared communication network (RAN) will not occur unless petty jealousies are set

aside for a common vision and a spirit of cooperation. If this is to happen, the Federal Government will need to provide leadership backed up by the organizational and financial resources to see it through.

A national program to encourage the use of information technology for rural economic development will be less costly if existing organizations are given charge of its direction and implementation. There are a number of organizational candidates for this task, including a wide variety of agencies and institutions involved in development activities at the Federal, State, and local levels. Each, however, is generally responsible for only one piece of the development puzzle. Thus, the problem for policymakers is not to establish new institutions arrangements, but to assign agencies tasks that match their existing strengths and to assure that cooperation and coordination among these agencies provides a multidimensional and integrated development approach. There are at least three organizations that could be considered for major rural development roles. These include the United States Department of Agriculture, the Rural Electrification Administration, and the State land-grant colleges and university systems.

#### The National Stakes

In considering the Federal Government's role it is important to remember that, whether rural communities experience development or decline, is not merely a local concern. All Americans have a stake in how well rural communities cope with, and take advantage of, the rapidly changing environment in which they find themselves. The kinds of economic activity that occur in rural America can have a significant impact on the Nation's overall prosperity.



Long-term economic development requires the continuing flowering of new centers of innovation. As we increasingly realize, such innovation takes place primarily in relative small local enterprises. Most rural areas, however, have been forced to play a supportive role in this process. With their long distance from commercial centers, and their sparse populations, the small communities in these areas have generally been unable to assemble the skills, information, and capital required for development to take place. As our report points out, these barriers of distance are likely to be much less formidable in the future. Equipped with communication and information technology and the wherewithal to take advantage of it, rural communities can be viewed not as potential problems, but rather as untapped national resources.

Senator SARBANES: Thank you very much, Ms. Garcia, for some very helpful testimony. We appreciate it. We are going to go through and hear from the other two panelists, and then I will have some questions to the panel or members thereof.

The next witness will be George Connick, President of the University of Maine at Augusta and Chairman of the advisory panel, who provided counsel to OTA on the report about which we have just heard.

Mr. Connick, please proceed.

**STATEMENT OF DR. GEORGE P. CONNICK, PRESIDENT,  
UNIVERSITY OF MAINE AT AUGUSTA; CHAIRMAN, ADVISORY  
PANEL ON THE OFFICE OF TECHNOLOGY ASSESSMENT STUDY**

Mr. CONNICK: Thank you, Mr. Chairman.

Let me begin by pointing out that I am from a very rural state. Some would contend that it is at the end of the road economically, but what I would like to describe to you——

Senator SARBANES: It is at the head of the road politically since the Majority Leader of the United States Senate is from your state I might add. [Laughter.]

Mr. CONNICK: Yes. I didn't mention politics, only economics. [Laughter.]

Mr. CONNICK: Maine in the last three years has developed one of the most sophisticated statewide comprehensive educational telecommunications systems in the country, and I would like to take just a couple of minutes to tell you how that happened, and the critical role the Federal Government played in making that possible, and in this way maybe underscoring several of the points and important issues in this particular report.

As a way of background, about 6 years ago in 1985, the Board of Trustees of the University of Maine's system became very concerned about the level of educational access in the State of Maine, and they asked that my office prepare a plan for how the educational access needs of Maine's citizens could be addressed.

We came up with some startling and very disturbing statistics. For example, we found that about 25 percent of Maine's high-school students dropped out before graduation. We found that Maine ranked 48th in the Nation in terms of those who did graduate going on for post-secondary education. We found that 37 percent of Maine's adults did not have a GED or a high school diploma, that about one-third of Maine's adults were illiterate. And we found that only one-third of Maine's people live near a university campus. In other words, we found that there was an enormous gap in Maine between the educational resources that were available and the geographic ability of citizens to take advantage of those educational opportunities. Maine spends a great deal on educational opportunities even at that level. But we found that

we lagged far behind the rest of the country and that if we were to really close the gap to bring Maine even to the national average, we would have to add 20,000 students to the university system. The problem was that Maine's university system in seven campuses only had 33,000 students. We would have had to increase the size of the university system by 70 percent.

