A Proud Past,
A New Vision.

ARC

Appalachian Regional Commission

Information Age Appalachia

A rural digital divide program

November, 2001

A Regional Vision

Appalachia is a prosperous and vibrant region with full access to the tools of the Information Age and has the knowledge and capacity to use those tools to compete successfully in the 21st century economy.

Executive Summary

While much of the United States has been reaping the economic benefits of the Information Age, rural and small town Appalachia has been too often left behind. For a variety of reasons, the area substantially lacks adequate access to a robust telecommunications infrastructure. This, in turn, exacerbates the region's geographical isolation and serves as a barrier to the economic, educational, medical and various other benefits that regions outside of Appalachia – including rural ones – have enjoyed for years.

This rural digital divide exists despite the provisions of the Tele-communications Act of 1996 and other initiatives designed to assure access to modern telecommunications services to all Americans. This problem is particularly acute in the region's distressed counties – those where the poverty and unemployment rates are substantially higher than the national averages. Hence there is a need to take proactive steps to address this market imperfection.

The Appalachian Regional Commission (ARC) took just such an approach when it directed that a program targeting this problem be developed. This document describes the framework under which the ARC and its partners will work to bring the benefits of the information revolution to those whom it threatens to bypass.

The *Information Age Appalachia* program's focus is not only on access to infrastructure, but more importantly, on applications dependent on that access. As such, it is not a technology program *per se*, but one that seeks to stimulate economic growth and improve the overall standard of living in the region through technology-related avenues.

In addition to facilitating access to infrastructure, the program's goals include supporting educational and workforce development initiatives, introducing e-commerce to targeted market segments and facilitating technology sector job creation.

Examples of the types of program activities include :

Access to Infrastructure

- Developing telecommunications plans
- Creating aggregation of demand projects
- Installing necessary infrastructure in distressed areas

Education, Training, Workforce Development

- Assisting grantees with E-rate applications to the FCC

- Facilitating technology ownership in the home
- Developing teacher training technology-integration curriculums
- Funding community learning / technology access centers
- Developing traditional educational materials, and enhanced DVD materials for training programs to assist all sectors

E-commerce Readiness

- Funding e-Commerce training programs
- Developing a handbook and other materials on e-Commerce
- Assisting business development organizations with information technology (IT) marketing efforts
- Identifying IT sector gaps and working with trade associations on special program development in e-Commerce by sector
- Assist in aggregating micro-business development opportunities

Tech Sector Employment

- Developing planning strategies jointly with the Small Business Administration (SBA), National Business Incubator Association (NBIA), Industrial Development Authorities (IDA), Chambers of Commerce, Local Development Districts (LDD), Small Business Development Centers (SBDC) and other organizations that promote IT sector development
- Assisting with plans, development, and funding of "smart parks", IT Incubators, and other business outreach services that provide co-location IT opportunities
- Funding enhanced telecommunication services to facilitate smart parks and IT Incubator development opportunities
- Funding joint demonstration projects with the SBA, State organizations, LDDs, IDAs, SBDCs, and others on IT sector development
- Assisting IT businesses with access to Revolving Loan Funds (RLF), venture capital and credit services

The program is highly complementary to existing government and private initiatives dedicated to this problem. ARC uses its resources to leverage other federal, state and private sector resources and to attract additional support.

As is customary in the Commission's previous work, the ARC acts as a catalyst to create new partnerships and spur action. Only by involving a broad range of stakeholders in the public and private sectors can such a large and complex issue be resolved.

The Appalachian Regional Commission

> *"The Congress hereby finds and declares that the Appalachian region of the United States, while abundant in natural resources and rich in potential, lags behind the rest of the Nation in its economic growth and that its people have not shared properly in the Nation's prosperity."*
> - Appalachian Regional Development Act of 1965

Congress established the Appalachian Regional Commission in 1965 to support economic and social development in the Appalachian Region. For over 35 years the commission has been a unique and successful federal-state partnership.

Appalachia, as defined in the legislation from which the Appalachian Regional Commission derives its authority, is a 200,000-square-mile region that follows the spine of the Appalachian Mountains from southern New York to northern Mississippi. It includes all of West Virginia and parts of twelve other states: Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia (see map on page 6 and detailed description of economic indicators in Appendix C).

The Commission is composed of the governors of the 13 Appalachian states and a presidential appointee representing the federal government. Grassroots participation is provided through local development districts—multi-county organizations with boards made up of elected officials, businesspeople, and other local leaders.

ARC undertakes projects that address the five goals identified by the Commission in its strategic plan:

1. Developing a knowledgeable and skilled population
2. Strengthening the Region's physical infrastructure
3. Building local and regional capacity
4. Creating a dynamic economic base
5. Fostering healthy people

To meet these goals, ARC helps fund such projects as education and workforce training programs, water and sewer system construction, leadership development programs, small business start-ups and expansions, and development of health-care resources. Working with the US Department of Transportation, ARC has been building the Appalachian Development Highway (ADH) network, consisting of 3,025 miles of enhanced highway construction to relieve the region's isolation and open it to economic

development. Like the ADH, the Information Age Appalachia program will also be an avenue to facilitate the attainment of these goals by providing new tools for a new age.

