Links to the Future:
Information and Telecommunications Technology and Economic Development in the Appalachian Region

EXECUTIVE SUMMARY

Communities across the Appalachia, especially in rural areas, face serious challenges exploiting new information, computing and telecommunication technologies (ICT) to expand their economic development horizons. Access to advanced technologies is often uneven and limited, while the capacities to use these technologies to improve performance in public and private sector institutions are often not as developed as in wealthier urban centers. Yet despite serious challenges, there are many examples and opportunities in Appalachia for utilizing information technologies to spur economic and community development. Numerous businesses and public sector institutions in the region have successfully leveraged advanced information and communications technologies to improve productivity, the quality of their services, and their market reach.

The goal of this report is to document the status of ICT in the Appalachian region with a view to assessing its potential relationship to economic growth and the range of federal state and local policies that influence its development. This work is based upon in-depth field research and telephone interviews, analysis of primary, archival and secondary documents, and web-based investigations to gather and analyze data.

Based upon an analysis of industry trends this report shows that digital technology and applications are strongly influencing national and regional economic development. Fast growing ICT industries made substantial contributions to employment and output growth over the 1990s. More importantly the utilization of new ICT technologies in commercial and public sector organizations have increased productivity growth and profoundly altered the ways that business is done in numerous industries.

A detailed analysis of industry data revealed that employment of ICT related industries in the Appalachian region grew rapidly across the 1990s.

- The Appalachian region shared in the late 1990s boom in ICT producing-industries, with employment growing by 45.6 percent between 1996 and 2000, adding over 91,000 jobs.

- However, this robust growth was less than the 54 percent growth experienced nationally in ICT producing industries.

- The growth in the number of business establishments in the Appalachian region in both ICT producer and user sectors was above the national average for all business sectors (ICT and non-ICT related).

- However leading producers of ICT products and services have a relatively weak presence in the ARC region. The region is becoming more dependent on external suppliers, especially in higher technology segments of producer industries, and did not share fully in the growth and innovation generated by these industries over the past decade.

The report finds that telecommunications infrastructure in the Appalachian regions is less developed than that in other parts of the country and that it compares negatively to national averages on various broadband indicators. Statistical analyses show that varying levels of access is directly associated with the levels of economic activity: more distressed counties have less developed broadband telecommunications infrastructure.

- Many parts of the Appalachian region —especially the more rural areas— have lower penetration rates of home computers, Internet access and even basic telephone than the national average.

- DSL-capable lines, an attractive lower-cost broadband technology that can be used by small- and medium-sized business, are not currently available over broad swaths of rural Appalachia. While many central offices of telecommunications providers are DSL-ready, many are not yet offering such services.

- Cable modem services are very spotty throughout the region. Furthermore, cable modems are not appealing for many businesses due to security concerns. More advanced technologies are not on the immediate horizon for rural Appalachia.

- Advanced telecommunications at prices affordable to local businesses and public organizations is a significant barrier to economic and social development in parts of the ARC region.

In depth research on the cost and quality of telecommunications services in Appalachian states and sub-regions traces access and cost barriers to frictions in recently deregulated markets for these services.

- Alabama, North Carolina, Tennessee, Kentucky, Georgia, South Carolina, West Virginia and Mississippi all have average loop cost that exceeds the national average.

- The ARC region, and especially its rural areas, is highly dependent on incumbent telephone companies for high-speed and basic telecommunications services. Competitive pressures are relatively low in the Appalachian sub-regions.

- Absent universal service support for carriers that serve high-cost areas, rural telephone markets are not likely to see local telephone competition.

- Most of the Appalachian states have fairly low numbers of competing local exchange companies, although in two, New York and Pennsylvania, the Bell Operating Companies have been approved to offer long distance services.

Federal, state and local policies to mitigate the effects of deregulation have had important positive outcomes as well as limitations.

- Federal E-rate and various state programs, including state-sponsored data networks, have enabled widespread high-speed connectivity among schools and libraries in the Appalachian region.

- Nonetheless, Federal Universal Service Funding of E-Rate and the Rural Health Programs indicate that ARC counties taken together have received a significantly lower per-capita allocation of funds than that of the nation as a whole.

- Federal universal service support favors the most rural of the Appalachian states: Mississippi, Alabama, West Virginia, South Carolina, Georgia and Kentucky have a net positive inflow of funds through the program, although the other Appalachian have made significant internal adjustments from larger, urban-serving companies to smaller, rural companies.

- Several states have proactively initiated programs to enhance telecommunications infrastructure. By using state telecommunications networks through resource sharing, demand aggregation or anchor tenancy programs, states are able to leverage their considerable investment and offer benefits to other public sector users—and in some cases, even private sector users.

- While several state universal service programs have been developed in part to ameliorate the revenue losses local exchange companies attribute to deregulation (especially reduced access rates), but the scope of such programs vary considerably.

- Another bright spot in high-speed infrastructure development is the creation of alternative networks under the auspices of communities or utilities.

- One factor that appears to enhance state potentials for improved telecommunications is coordination among state agencies within each state. By coordinating network design and use, state-funded infrastructure can be used optimally.

- On balance, however, there was a clear need for a more concerted focus on the economic development implications of IT access, capacity and training across the Region.

A crucial finding of this report is that information failures operate together with access barriers to limit the effective adoption of ICT and network services in businesses across Appalachia.

- Lack of information combined with access barriers limit the effective adoption of ICT and network services across Appalachia.

- ICT barriers in rural communities are having the most profound effect on the growth and diversification of local manufacturing, service and trade sectors.

- In the manufacturing sectors, branch plants have largely relied on parent companies to provide ICT access and training, while small and medium-sized companies have been at a clear disadvantage.

- In the service sector there is growing awareness that the innovative uses of computer and Internet technologies are becoming central for marketing and sales, especially for small businesses and entrepreneurs in sectors such as tourism and leisure, local crafts, and specialty agriculture.

- Limited ICT access and use was found to be a particular problem for the health care sector in rural communities.

- Case studies demonstrate that improvements in IT access to businesses and public sector institutions have been strongly driven by effective local leadership.

Several policy options are available for ARC to enhance opportunities in the less populous, more remote areas that are unlikely candidates for the operation of robust market forces.

- Expand and scale-up technical assistance to small and medium sized firms in rural communities.

- Aggressively support the formation of user groups in rural communities.

- Assist states and localities in applying for E-rate and Rural Health assistance under Federal Universal Service Funds.

- Support the expansion of public institutions' roles in offering broadband access.

- Demand aggregation strategies should be supported as they improve the bargaining power of communities with incumbents and other telecommunications providers in order to enhance infrastructure and access in under-served regions.

- Identify and disseminate information on model programs.

- Monitor state regulatory efforts to leverage improvements in infrastructure and service.

- Support demonstration projects with alternative technology providers.

- Continue to monitor broadband deployment and work with organizations attempting to initiate national or statewide deployment policies.