What we concluded was that there was no labor-intensive model in higher education or K through 12 education that was going to address the significant educational needs in the State of Maine. So, the proposal that we made to the Board of Trustees was to develop a technology intensive system to try and reach across what is a very rural state with a very dispersed population—the most dispersed population east of the Mississippi.

And what we had as goals was to create a system that would provide universal access to people in rural towns, homes, and businesses, in the K through 12 schools—the 800 schools across the state. We wanted to ensure that that access would be uniform, and that we would be able to guarantee that once we offered courses and training, it would be available. We wanted high quality. We wanted a system that would allow us to use our very best faculty. We wanted a system that was going to be efficient, and that would eliminate the increasingly difficult cost structure of higher education. We wanted a system that would achieve high productivity. We wanted something that once the technology was in place, was expandable at minimum cost. We recognized that there was very high upfront cost, similar to building a campus, in putting in technology; but we also recognized that unlike traditional higher education, once you make that investment, the cost per student to educate each student goes down as you add more students. The converse is true in traditional higher education. And we recognized that central administration would be cheaper.

As we put this plan before the Board of Trustees in 1986, there were some important public policy issues that obviously had to be addressed. Where would the money come from to build what was going to be a significant system and an expensive one? Who would be responsible? Whose hands would be on the steering wheel? Who would build it? Who would maintain it? Who would be responsible for providing people with access to it? Who would be allowed to use it? Should the educational telecommunications network be seen as a statewide resource similar to a public utility, and what kinds of partnerships should be involved in developing statewide telecommunications? There was a fundamental question in Maine and that was rural states like Maine can only afford to build one system of this sort. There will not be competing systems in the near future, at least not in Maine.

But what has happened since 1985, I think, is part of the story that relates to this report. In 1986, the University of Maine at Augusta wrote a Title III grant under the Higher Education Act. The original proposal

was to use satellite technology to span the State of Maine. We later changed that plan and developed a proposal that put us in partnership with New England Telephone, and the most striking part of that \$3.5 million grant is that it enabled Maine to develop a fiber optic backbone through the entire state, at least 15 years before New England Telephone had proposed to put fiber optics across the State of Maine. There was no plan to put fiber in Maine until sometime in the 21st century. So, this then leveraged this enormous expansion of telecommunications capacity in Maine. That federal grant was used entirely for technology. We hired no personnel from it. The State of Maine then appropriated the money in 1987, almost \$5 million, to operate that system, and that enabled the entire educational and technical enterprise to move forward.

In 1989, that system was turned on in September. It was not turned on modestly. We could put about 40 live, interactive courses on the system when it opened, and that's what we put on it. There was some skepticism as to why the University of Maine's system of seven campuses needed a telecommunications system that would have three fiber optic channels. Some people wondered why we needed one. The fact is that two of those channels were full when the system was completed, and the third one is used extensively for meetings and conferences and workshops.

The system runs from 7:00 a.m. until 10:00 p.m. It reaches the islands off the coast of Maine, and it has leveraged a whole variety of economic development activities in the state. The most striking statistic to the Board of Trustees—and they were certainly very interested in this project—was that half of all the new students who enrolled in the University of Maine's system in the fall of 1989 began over the instructional television system.

The telecommunications system has leveraged one other thing. It has enabled us to build really one of the most sophisticated information systems. The university libraries are now all on line—an on-line electronic catalog—as are Bowdoin, Bates, and Colby, the main State library, and the main law library. It means that people on an island off the coast of Maine can access the library resources in the State of Maine at a keyboard in their own high school. The system now is connected to 83 locations across the state, and it really spans every part of it.

In conclusion, I would like to point out that what I have described as the educational part of that telecommunications system is also being used by those in health fields, and in many state agencies. It is being used to reach the disabled across the state through another federal grant—a model project nationally. The court system in Maine is looking at the use of this technology to bring down costs of the rural criminal justice system. Rural health care is looking at it as a way to link sophisticated facilities with rural hospital care. We think it has made an enormous difference in Maine already in a matter of 2 years.