About 23 million people – or 8% of the entire US population - live in the 406 counties of the Appalachian Region; 42 percent of the Region's population is rural, compared with 20 percent of the national population. The Region's economic fortunes were based in the past mostly on extraction of natural resources and manufacturing. The modern economy of the Region is more diverse and includes diverse industry sectors such as primary metals, furniture and wood products, and automotive supplies among others.
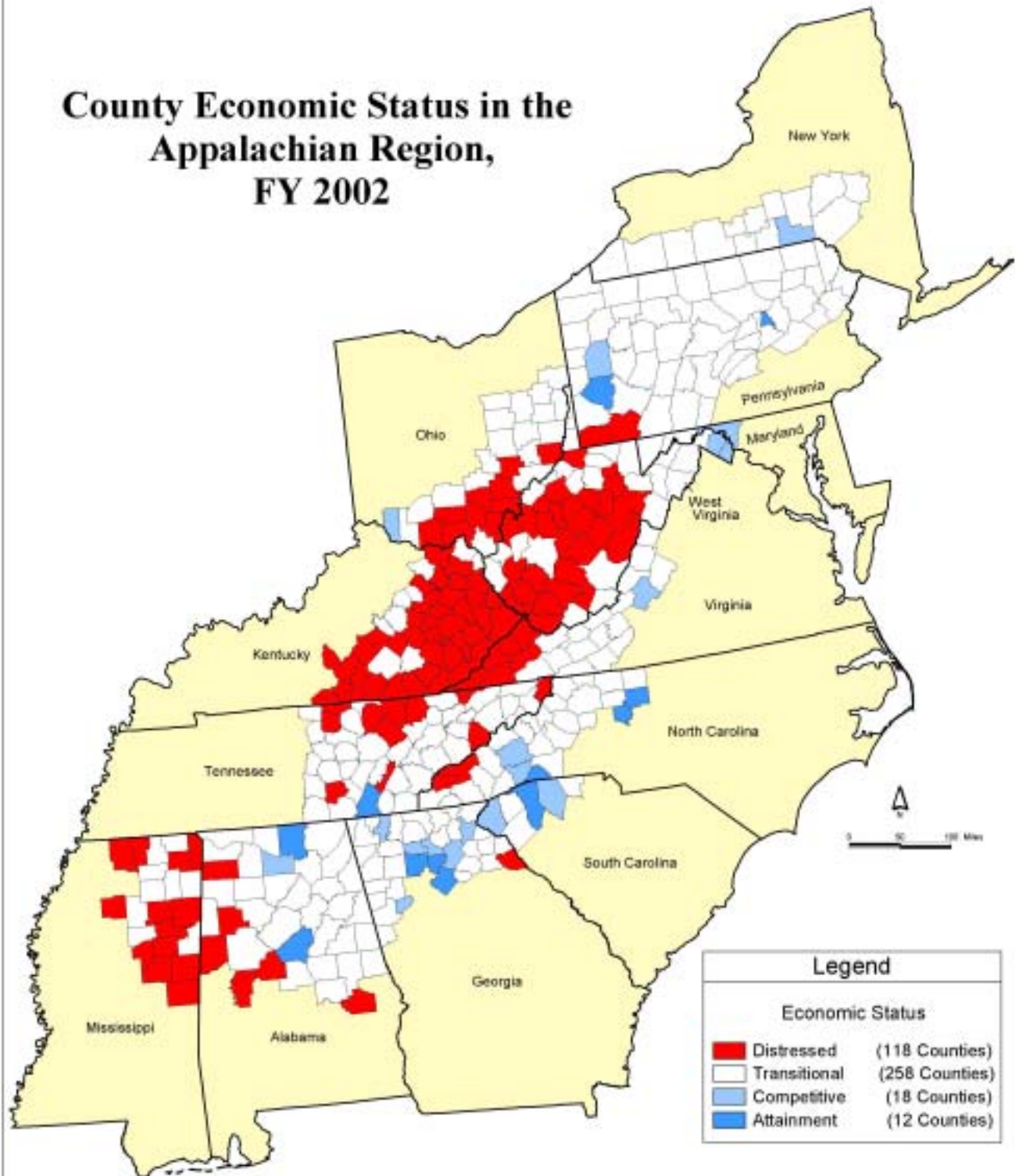
The Commission's make-up is optimal to construct a regional approach for a regional problem. For 35 years the ARC has brought together public sector participants from the federal, state and local levels with private sector stakeholders in industry, banking, and nonprofits, among others, to jointly address the challenges the region faces. This collaborative approach extends from the planning phase of projects all the way through implementation and assessment.

Using this philosophy, ARC has had a significant impact in the region. The Commission has helped to cut the poverty rate in half; reduce the infant mortality rate by two-thirds; double the percentage of adults age 25 or older with a high school diploma; build more than 2,300 miles of new highways; provide water and sewer services to over 800,000 households; and create hundreds of thousands of new jobs.

The Commission has also supported a number of technology-related projects under the ARC's five year Telecommunications Regional Initiative that forms the basis for the current program. For example, working with the State of Pennsylvania, the ARC helped develop PA SourceNet. This initiative successfully assisted manufacturing concerns develop new markets through adopting an e-commerce platform (see www.PASourceNet.Com). In North Carolina, the Commission helped develop cyber-campuses in targeted communities. These community access centers provide the continuing education and training that are critical for the local workforce and economy. Many other examples could be cited.

Building on this past record of success, the *Information Age Appalachia* program seeks to deliver an equally impressive record of accomplishment into the 21st century.

County Economic Status in the Appalachian Region, FY 2002

Legend

Economic Status

Distressed	(118 Counties)
Transitional	(258 Counties)
Competitive	(18 Counties)
Attainment	(12 Counties)

Data Sources:
U.S. Department of Labor, Bureau of Labor Statistics (unemployment data), 1997-1999;
U.S. Department of Commerce, Bureau of Economic Analysis (income data), 1998;
U.S. Department of Commerce, Bureau of the Census (poverty data), 1990.

The Appalachian Digital Divide

In 1965 the interstate highway system had bypassed Appalachia, and the need to reverse the negative impacts of that oversight was a primary motivator for the creation of the Appalachian Regional Commission. Today it is the information superhighway that is bypassing many of the 22 million people in the region.

Indeed, while much of the United States has been reaping the economic benefits of the Information Age, rural and small town Appalachia has been largely left behind. For a variety of reasons, the area substantially lacks adequate access to a robust telecommunications infrastructure. This in turn serves as a barrier to the economic, educational, medical and various other benefits that regions outside of Appalachia – including rural ones – have enjoyed for years.

Ironically, legislators and policy makers have long been concerned about the potentially disastrous economic effects to the country if access to technology was limited to those in metropolitan areas. The original Universal Service law guaranteeing rural America access to basic telephone service dates back to 1934. The region has benefited greatly from this law and the various programs developed over time to ensure its implementation.

With the advent of the Information Age, Congress again realized the potential for a modern-day disparity regarding access to the Internet and other new technologies critical to the economic health of the nation. As such the Telecommunications Act of 1996 contained provisions similar to the original Universal Service law to ensure that all Americans have access to the benefits of these new and emerging technologies.

And yet, five years after passage of these provisions, access to a modern telecommunications infrastructure – and the benefits it provides – is still problematical for Appalachia.

Government data show just how real this rural digital divide is. The US Department of Commerce National Telecommunications and Information Administration and the US Department of Agriculture's Rural Utilities Service (NTIA/RUS) performed an in-depth analysis on this issue. Their report, *Advanced Telecommunications in Rural America*[1], was released in April 2000, and documented the extent to which rural America still lagged behind in access to broadband services.

The ARC contracted with scholars at the University of Texas to examine that and other data to develop a detailed analysis of the gaps in broadband[2]

services within the region (ARC/UT study). Thanks to that effort we can now document the extent of the rural digital divide within Appalachia.

As the NTIA/RUS study points out, the most common commercially available method for residences and small businesses to gain access to broadband services is through either a Digital Subscriber Line (DSL) link provided by the local phone company or a cable modem through one's cable TV provider.

Although growing rapidly in availability, both of these access routes are primarily being introduced into metropolitan areas. Indeed, even basic cable service is less available in rural areas than non-rural ones (NTIA/RUS study). As the following maps on pages 9 and 10 show (see county details in Appendices D and E), neither of these options is widely available to the residents and businesses of Appalachia. Alternative technologies such as satellite and ground-based wireless exist that can deliver broadband services, but they are currently neither widely available nor affordable.