I think the essential message I would bring to you from Maine is that Maine could not have done this, and I think would not have done it, without the initial support of the Federal Government and the leadership provided by various funding sources out of Washington.

Thank you very much.

[The prepared statement of Mr. Connick follows:]

## PREPARED STATEMENT OF GEORGE P. CONNICK

## 1. Background --

- a. 1985--Board of Trustees request a plan to expand educational access in Maine;
- b. Research findings--
  - (1) High school dropouts (25%);
  - (2) High school graduates (48th in U.S.);
  - (3) Adults without GED or high school diploma (37%);
  - (4) Adults participating in higher education (50th in U.S.);
  - (5) Only 1/3 of Maine adults live within commuting distance of campus;
- c. The Gap--for Maine to raise educational participation of Maine adults to national average, would require an increase in college enrollments of 20,000 students.

2. The Problem -- the University of Maine System (7 campuses) enrolled approximately 31,000 students in 1985. An increase of 20,000 would expand enrollment by nearly 70%. There was no LABOR INTENSIVE model which would allow Maine to significantly expand educational access to this level.

## 3. The Solution --

- a. Develop a TECHNOLOGY INTENSIVE system that would extend to every part of the state. It would provide:
  - (1) Universal access (to towns, homes, businesses, schools; insure that no courses would ever be cancelled; reach into rural areas with dispersed populations which would never have critical mass even if there were no projected faculty shortages);
  - (2) High quality (could use our best faculty);
  - (3) Efficient (eliminated duplication of course offerings);
  - (4) Higher productivity (once technology was in place, could reach significantly greater numbers of people than traditional educational system);
  - (5) Cost (high one-time, up-front cost -- although not as high as building a campus -- but, unlike traditional campus-based models, cost per student would decline as more students enroll over the technology-based system);
  - (6) Central administration (lower cost).

## 4. Public Policy Issues --

- a. Where would the money come from;
- b. Who would be responsible for building, maintaining and scheduling the system;
- c. Who would be allowed to use it; should the educational telecommunications network be seen as a statewide resource--public utility;
- d. What partnerships should be involved in developing statewide telecommunications; can any state afford to build more than one of these systems?

## 5. What has happened since 1985 --

- a. 1986--UMA receives Title III grant to assist in constructing telecommunications network (approximately \$3.5 million) partnership with New England Telephone;
- b. 1987--Board of Trustees approves Plan for Community College of Maine (which proposes the TECHNOLOGY INTENSIVE model);
- c. 1988--Legislature approves funding for operational plan (approximately \$4.6 million), including staffing and off-campus centers;
- d. 1989--Network completed and first 40 live, interactive college-level courses offered statewide in September; system used four hours each day for high school courses and 20 hours per week set aside for statewide meetings, training programs workshops, etc.; IMPACT: 1/2 of all of the new students enrolled in the University System in the fall, 1989, were taking courses over the instructional television system;
  - (1) URSUS--statewide automated library system begins;
  - (2) Computers--University computer system is expanded;
  - (3) 77 locations dispersed across the state.

## 6. Summary --

- a. Student performance;
- b. Use of telecommunications system by a variety of organizations;
- c. Economic development potential;
- d. Other.

Senator SARBANES: Thank you very much, sir.  
Mr. Mink, we'll be happy to hear from you.

**STATEMENT OF PHILLIP MINK, GENERAL COUNSEL,  
LEGAL AND REGULATORY REFORM PROJECT,  
CITIZENS FOR A SOUND ECONOMY FOUNDATION**

Mr. MINK: Thank you, Mr. Chairman. CSE thanks you and the Committee for this opportunity to express its views on the OTA report. As a nonpartisan organization of 250,000 members and supporters, we are dedicated to solving pressing national problems in ways that expand consumer choice and promote economic growth and opportunity. I should add here that we do devote an enormous part of our resources to telecommunications policy at the national level and, in some areas, at the state level.

Our interest in telecommunications arises from the enormous contribution those technologies can make to the quality of consumers' lives and to U.S. economic vitality. In this age of rapidly expanding technology, increased telecommunications usage leads to economic growth, job creation, and enhanced international competitiveness. Indeed, telecommunications is already the leading contributor to productivity in the U.S. economy, well ahead of electricity, transportation, and other infrastructure services.

An advanced telecommunications network will benefit rural America by improving education and medical care, fostering economic growth, and providing a host of information age services. Therefore, we commend OTA for undertaking a thorough study of the many factors involved in serving rural America's telecommunications needs.

Having said that, though, we cannot agree that Congress should adopt the policies advocated by the OTA report. Instead, we urge the Committee to take stock of the many telecommunications debates now ongoing in Congress, the courts, and the federal agencies. Those debates will determine the future of the U.S. telecommunications network, as well the future of the U.S. economy. Then, and only then, can this Committee make intelligent decisions about the further need for rural telecommunications development.

CSE advocates a number of policy changes that we believe will enhance the public switched network for all Americans, rural and urban. Our positions are based on the fact that converging communications and computer technologies have taken a preeminent role in U.S. economic development. This trend allows businesses to better track inventories and communicate with customers. It brings college classes into the homes of rural America, provides at-home health care monitoring for the elderly and disabled, and a host of other services.

To use one example of this trend, computer and communications technologies transformed Bentonville, Arkansas, with a population of



11,000, into the headquarters for Wal-Mart, where a computer center the size of a football field controls the company's nationwide operations and tracks inventory, credit, and sales via satellite.

For this technological revolution to continue, though, the highly regulated communications industry must keep up with the essentially unregulated computer industry. Because of several anticompetitive policies, that mutual development is not occurring. We advocate several policy changes to correct the problem.

First, the seven regional Bell companies, which own well over half of the Nation's telecommunications assets, cannot manufacture the telecommunications equipment that drives the network. They cannot provide electronic information over the telephone lines, such as an electronic yellow pages; and they cannot provide long-distance service, which is key to setting up the networks they are talking about in this OTA study. These bans, which were placed on the Bell companies during the AT&T breakup, have certainly outlived their usefulness.

Second, the 1984 Cable Act prevents all telephone companies from providing cable in their telephone service areas. While the Cable Act ban excludes rural areas, the definition of rural, we believe, is too narrow to have meaningful impact today.

Third, the telephone companies operate under archaic depreciation schedules. While the computer industry can write off equipment in a couple of years, state and federal regulations force telephone companies to do so over 27 years. Accelerated depreciation schedules would encourage telephone companies to replace outdated copper wires and switches with state-of-the-art fiber optic technology, allowing more information to reach consumers at a more rapid rate.

These destructive policies have retarded the development of the U.S. telecommunications infrastructure. However, policymakers in all three branches of government are trying to remove them, and this year they may succeed. Within the next 2 to 5 years, they almost certainly will. For instance, this year the Senate Commerce, Science, and Transportation Committee passed S. 173, which would allow the Bell companies to manufacture telecommunications equipment. I should point out that Senator Hollings introduced that bill last year as well, and he has been a leader in telecommunications policy the last 2 years. And that bill could reach the Senate floor this month. Congressman Markey will soon introduce a similar bill in the House—a companion bill.

In response to growing concern over the rates and service offered by entrenched cable monopolies, several Congressmen and the Bush administration support telephone company competition. This year Senator Burns has introduced a far-reaching bill to allow the telephone companies to provide cable service. That bill also heavily emphasizes putting in place a national fiber network. That is one of the key goals of that bill.

In the House, Congressmen Boucher and Oxley plan to introduce a similar measure to lift the cable ban.

In the courts, last year the D.C. Circuit Court of Appeals ordered Federal District Court Judge Harold Greene to reconsider his denial of information services relief for the Bell companies. Judge Greene heard arguments in April, and a decision is expected this summer. Even if he does not lift that ban, we believe the D.C. Circuit Court will probably within the next year.

Finally, if Congress and the courts adopt these policies, rural areas will reap substantial benefits. For instance, an advanced communications network would eliminate problems specific to rural areas, such as commuting and gaining access to important services, minimizing any advantages urban areas have over the rural areas. I should add one example often used—Citibank is locating its credit card operation in South Dakota, I believe. Many other firms are pursuing similar policies.