Not surprisingly, a lack of access to broadband services leads to distinct disadvantages in the region's ability to compete for tech sector jobs and business. Tech-related job growth in the region's rural areas from 1996-2000 was a mere 21% versus a national average of 53% (ARC/ UT study).
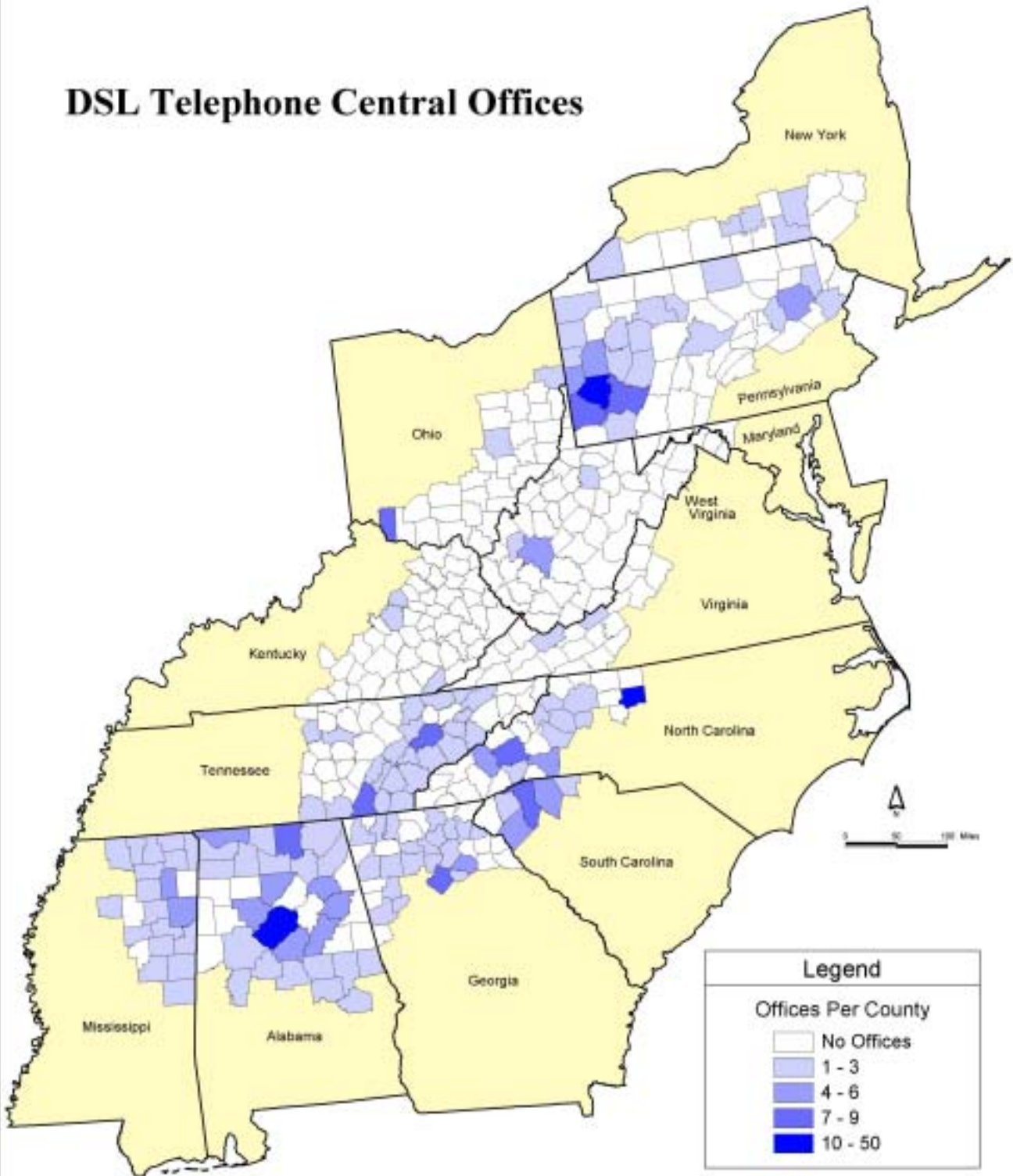
As damaging as that is, the negative impact of the Appalachian digital divide is not limited to technology-specific economic drivers. Almost every industry today is becoming increasingly dependent on access to advanced telecommunications in order to reach their customers and suppliers. Key industry sectors in the region[3] are also then put at a competitive disadvantage if they are not able to leverage the information and business opportunities residing on the Internet.

Lastly, programs that provide enhanced educational content for K12 education and adult learning programs are frequently not able to benefit the region because of the lack of critical telecommunications services that are required to deliver these services. At the same time, as Chart 1 shows, the region as a whole is not adequately taking advantage of the Universal Service Funds program to underwrite telecommunications-related expenses. This alone accounts for a $148M investment shortfall in the region's telecommunications infrastructure.

To be sure, part of this disparity is due to the lack of local capacity to develop strategies to take advantage of these programs in addition to the lack of commercially available services. Any approach then to bridging this divide must take this factor into account and develop methods to increase local capacity to successfully compete for these funds.

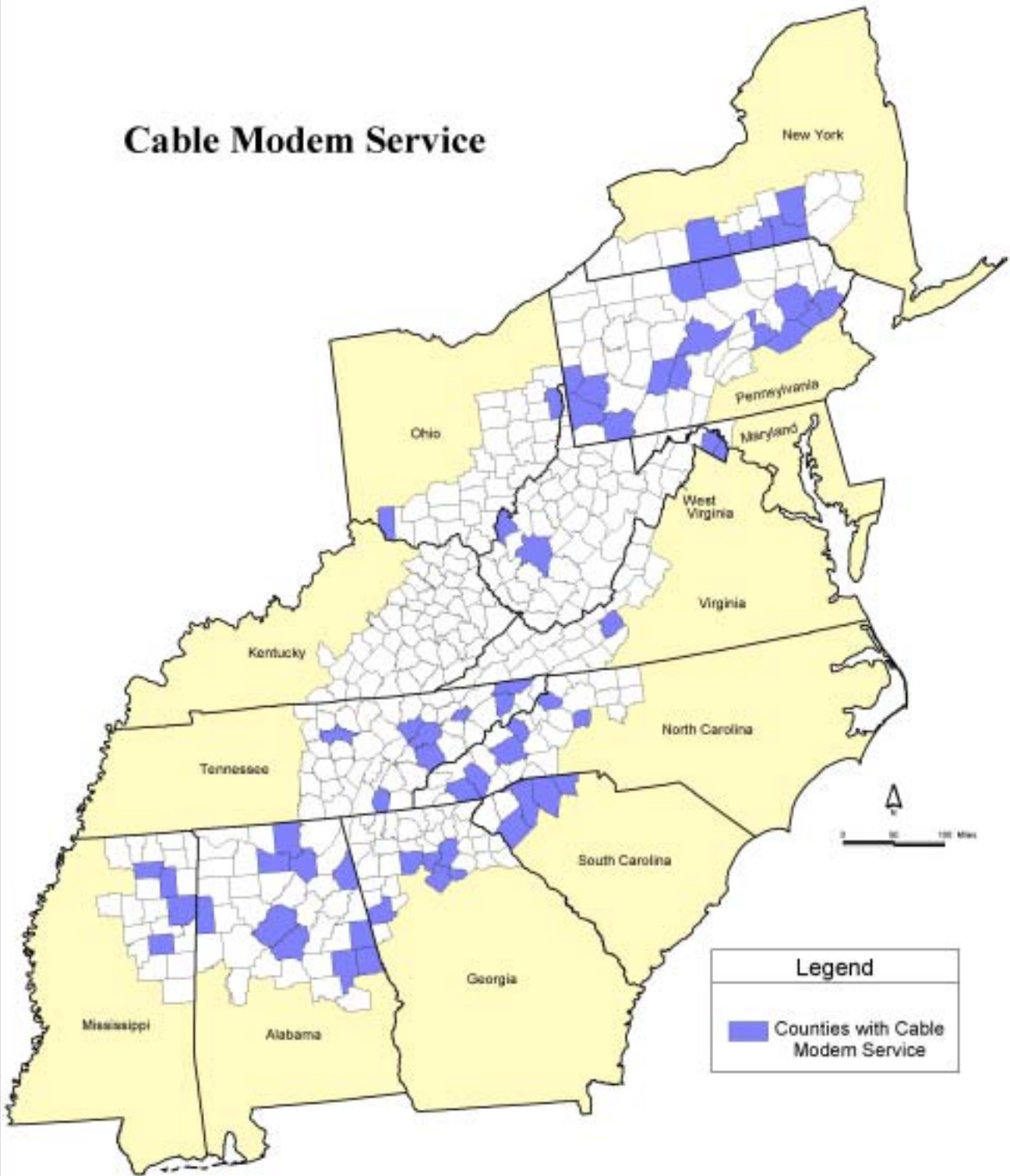TELECOMMUNICATION RESOURCES IN THE APPALACHIAN REGION

DSL Telephone Central Offices

Legend

Offices Per County

	No Offices
	1 - 3
	4 - 6
	7 - 9
	10 - 50

Source : FCC Form 477. 2000

Cable Modem Service

Legend

Counties with Cable Modem Service

Source : FCC Form 477, 2000

As a result, this lack of access that defines the Appalachian digital divide is but the foundation of a larger barrier depriving the region from not only the technology itself, but also the benefits it can deliver to every aspect of society today.