In summary, with competition, the private sector should be able to determine how to meet rural America's telecommunications needs. That is why we cannot support the OTA study that assumes that no policy changes will happen, and thus the Government must act. While reading the political tea leaves is risky, we believe technological advancement will force policymakers to change obsolete policies. When that happens, all Americans will benefit from information age technologies we can now only dream about.

And finally, if I could add just an afterthought to what I said here. I do think if you are going to talk about telecommunications policy, it is very difficult to separate rural telecommunications policy from national telecommunications policy. And in that regard, I do think it would be absolutely critical that the Federal Communications Commission, which is empowered under the 1934 Communications Act to implement the policies that Congress enacts by law, into this process. And I do think their input would be most valuable. In addition, I would encourage the participation of the Department of Commerce's National Telecommunications and Information Administration. I know they probably had some input into this process, but they will be dictating the course in many ways of our national policy in coming years.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Mink follows:]

## PREPARED STATEMENT OF PHILLIP MINK

Citizens for a Sound Economy (CSE) thanks the Committee for this opportunity to express its views on the Office of Technology Assessment's report, "Rural America at the Crossroads: Networking for the Future." As a nonpartisan organization of 250,000 citizen members and supporters, CSE is dedicated to solving pressing national problems in ways that expand consumer choice and promote economic growth and opportunity.

CSE's interest in telecommunications issues arises from the enormous contribution those technologies can make to the quality of consumers' lives and to U.S. economic vitality. In this age of rapidly expanding technology, increased telecommunications usage leads to economic growth, job creation, and enhanced international competitiveness. Indeed, telecommunications is already the leading contributor to productivity in the U.S. economy, well ahead of electricity, transportation, and other infrastructure services.

An advanced telecommunications network will benefit rural America by improving education and medical care, fostering economic growth, and providing a host of other information age services. We commend OTA for undertaking a thorough study of the

many factors involved in serving rural Americans' telecommunications needs.

Having said that, however, we cannot agree that Congress should adopt the policies advocated by the OTA report. Instead, we urge the Committee to take stock of the many telecommunications debates now ongoing in the Congress, the courts, and the agencies. Those debates will determine the future of the U.S. telecommunications network, as well as the future of the U.S. economy. Then, and only then, can this Committee make intelligent decisions about the further need for rural telecommunications development.

CSE advocates a number of policy changes that we believe will enhance the public switched network for all Americans, rural or urban. Our positions are based on the fact that converging communications and computer technologies have taken a preeminent role in U.S. economic development. Computers can convert information -- video, data, voice, and the like -- into an electronic language easily transmitted over the telephone. This "digitization" allows businesses to better track inventories and communicate with customers, brings college classes into the homes of rural America, provides at-home health care monitoring for the elderly and disabled, and a host of other services.

To use one example of this trend, computer and communications technologies transformed Bentonville, Arkansas (population 11,000) into the headquarters for Wal-Mart, where a computer center the size of a football field controls the

company's operations and tracks inventory, credit, and sales via satellite.

For this technological revolution to continue, the highly regulated communications industry must keep up with the essentially unregulated computer industry. Because of several anticompetitive policies, that mutual development is not occurring. We advocate several policy changes to correct the problem.

First, the seven regional Bell companies, which own well over one-half of the nation's telecommunications assets, cannot manufacture the telecommunications equipment that drives the network; provide electronic information over the telephone lines, such as an electronic yellow pages; and provide long-distance service. These bans, placed on the Bell companies during the AT&T breakup, have outlived their usefulness.

Second, the 1984 Cable Act prevents all telephone companies from providing cable in their telephone service areas. While the Cable Act ban excludes rural areas, the definition of rural is too narrow to have a meaningful impact today.

Third, the telephone companies operate under archaic depreciation schedules. While the computer industry can write off equipment in a couple of years, state and federal regulations force telephone companies to do so over twenty-seven years. Accelerated depreciation schedules would encourage telephone companies to replace outdated copper wires and switches with

state-of-the-art fiber optic technology, allowing more information to reach consumers at a more rapid rate.

These destructive policies have retarded the development of the U.S. telecommunications infrastructure. However, policymakers in all three branches of government are trying to remove them. This year they may succeed. Within the next two-to-five years, they almost certainly will.

This year, the Senate Commerce, Science, & Transportation Committee passed S. 173, which would allow the Bell companies to manufacture telecommunications equipment. The bill could reach the Senate floor this month.

In response to growing concern over the rates and service offered by entrenched cable monopolies, several congressmen and the Bush Administration support telephone company competition. Last year, S. 2800, which would have allowed the telephone companies to transmit cable programming, passed the Senate Commerce, Science & Transportation Committee. This year Senator Burns (R-MT) has introduced a more far-reaching bill to allow the telephone companies to provide video programming.

In the House, Congressmen Boucher (D-VA) and Oxley (R-OH) plan to introduce similar measures to lift the cable ban. And Congressman Markey (D-MA) has drafted a bill to lift the manufacturing ban and foster the rapid development of computer-enhanced information services.

In the courts, last year the D.C. Circuit Court of Appeals ordered federal district court Judge Harold Greene to reconsider

his denial of information services relief for the Bells. Judge Greene heard arguments in April, and a decision is expected this summer. Most observers predict that even if he doesn't lift the ban, the D.C. Circuit will.

CSE has asked Congress and the courts to lift the information services, manufacturing, and cable bans, and we advocate accelerated depreciation schedules. If Congress and the courts adopt these policies, rural areas will reap substantial benefits. For instance, an advanced communications network would eliminate problems specific to rural areas, such as commuting and gaining access to important services, minimizing any advantages urban areas have over rural areas.

In short, with competition, the private sector should be able to determine how to meet rural America's telecommunications needs. That is why we can't support the OTA study, which assumes that no policy changes will happen and thus the government must act. While reading the political tea leaves is risky, we believe technological advancement will force policymakers to change obsolete policies.

Those same technologies, once unleashed, should serve rural Americans well. So before Congress further intervenes in rural telecommunications development, it should eliminate the many policy barriers to competition. Then the private sector should be able to serve all Americans with information age technologies we can only dream about.

Senator SARBANES: Thank you very much, Mr. Mink.

Ms. Garcia, first of all, could you explain how this rural area network works?

Ms. GARCIA: Let me say first that this notion is a concept as opposed to a prescription. One of the things that we discovered in our case studies—we did four case studies to help in our research—was how diverse rural areas were, and that it is impossible to prescribe a solution that would work in all areas. This concept shows how it is possible to make it economically viable in the near-term to provide advanced services to rural areas.

In response to some of the things that Mr. Mink said, let me say that we do not believe that providing technology deployment in itself is the best or optimal solution. We think it is necessary to join technology policy with development policy. The development of a rural area network would not only provide the economies of scale and scope by pooling user demand, it would be market driven because the demand would be there. Therefore it is not a technology-push approach, but a user-pull approach. It would require the sharing among all the players that is necessary within rural areas to bring about development.

Even if all the changes that Mr. Mink is suggesting were to take place, all you would have is technology going to rural areas. And it would go to the large businesses first. That kind of development may very well not be sustainable in rural areas. Wal-Mart is a very good example of the nature of the two-edged sword of technology. Just as labor can get jobs by bringing a Wal-Mart there, so can money filter out of rural areas through telecommunications. That is why we argue that you need to bring about sustainable growth from within so that rural areas are on an equal playing field with urban areas and can compete in a sustainable way in those things that they do best from within.

If you look back historically at the telegraph, the railroads, or even the television, what you will see happening is that by merely bringing technology to rural areas you can cause harm to them. This is how out-migration takes place. So, we are looking for something that would combine development policy with technology policy, and we do not think that this can be done merely through telecommunications policy.

Senator SARBANES: Did you get any sense of how what we are doing compares with what is done in other countries?