Chart 1.
Universal Service *per capita* funding
Appalachian Region vs. US Average
(not including High Cost Program)
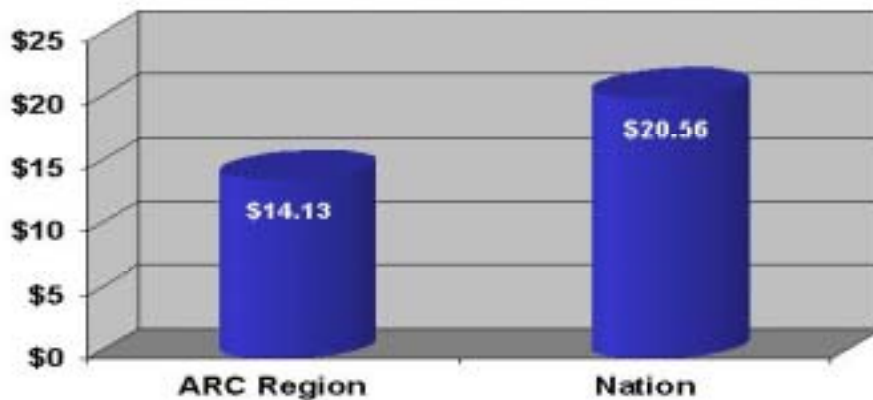
Source : ARC-commissioned University of Texas study

Federal Initiatives

The federal government has developed a number of programs to foster the introduction of advanced telecommunications into rural and other areas underserved by providers. These programs and their administrators include :

- Technology Opportunities Program   Commerce/NTIA
- Rural Utilities Service Loan Program   Agriculture/RUS
- Neighborhood Networks Program   HUD
- Community Technology Centers   Education
- PRO-Net Program   SBA
- Universal Service Benefits   FCC/USAC
    - E-rate
    - Low Income Programs
    - High Cost Program
    - Rural Health Care Program

These programs have been very successful in their own right, and will continue to serve as important adjuncts to this program. However, without access to a commercially available and affordable telecommunications infrastructure, the ability of much of rural Appalachia to take advantage of these programs is limited.

On Capitol Hill the members of Congress remain concerned over the disparity in access between rural and non-rural America. In the current (107th) session of Congress over 20 bills have been introduced to stimulate the delivery of advanced telecommunications services to rural America through a variety of approaches (see Appendix A). There have also been a number of bills introduced promoting education, health care, worker training and business development programs that contain significant technology and telecommunications components. It is thus important to prepare the region to take advantage of any possible opportunities emerging from this legislative environment.

Conclusion

Five years after the implementation of the Telecommunications Act of 1996 the legislative, regulatory and business environments have left us with a rural digital divide in Appalachia. This market imperfection in access for a full 8% of the American population disadvantages the region and threatens the well being and competitiveness of Appalachian communities across the spectrum of all measures of economic vitality.

The Commission deemed that the *status quo* is unacceptable, and impairs the ability of the ARC to meets its 5 goals for the region stated in its strategic plan.

In response, the Commission voted unanimously to take a proactive approach to resolving the digital divide in Appalachia and to ensure that the region can take advantage of the tools of the information age and the benefits they bring to education, medical care, the government sector and industry that other regions of the country enjoy today.

Information Age Appalachia

The *Information Age Appalachia* program represents the resolve of the Commission to bridge the digital divide in Appalachia. Without intervention the region will continue to fall farther behind the rest of the nation in deploying the technology-based applications required to support its economic vitality.

Of particular concern are the region's 118 distressed counties. These counties are plagued with high unemployment and poverty rates and low household income. Without access to the proper tools needed to spur economic development these counties surely will fall even farther behind.

The program will support the Commission's five strategic goals by focusing on four distinct subject areas. These areas were selected by the relative poor performance of the region when measured against the rest of the United States.

Focus Area One : Access and Infrastructure

Broaden the availability of advanced telecommunications services by promoting increased infrastructure investments from both private sector and government sources.

Focus Area Two : Education and Training

Ensure that the region is supporting today's workforce as well as developing the workforce of tomorrow by integrating technology into K-12 and continuing education programs plus expanding community awareness and training programs.

Focus Area Three : e-Commerce

Improve the competitiveness of businesses in the region by increasing the adoption of e-commerce practices.

Focus Area Four : Technology Sector Job Creation.

Increase employment in the technology sector for producer and user industries through investment and entrepreneurship support.

Through the program activities supporting these focus areas the Commission hopes to achieve the following outcomes based on the ARC's requested program budget ($15m/yr for 5 years). The Commission anticipates that these projected outcomes are realistic based on its experience with similar initiatives over the years.

Projected Outcomes:

- 100,000 households with increased IT capacity
- 5,000 jobs created or retained
- 1,000 businesses with increased IT capacity
- 1,000 government, education, and medical facilities with increased IT capacity

Guiding Principles

A number of guiding principles were identified early in the development of the program :

The status quo is unacceptable! This principle alone is the most salient of all our guiding principles. The ARC decries that a large number of Americans living in Appalachia do not have available to them the telecommunications infrastructure necessary to avail themselves of the economic and social benefits that are the hallmark of the Information Age.

Emphasize needy communities. Within the framework of a regional program special attention must be paid to those areas that are economically distressed.

Be open-minded. This initiative offers the opportunity to introduce new practices and re-evaluate existing program standards and operating procedures that are being used in the region to deliver programs. Past practices, while a good guide, are not being universally adopted.

Be flexible. The 406 counties in the region are diverse in their make-up, capacities and approaches to the problem. The plan recognizes and supports that diversity. No "one size fits all" approach can be successful.

Maintain a local focus. The Commission believes success is better promoted by entrusting those closest to the scene to develop their approach and manage the program activities.

Maintain practice of leveraging. The Commission's experience is that the best results are achieved when more than one sector of the economy is involved in the development of solutions. Further, some level of matching

funds indicates a strong commitment at the local level and improves the chances of success for project implementation.

Fund projects that can be sustained locally. The Commission desires to promote projects that will have the capability of remaining in operation without continuing infusions of grant monies.

Create affordable solutions.   Access to technology needs to be affordable to the community if it is to reap the benefits of that access.

Program **A**ctivities

Program activities feature both region-wide and local initiatives. Region-wide activities are those that provide resources and support for all program components regardless of geographic location within the region. These include global support activities such as education and technical assistance as well as those that directly address one of the program focus areas, such as an e-commerce workshop for example.

Local activities are composed of the projects that are implemented by our state partners and supported by the ARC grant-making process. These projects deliver services to a more narrowly focused population and area than region-wide activities. Both region-wide and local activities are supported by ARC funds.

The priorities of region-wide efforts include :

- Building up the capacity of local organizations
- Serving as a clearinghouse of expertise and best practices
- Eliciting additional support to augment existing resources

Examples of region-wide implementation strategies would include :

Technical assistance and consultations. The commission has brought expertise in-house to serve as central resources for the region. The establishment and support of permanent technical expertise at the local level within the region will also be facilitated. Basic education on broadband technology and its associated applications will be made available to program managers, LDD staff and others in the region.

On-line resources. An on-line clearinghouse will be both a storehouse of resources and examples of best practices as well as provide discussion areas for people to share experiences and ideas.   An on-line "Yellow Pages" directory of regionally based technology enterprises available for hire and consultation services will also be developed. This will serve to both provide

assistance to program managers, LDD staff and other ARC partners as well as stimulate and promote tech-related business in the region.

Workshops. Workshops will be delivered on a number of specific topics to stimulate innovative approaches and provide some "hands-on" experience with various solutions. Workshops will be conducted both virtually *via* teleconference as well as through traditional means.

Outreach. Strategic relationships, new partnerships and alliances are seen as key components of the program's success. Working with foundations, trade associations, industry and nonprofit organizations will broaden our scope and increase the level of resources available. New participants from the states, such as the Chief Information Officers, will ensure that the most appropriate local input is obtained. Alternative sources to government funding for the program will also be solicited.

Program Advisory Board. The advisory board will ensure an ongoing input of new ideas and feedback from the stakeholders. Each state will be invited to assign an individual to represent it on the advisory board. Representation from other potential partners will also be solicited. The advisory board will work with existing ARC panels such as the entrepreneurship advisory board, and may also convene sub-committees on specific focus areas.

Federal Liaison.   There are numerous federal departments and agencies that have resources that can and should be part of the solution. Working with them to ensure that the region obtains its fair share of these resources will be a priority.

Local Activities

Following the guidance of the Commission, local activities that are eligible for funding under this program must address at least one of the program's four focus areas. Within each of these areas a number of eligible program activities are identified. These are generally broad-based to allow maximum flexibility at the local level to determine the approaches judged to have the best chances of success.

Local Activities Project Guidelines

In order to maximize the impact of the available funds, potential applicants are encouraged to design projects that :

- Implement existing IT strategic plans or initiatives
- Bridge critical gaps in access, education and training
- Benefit areas of economic distress
- Demonstrate multi-jurisdictional approaches to the problem

It is highly recommended that project proposals address one or more of these criteria. In all other respects projects submitted under this program will follow ARC's existing guidelines for regional initiatives.

Focus Area One
Access to Infrastructure

As the ARC/UT analysis details, the region substantially lacks access to broadband services, which puts the region's people and businesses at a competitive disadvantage. As the maps on pages 9 and 10 show, the availability of Digital Subscriber Line (DSL) or cable modem is practically nonexistent in the region's distressed areas.

To support the Commission's goals, access to modern voice, video, and data transmission services must be both universal and affordable within Appalachia's most remote communities. These services may be delivered through a variety of avenues including ground-based wireless, satellite, cable TV networks, fiber optic networks and/or traditional telephony technologies.

In some cases the deployment of multi-purpose broadband technologies and the development of new networks will be the answer. In other cases, projects may involve working with local telephone companies and Internet Service Providers (ISP) to increase the availability of local dial-up services.

ARC's key roles will be in helping local communities develop strategic telecommunications plans; helping to aggregate local demand to make private sector investments economically feasible; building public-private partnerships that encourage these investments, and facilitating some enhanced telecommunications services to hard-to-reach communities, i.e. the "last mile".

Regional program activities

- Demand aggregation workshop
- Broadband technology primer
- Liaison and Outreach
    o FCC
    o US Dept of Commerce/NTIA
    o US Dept of Agriculture/RUS
    o Service providers
    o Industry associations
    o State agencies/LDDs
    o Community organizations and nonprofits

Types of local activities that the program will support include :

Planning. Developing local strategic telecommunications plans, including assessment of local infrastructure and demand as a prelude to a demand aggregation program. Multi-county plans are particularly encouraged where feasible.

Demand Aggregation. Assisting local communities to pool local demand as an incentive to telecommunications providers to deliver broadband services into areas that they have previously determined were not cost effective.

Multi-purpose networks. Building local networks to support the delivery of services in more than one focus area or more than one sector of the local economy. For example, a K-12 network that supports continuing education or job training program after school.

Contributed infrastructure and services. In addition to funding the purchase of equipment necessary to fulfill the goals of this focus area, the ARC may also be able to broker or provide donated networking hardware, software and other services that will facilitate the development of improved connectivity to needy communities in the region.

Last-mile. Enabling a local network or node to gain access to the Internet or other telecommunications facility to further a program focus area.

Focus Area Two
Education, Training and Workforce Development

In addition to access, the people of Appalachia must have the appropriate knowledge to use technology in ways to enhance their children's education and improve their own job skills. This will require upgrading the skills of teachers, creating training opportunities for local leaders including the LDD, IDA, SBDC staffs and other interested parties such as Chambers of Commerce.

A key component of this initiative will be improving the success rate of distressed counties and multi-county areas in applying for Universal Service funds so that they receive their fair share of support for the educational networks necessary to support these efforts. Currently the region as a whole only garners $14.13 in *per capita* Universal Service funds *versus* the national average of $20.56 (see Chart 1).

Regional Program Activities

- Universal Service Workshop
- Liaison and Outreach
    o US Dept of Education
    o US Dept Commerce
    o HUD
    o US Dept of Labor
    o Regional industry sectors
    o Trade associations
    o Chambers of Commerce at national, state and local levels
    o State agencies/LDDs
    o Community organizations and nonprofits

Types of local activities that the program will support include :

Planning. A prerequisite for successfully applying for e-rate and numerous other educationally related grant monies is the existence of a comprehensive technology plan. Planning initiatives relevant to adult education and job-related technology training will also be supported.

Tech@Home program. Building on ARC's successful laptop programs, the Commission is developing a program called "Tech@Home" that will ensure that students and their parents will have home access to the tools required for 21st century education and jobs. Completion of a training program will be a prerequisite for participation in this program activity.

Teacher tech training. Effective integration of technology into the curriculum often requires that teachers be trained to best utilize this equipment in the school environment.

Links to educational networks. State educational networks and other networks such as the universities' Internet2 network provide a wealth of resources and capabilities to supplement local efforts.

Distance learning (K-12 and adult).   Technology can diminish the great distances between student and teacher that are not uncommon in the region. Distance learning platforms may include any of a number of traditional delivery technologies as well as cable TV, wireless and others to enhance training opportunities.

Community Tele-centers. Creating community access points available to all can support a number of initiatives and goals. Programs that could be supported include Workforce Investment Boards, welfare-to-work programs, other adult-oriented activities, and existing state initiatives.

DVD-based learning products. Many people will not have the access to the speed or quality of an Internet or other connection to take advantage of a distance-learning program. Providing similar content via Digital Video Disk will make it available through stand-alone PCs. This content could also be relevant to the program's other focus areas.