Ms. GARCIA: Well, our approach to the notion of infrastructure is very different than in other countries. In the United States, there is a tradition of looking at communications as an end in and of itself. In a number of other countries, communications is looked at as a means to other ends. It is a way of providing social services. The notion of technology for economic development is more natural. You can look in Sweden. You can look in Austria to see developments such as the telecottage. You can look at the French approach to telecommunications, which is viewed as a way of creating an educated citizenry to participate



in an information age. In our country, we tend to look at telecommunications as a service. A few years ago, Chairman Fowler at the FCC said television is like a toaster, and therefore we should treat it as such. This is definitely a different approach than you would find in other countries where the infrastructure is looked at as a means to achieving societal goals, and that is why regulators in rural areas have often avoided taking a proactive approach.

What we think we have to come up with is a way of meeting the regulators' criteria, which means it would be economically viable at the same time as it would be a means of encouraging advanced infrastructure in rural areas. We think we have what would be a win-win solution for all.

Senator SARBANES: Well, that is another vote. I think maybe we will be able to finish up before I have to go to vote.

Mr. Mink, I'm not quite clear. Is it your view that the Government should not play a role in trying to establish this communications network?

Mr. MINK: No, it is not. I think what we have right now is a lot of government involvement in telecommunications policy. Since the turn of the century, state and local governments have granted AT&T and their successors—the Bell companies—local monopolies to pursue precisely the policies Ms. Garcia is talking about. State regulators are extremely cognizant of rural economic development. If you go to the State of Tennessee, for instance, my home State of Mississippi, the State of Texas, most states very much consider those policies when they are considering their telecommunications policies. They have to serve rural customers. We have achieved virtual universal service in this country. I think 96 percent of the populace now has telephone service. The network is there. What is not there are the services to provide over that network. We do need to keep the network technologically advanced. That is happening.

Senator SARBANES: Which policies of the OTA report do you feel should not be adopted? You make that statement.

Mr. MINK: They talk very specifically about loans and grants. I assume that would go to rural telcos, state and local governments, or whoever would be involved in setting up these networks. Again, I don't think we need those sorts of loans and grants at this stage if we can fulfill those goals with other policies, and I think we have every belief that other policies, such as Senator Hollings is pushing right now, will achieve those goals.

Senator SARBANES: Do you think the market will provide those things alone? That the way it is structured, there is a sufficient return that the market will do it?

Mr. MINK: I think if the incredible market distortions we have right now by virtue of what we believe are policy errors committed over the

last few decades are corrected, the combination of market incentives and ongoing state and federal regulation—which is so integral to this Nation's telecommunications policy already—should be able to fulfill those goals. Again, I would repeat state and federal regulators, and I should mention that current FCC Chairman Al Sikes, have a tremendous interest in rural development and have been pushing that issue fiercely for the last 4 or 5 years. We believe those policy bodies will be able to deal with these problems as they have over the last century without the need for this process.

Senator SARBANES: As I understood Dr. Connick's statement—I am going to invite him to now comment on this conversation—to put together this network that you outlined for us in Maine—which sounds very impressive—you really had to, in effect, draw support from almost every conceivable source. Is that correct?

Dr. CONNICK: That is correct. Our discussions with New England Telephone indicated that there was no market that they could see that would justify sophisticated telecommunications to the most rural parts of the state. Maine is all rural. So, there was going to be little of that kind of development. The same is true—we are working on a regional basis—with New Hampshire and Vermont. They face the same kinds of problems.

And so, the model that we developed in Maine working with New England Telephone, where one chunk of money went to New England Telephone to help leverage the creation of that sophisticated telecommunication system, was essential to get them to change their planning, but they were very clear. There was no economic reason for them to move forward unless there was a substantial infusion of funds up front. In this case, it was \$2 million. But that was one time, and now we have a very progressive system in Maine.

Mr. MINK: Mr. Chairman, if I may point out the reasons those companies have no economic incentive is because of the regulatory policies we have. Right now if you are depreciating your copper wire over a period of almost 30 years, you are tied into that system almost indefinitely. There is no way you can justify ripping out that copper wire and installing fiber, as they did in Maine, given the incentives.

You also have a tremendous problem with the profits necessary to justify that sort of system. Since telephone companies cannot provide cable, information services, or manufacture equipment, they are deprived of many sources of income they could use to deploy just that sort of thing.