Focus Area Three
e- Commerce

To remain competitive, Appalachia's businesses must increase their use of the Internet and electronic commerce. Both existing businesses and aspiring entrepreneurs need guidance in how to migrate traditional face-to-face activities to an Internet environment, how to craft strategies for marketing products over the web, and how to design plans for meeting production and shipping requirements in an Internet economy.

Workshops will show local businesses how to grow existing lines of business and even enter into new areas. Attention will be paid to training programs in e-commerce that will benefit supply chain business-to-business (B2B), business-to-customer (B2C) and business-to-government (B2G) applications. Some existing educational training programs at higher education facilities or other organizations in the region will be expanded to meet these training needs.

The general business sector of the region along with the region's concentrated business sectors in auto supplies, industrial machinery, wood products and others, would greatly benefit from easier enhanced modes of telecommunications to reach customers and suppliers. All facets of electronic commerce – B2B, B2C, and B2G – will need to be supported to ensure that every type of transaction conducted today will be facilitated in the e-commerce strategy.

Facilitating region-wide, sector-specific e-commerce solutions will be a primary objective. Partnering with industry associations and other groups related to particular sectors, the ARC will provide e-commerce readiness training to small and medium-sized enterprises to stimulate adoption of Internet-enabled business techniques.

Regional Program Activities

- e-Commerce workshops
- Procurement Directory web site
- Liaison and Outreach
    o Small Business Administration
    o US Dept of Commerce
    o US Dept of Labor
    o Trade associations
    o Chambers of Commerce at national, state and local levels
    o State agencies/LDDs
    o Community organizations and nonprofits

Types of local activities that the program will support include :

Readiness assessments. Developing an e-commerce strategy often begins with an inventory and assessment of the current level of telecommunications access and use within either a geographic region or industry sector.

ARC's e-Commerce package. Using the ARC's and the states' aggregate purchasing power, discounts on the software and hardware necessary to launch an e-commerce site may be facilitated through working with Chambers of Commerce, SBDCs, IDAs and other organizations. This would lower the barrier for small- and medium-sized enterprises to engage in e-commerce.

Sector-based e-commerce. Building on the region's sect oral strengths will allow maximum participation and increase the benefits to these sectors. Working with trade associations and other industry aggregators, enhanced e-commerce activities will assist Appalachian businesses to connect with their manufacturers, suppliers, buyers and other customers.

Micro-commerce. Aggregating micro-enterprises based on geographic location or market segment into an on-line guild or marketplace can significantly increase the prospects of small and medium-sized businesses to thrive and compete more effectively in the worldwide economy.

Focus Area Four
Tech Sector Employment

Recent statistics show how the region lags behind the nation in startup rates for new firms in 15 critical IT-related sectors (See Appendix B). IT-related employment growth has also been lower than the national average (53%) from 1996-2000, particularly in the rural areas (21%) (ARC/UT study).

Reversing these trends does not mean simply providing access to broadband technology. It also means cultivating new business opportunities for the region through expanded marketing efforts or perhaps developing incubators or "smart parks" to support information technology businesses. The recent downturn in the IT sector nationwide provides an opportunity for the region to advance proactive solutions.

Other strategies include supplying the region with enhanced telecommunications equipment, assisting IT business development through SBDCs, IDAs, etc., with strategic plans, fostering indigenous software and network design companies, capitalizing on the maintenance activities of the IT sector, and developing content to be delivered by enhanced broadband services to the business community at large.

The program will complement local efforts to attract high tech employers into the region. The introduction of enhanced telecommunications services into an area can also assist in retaining existing employers that might otherwise be forced to relocate to an area with a more robust telecommunications platform.

Program activities in this focus area will be conducted in concert with ARC's existing Entrepreneurship Initiative.

Regional Program Activities

- Tech employment workshops
- Liaison and Outreach
    - US Dept of Labor
    - US Dept of Commerce
    - US Dept of Education
    - Small Business Administration
    - Trade associations
    - Chambers of Commerce at national, state and local levels
    - Venture Capital Firms
    - IT industry
    - State agencies/LDDs
    - Community organizations and nonprofits

Types of local activities that the program will support include :

Planning. Developing strategies to promote tech sector growth in a locality in conjunction with IDA, SBDG, NBIA, LDDs, etc.

IT Incubators and "smart parks". Incubators provide co-location with other tech-oriented firms as well as sharing of resources to assist firms getting off the ground. Smart parks provide a modern telecommunications environment that is critical to businesses today. Both approaches can be significant attractions for tech-related enterprises.

Demonstration programs. ARC will consider jointly funding programs with organizations such as SBA, NBIA, state and regional organizations, and others that use enhanced telecommunications services to support the growth of small and medium-sized businesses throughout the region.

IT Sector Financial Assistance. Small and startup enterprises will be supported through access to developmental venture capital and credit, managerial and technical assistance and training.

Footnotes

1. The complete NTIA/RUS report is available on-line at the government's digital divide site: www.digitaldivide.gov/reports/ruralbb42600.pdf

2. The definition of what constitutes "broadband" varies widely. For the purposes of this program, we are adopting the approach taken by the NTIA/RUS in the above study. That study accepted the FCC definition of broadband – 200 kilobits/second at the user's connection in both directions – but recognized that other "high data rate services" exist that may not entirely meet this definition but nonetheless can be the foundation for useful service delivery.

3. The region's diverse industries include primary metals, industrial machinery, furniture, wood products, automotive supplies, mining equipment, advanced metal products, food processing, motor freight, printing and publishing among others.

Bills Introduced in the 107th Congress
Promoting Rural Broadband Deployment

Senate Bill	House Bill	Name of Act
88	267	Broadband Internet Access Act of 2001
	2597	Broadband Deployment and Telework Incentive Act
	1697	Broadband Competition and Incentives Act
430		Broadband Rural Research Investment Act
150		Broadband Deployment Act
966	2038	Rural Broadband Enhancement Act
	2487	Rural America Technology Enhancement Act
428	1416	Broadband Expansion Grant Initiative
	2669	Rural Telecommunications Enhancement Act
	1698	American Broadband Competition Act
426	1415	Tech Bond Initiative of 2001
414	1034	NTIA Digital Network Technology Program Act
696		Third Generation Wireless Internet Act
	1542	Internet Freedom and Broadband Deployment Act
1056		Community Telecom Planning Act
1126		Broadband Deployment & Competition Enhancement
	2139	Rural America Broadband Deployment Act
	2401	Rural America Digital Accessibility Act
	1127	Rural Broadband Deployment Act
	2120	Broadband Antitrust Restoration and Reform Act
1191	2330	Agriculture, Rural Development et al. Appropriation

Appendix B

Regional Startup Rates in Critical IT Sectors

Selected Appalachian Technology Startup Rates

SIC	Industry	Starts	Start Rate	Index (US = 1.00)
3571	Electronic Computers	26	28.9%	0.88
3572	Computer Storage Devices	2	11.1%	0.32
3575	Computer Terminals	10	37.0%	0.99
3577	Computer peripheral equipment	26	33.3%	1.21
4822	Telegraph/other communications	7	26.9%	0.88
4899	Communication services	47	43.1%	1.01
7371	Custom computer programming	558	32.5%	0.88
7372	Prepackaged software	110	21.2%	0.95
7373	Computer integrated systems design	220	29.0%	0.99
7374	Data processing and preparation	325	35.0%	0.86
7375	Information retrieval services	61	45.9%	1.02
7376	Computer facilities management	7	35.0%	1.45
7377	Computer rental and leasing	11	52.4%	2.38
7378	Computer maintenance and repair	219	35.5%	0.89
7379	Computer related services	531	27.4%	0.94

Source: *Analysis of Business Formation, Survival and Attrition Rates of New and Existing Firms in Appalachia, and Related Jobs Flows*, by The Brandow Company, July 2001, pp.32.

Appendix C

County Economic Status in Region FY2002

The map on page 6 depicts the counties in the 13 state Appalachian Region coded to show whether the county is considered a Distressed, Transitional, Competitive or Attainment county. The definitions for the classifications are as follows:

Distressed Classification: Three year average unemployment rate at or above 150% of US average AND Per Capita "Market" Income at or below 67% of US average AND Poverty rate at or above 150% of US average OR Poverty rate twice US average and one other condition.

Transitional Classification: All counties not in another classification.

Competitive Classification: Three year average unemployment rate at US average AND Per Capita "Market" Income at or below 80% of US average AND Poverty Rate at US average.

Attainment Classification: Three year average unemployment rate at US average AND Per Capita "Market" Income at US average AND Poverty Rate at US average.

The following counties are coded as Distressed:

- Alabama: Bibb, Fayette, Franklin, Hale, Macon, Pickens
- Georgia: Elbert
- Kentucky: Adair, Bath, Bell, Breathitt, Carter, Casey, Clay, Clinton, Cumberland, Elliott, Estill, Floyd, Green, Harlan, Jackson, Johnson, Knott, Knox, Lawrence, Lee, Leslie, Letcher, Lewis, Lincoln, McCreary, Magoffin, Martin, Menifee, Monroe, Morgan, Owsley, Perry, Pike, Powell, Rockcastle, Rowan, Russell, Wayne, Whitley, Wolfe
- Mississippi: Benton, Chickasaw, Choctow, Clay, Kemper, Marshall, Monroe, Noxubee, Oktibbeha, Prentiss, Tishomingo, Winston, Yalobusha.
- North Carolina: Graham, Swain
- Ohio: Adams, Athens, Gallia, Jackson, Meigs, Monroe, Morgan, Pike, Scioto, Vinton
- Pennsylvania: Fayette, Greene
- Tennessee: Campbell, Clay, Cocke, Fentress, Grundy, Hancock, Jackson, Johnson, Meigs, Morgan, Scott
- Virginia: Buchanan, Dickenson, Lee, Russell, Scott, Wise (including the city of Norton)

- West Virginia: Barbour, Boone, Braxton, Calhoun, Clay, Fayette, Gilmer, Jackson, Lewis, Lincoln, Logan, McDowell, Mason, Mingo, Nicholas, Pocahontas, Raleigh, Randolph, Ritchie, Roane, Summers, Taylor, Upshur, Webster, Wetzel, Wirt, Wyoming

The following counties are coded as Transitional:

- Alabama: Blount, Calhoun, Chambers, Cherokee, Chilton, Clay, Cleburne, Colbert, Coosa, Cullman, De Kalb, Elmore, Etowah, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Limestone, Marion, Marshall, Randolph, St. Clair, Talladega, Tallapoosa, Tuscaloosa, Walker, Winston
- Georgia: Banks, Barrow, Bartow, Carroll, Catoosa, Chattooga, Dade, Fannin, Floyd, Franklin, Gilmer, Gordon, Haralson, Hart, Heard, Jackson, Lumpkin, Madison, Murray, Paulding, Polk, Rabun, Stephens, Towns, Union, Walker, White
- Kentucky: Boyd, Clark, Fleming, Garrard, Greenup, Laurel, Madison, Montgomery, Pulaski
- Maryland: Allegany, Garrett
- Mississippi: Alcorn, Calhoun, Itawamba, Lee, Lowndes, Pontotoc, Tippah, Union, Webster
- New York: Allegany, Cattaraugus, Chautauqua, Chemung, Chenango, Cortland, Delaware, Otsego, Schoharie, Schuyler, Steuben, Tioga, Tompkins
- North Carolina: Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Cherokee, Clay, Haywood, Jackson, McDowell, Macon, Madison, Mitchell, Rutherford, Stokes, Surry, Transylvania, Watauga, Wilkes, Yadkin, Yancey
- Ohio: Belmont, Brown, Carroll, Columbiana, Coshocton, Guernsey, Harrison, Highland, Hocking, Holmes, Jefferson, Lawrence, Muskingum, Noble, Perry, Ross, Tuscarawas, Washington
- Pennsylvania: Armstrong, Beaver, Bedford, Blair, Bradford, Cambria, Cameron, Carbon, Centre, Clarion, Clearfield, Clinton, Columbia, Crawford, Elk, Erie, Forest, Fulton, Huntingdon, Indiana, Jefferson, Juniata, Lackawanna, Lawrence, Luzerne, Lycoming, McKean, Mercer, Mifflin, Monroe, Northumberland, Perry, Pike, Potter, Schuylkill, Snyder, Somerset, Sullivan, Susquehanna, Tioga, Union, Venango, Warren, Washington, Wayne, Westmoreland, Wyoming
- South Carolina: Anderson, Cherokee, Pickens
- Tennessee: Anderson, Bledsoe, Blount, Bradley, Cannon, Carter, Claiborne, Coffee, Cumberland, De Kalb, Franklin, Grainger, Greene, Hamblen, Hawkins, Jefferson, Knox, Loudon, McMinn, Macon, Marion, Monroe, Overton, Pickett, Polk, Putnam, Rhea, Roane, Sequatchie, Sevier, Smith, Sullivan, Unicoi, Union, Van Buren, Warren, Washington, White

- Virginia: Alleghany (including the cities of Clifton Forge and Covington), Bath, Bland, Carroll (including the city of Galax), Craig, Floyd, Giles, Grayson, Highland, Montgomery (including the city of Radford), Pulaski, Rockbridge (including the cities of Buena Vista and Lexington), Smyth, Tazewell, Washington (including the city of Bristol), Wythe
- West Virginia: Brooke, Cabell, Doddridge, Grant, Greenbrier, Hampshire, Hancock, Hardy, Harrison, Kanawha, Marion, Marshall, Mercer, Mineral, Monongalia, Monroe, Morgan, Ohio, Pendleton, Pleasants, Preston, Putnam, Tucker, Tyler, Wayne, Wood

The following counties are coded as Competitive:

- Alabama: Morgan
- Georgia: Dawson, Douglas, Habersham, Hall, Pickens, Whitfield
- Maryland: Washington
- New York: Broome
- North Carolina: Buncombe, Henderson
- Ohio: Clermont
- Pennsylvania: Butler
- South Carolina: Oconee , Spartanburg
- Virginia: Botetourt
- West Virginia: Berkeley, Jefferson

The following counties are coded as Attainment:

- Alabama: Madison, Shelby
- Georgia: Cherokee, Forsyth, Gwinnett
- North Carolina: Davie, Forsyth, Polk
- Pennsylvania: Allegheny, Montour
- South Carolina: Greenville
- Tennessee: Hamilton

Appendix **D**

DSL Telephone Central Offices

The map on page 9 depicts the counties in the 13 state Appalachian Region coded to show which counties have DSL-enabled central offices broken down by the number of DSL offices in each county. The number of DSL offices is classified in four categories: No offices, 1-3 offices, 4-6 offices, 7-9 offices, 10-50 offices.