Senator SARBANES: I hear what you are saying, but I am not sure analytically where it leads you. You are asserting, as I understand it, that if these various impediments—as you perceive them—of a regulatory nature were removed, it would become economically viable to undertake these investments and the expansion of these networks.

Mr. MINK: Right.

Senator SARBANES: It is not clear to me on its face that that's the case, and that is what I am trying to get at.

I guess I would ask Mr. Connick again. Even assuming some of these things had not existed, do you think New England Telephone would have been prepared to undertake this endeavor without some of this infusion of monies that were provided?

Dr. CONNICK: Well, it is certainly a question that we never thought about in terms of a regulatory issue because we did not see that down the road. New England Telephone's view, when we first talked to them, was that there was no market—there were no business reasons—to extend sophisticated telecommunications across the State of Maine. That is why they had no plans to do it until the 21st century.

Now, if the assumption is correct that if you remove the regulations and it is economically advantageous to put in new fiber, I don't know the answer to that, but it certainly was not in the thinking of New England Telephone. The market simply was not there.

Senator SARBANES: Did the OTA touch on that subject?

Ms. GARCIA: Yes. We considered that.

History suggests that it is not the case. If you look back at the deployment of the telegraph, electricity, and telephone, there were no restrictions or constraints on the providers, and it took a very long time to achieve universal electricity deployment across the country. It would not have been accomplished, I don't think, without the REA. We have universal telephone service; that is, not even touch tone dial service, but basic telephone service. But I doubt that that would have been accomplished—and it took 17 years—without the development through REA and the loan system. So, history itself, if you look at it as a parallel, would suggest that technology will not reach rural areas. We are talking about the technology to conduct business, which is not just universal telephone services, but advanced telecommunications services. I can see no way, even if these constraints on the telephone companies were loosened, that this would take place in a timely fashion.

Mr. MINK: But, Senator, that goes back to my point a moment ago. As she said, we do have universal telephone service. Whether AT&T was the company to do that, to fulfill that natural monopoly premise, is highly controversial. Nobody knows. But the network is now in place. We do not need to debate that question.

The real question is what are you going to put on the network. If you have a rural telecommunications system, unless you are going to do high-speed data transmission or high-definition television, even the high-speed data right now you can do in most places. Now, if you are going to isolate certain segments of a rural area, and say we need a fiber trunk here to transport high-speed data transmissions to, say, a place in rural

Montana, you can certainly do that if you want to do that. I'm just not sure I would see much economic sense in doing it.

Ms. GARCIA: Mr. Chairman, the University of Maine system, as Mr. Connick said, uses three high-speed fiber wires and is already overcapacity. So, we are not suggesting simple transmission services but high-speed data services. What we have tried to do is to find a creative way to create the demand that would economically justify that, and we think that we have. I think Maine is a very good example of how that can be done.

Senator SARBANES: I am going to have to close the hearing at this point, but I am struck by the need to create at the receiving end a demand for these kinds of services. I think in many rural areas you have no critical mass that is there, and it almost has to be assembled. I am not quite clear how you do it. You did it in Maine because you had the impetus of the educational system to do it. It is a little tougher I think in the business community how you would help to create this critical demand.

Dr. CONNICK: I would give you only one other example and that is L. L. Bean in Maine. When I went to Maine 25 years ago, L. L. Bean was a \$2 million company. It is now a \$650 million company. And they will contend that the bulk of what has allowed them to grow and expand is electronics. As electronics and sophisticated telecommunications have expanded, they have been able to expand. They would have moved earlier to parts of Maine if they had had the kind of technology available to put some of their plant operations. They would have dispersed it in the state.

So, there may be a chicken and egg question here, but it is very clear that in a modern society you are not going to develop in rural areas unless you have the telecommunications. How you get there, I think, is part of the major public policy issue. But I would contend in Maine we would not have gotten there without federal help.

Senator SARBANES: I am going to have to close, or I am going to miss that vote and that would make my constituents very unhappy, I'm afraid.

We thank the panel very much for their testimony. We appreciate it, and we thank you for your report, Ms. Garcia.

The Committee is adjourned.

[Whereupon, at 3:23 p.m., the Committee adjourned, subject to the call of the Clerk.]

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