The following counties are coded as having no DSL-enabled offices:

- Alabama: Blount, Cherokee, Clay, Cleburne, Fayette, Lamar, Marion, Pickens, Randolph, St. Clair, Winston
- Georgia: Banks, Catoosa, Chattooga, Dade, Elbert, Fannin, Franklin, Gilmer, Gordon, Haralson, Hart, Heard, Madison, Polk, Rabun, Towns
- Kentucky: Adair, Bath, Boyd, Breathitt, Carter, Casey, Clay, Clinton, Cumberland, Elliott, Estill, Fleming, Floyd, Garrard, Green, Greenup, Harlan, Jackson, Johnson, Knott, Knox, Laurel, Lawrence, Lee, Leslie, Letcher, Lewis, Lincoln, McCreary, Magoffin, Martin, Menifee, Monroe, Montgomery, Morgan, Owsley, Perry, Pike, Powell, Pulaski, Rockcastle, Rowan, Russell, Wayne, Whitley, Wolfe
- Maryland: Allegany, Garrett, Washington
- Mississippi: Calhoun, Choctaw, Itawamba
- New York: Allegany, Cattaraugus, Chemung, Cortland, Delaware, Otsego, Schoharie, Stueben, Tioga
- North Carolina: Alleghany, Ashe, Cherokee, Clay, Davie, Graham, Jackson, Mcdowell, Macon, Madison, Mitchell, Polk, Stokes, Surry, Swain, Transylvania, Yadkin, Yancey
- Ohio: Adams, Athens, Belmont, Brown Carroll, Coshocton, Gallia, Guernsey, Harrison, Highland, Hocking, Aholmes, Jackson, Jefferson, Lawrence, Meigs, Monroe, Morgan, Noble, Perry, Pike, Ross, Scioto, Tuscarawa, Vinton, Washington
- Pennsylvania: Bedford, Blair, Bradford, Cambria, Carbon, Clearfield, Clinton, Erie, Forest, Fulton, Greene, Huntingdon, Juniata, Lycoming, Mckeon, Mifflin, Montour, Northumberland, Perry, Potter, Schuykill, Snyder, Somerset, Sullivan, Susquehanna, Union, Venango, Warren, Washington, Wayne, Wyoming
- South Carolina: Oconee
- Tennessee: Bledsoe, Cannon, Carter, Clay, Coffee, Cumberland, DeKalb, Fentress, Grainger, Greene, Grundy, Jackson, Johnson, Macon, Morgan, Overton, Pickett, Scott, Sequatchie, Sullivan, Unicoi, Union, Van Buren, Warren, Washington, White
- Virginia: Alleghany, Bath, Bland, Botetort, Bushanan, Caroll, Craig, Dickenson, Floyd, Grayson, Highland, Lee, Montgomery, Pulaski, Rockbridge, Russell, Scott, Smyth, Washington, Wise, Wythe

- West Virginia: Barbour, Berkeley, Boone, Braxton, Brooke, Cabell, Calhoun, Clay, Doddridge, Fayette, Gilmer, Grant, Greenbrier, Hampshire, Hancock, Hardy, Jackson, Jefferson, Lewis, Lincoln, Logan, McDowell, Marion, Marshall, Mason, Mercer, Mineral, Mingo, Monongalia, Monroe, Morgan, Nicholas, Ohio, Pendleton, Pleasants, Pocahontas, Preston, Raleigh, Roane, Summers, Taylor, Tyler, Upshur, Wayne, Webster, Wetzel, Wirt, Wood, Wyoming

The following counties are classified as having 1-3 DSL-enabled offices:

- Alabama: Bibb, Chambers, Chilton, Colbert, Coosa, DeKalb, Elmore, Franklin, Hale, Jackson, Lawrence, Limestone, Macon, Marshall, Morgan, Tallapoosa, Tuscaloosa
- Georgia: Barrow, Bartow, Carroll, Cherokee, Dawson, Douglas, Floyd, Forsyth, Habersham, Hall, Lumpkin, Murray, Paulding, Pickens, Stephens, Union, Walker, White, Whitfield
- Kentucky: Bell, Clark, Madison
- Mississippi: Alcorn, Benton, Chickasaw, Clay, Kemper, Lowndes, Marshall, Noxubee, Oktibbeha, Pontotoc, Prentiss, Tippah, Tishomingo, Union, Webster, Winston, Yalobusha
- New York: Broome, Chautauqua, Chenango, Schuyler, Tompkins
- North Carolina: Alexander, Avery, Burke, Caldwell, Henderson, Watauga, Wilkes
- Ohio: Columbiana, Muskingum
- Pennsylvania: Armstrong, Cameron, Centre, Clarion, Columbia, Crawford, Elk, Fayette, Indiana, Jefferson, Lackawanna, Lawrence, Mercer, Monroe, Tioga
- South Carolina: Cherokee, Pickens
- Tennessee: Anderson, Blount, Bradley, Campbell, Claiborne, Cocke, Franklin, Hamblen, Hancock, Hawkins, Jefferson, Loudon, McMinn, Marion, Meigs, Monroe, Polk, Putnam, Rhea, Roane, Sevier, Smith
- Virginia: Giles, Tazewell
- West Virginia: Harrison, Putnam

The following counties are classified as having 4-6 DSL-enabled offices:

- Alabama: Calhoun, Cullman, Etowah, Lauderdale, Shelby, Talladega, Walker
- Georgia: Jackson
- Mississippi: Lee, Monroe
- North Carolina: Haywood, Rutherford
- Pennsylvania: Beaver, Butler, Luzerne
- South Carolina: Anderson, Spartanburg

- West Virginia: Kanawha

The following counties are classified as having 7-9 DSL-enabled offices:

- Alabama: Madison
- Georgia: Gwinnett
- North Carolina: Buncombe
- Ohio: Clermont
- Pennsylvania: Westmoreland
- South Carolina: Greenville
- Tennessee: Hamilton, Knox

The following counties are classified as having 10-50 DSL-enabled offices:

- Alabama: Jefferson
- North Carolina: Forsyth
- Pennsylvania: Allegheny

Appendix **E**

Cable Modem Service

The map on page 10 depicts the counties in the 13 state Appalachian Region coded to show which counties have cable modem service.

The counties having cable modem service are as follows:

- Alabama: Chambers, Cherokee, Jefferson, Lamar, Madison, Marshall, Morgan, Randolph, Tallapoosa
- Georgia: Barrow, Carroll, Cherokee, Forsyth, Gwinnett, Hall
- Mississippi: Lee, Monroe, Oktibbeha, Union
- New York: Broome, Chemung, Chenango, Steuben, Tioga
- North Carolina: Alexander, Buncombe, Jackson, Macon, Watauga, Yancey
- Ohio: Clermont, Jefferson
- Pennsylvania: Allegheny, Beaver, Blair, Cambria, Carbon, Centre, Fayette, Luzerne, Monroe, Northumberland, Potter, Schuylkill, Tioga, Washington
- South Carolina: Anderson, Cherokee, Greenville, Spartanburg
- Tennessee: Anderson, Blount, Bradley, Hamblen, Knox, Putnam, Sullivan, Washington
- Virginia: Montgomery
- West Virginia: Berkeley, Jefferson, Kanawha, Mason