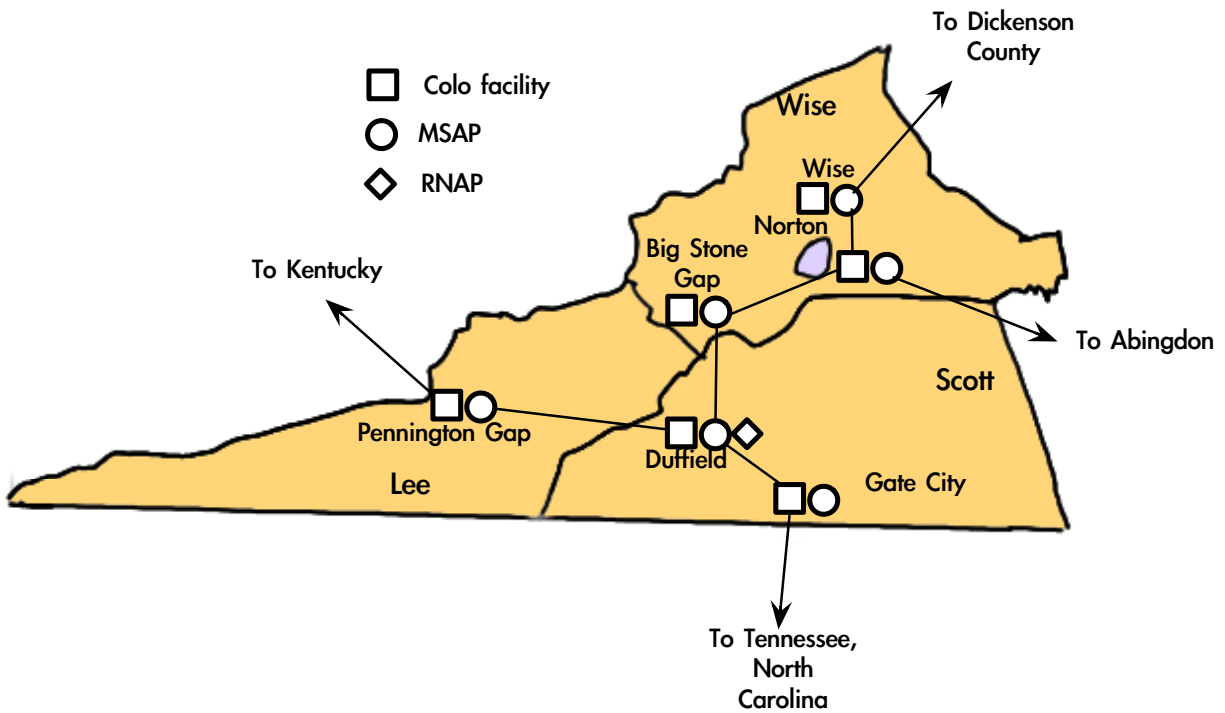


LENOWISCO

Technology and Telecommunications

Master Plan

Section One: Goals and Objectives



March, 2005

Prepared by Design Nine, Inc. for the Lenowisco Planning District Commission.

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The following organizations made substantial contributions to this effort:

City of Norton

Wise County

Scott County

Lee County

Pioneer Center Business Incubator

Wise County Library System

Disclaimer

The telecommunications business is continually evolving. We have made our best effort to apply our experience and knowledge to the business and technical information contained herein. We believe the data we have presented at this point in time to be accurate and to be representative of the current state of the telecommunications industry. Market changes and new technology breakthroughs may affect our recommendations over time.

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1 Executive Summary

"It's not what the vision is, it's what the vision does." - Peter Senge

1.1 A vision for the future

The LENOWISCO Planning District Commission convened a series of meetings beginning in May of 2004 through December, 2004 to discuss the technology and telecommunications challenges facing the region. A broad array of regional leaders, businesspeople, educators, and citizens have contributed significant time and effort to this regional master plan.

The LENOWISCO region believes the following are important and critical issues that must be addressed to make the area competitive in the global Knowledge Economy, to keep it a great place to live, and to ensure that it is a great place to work.

- Affordable access to wired and wireless broadband services throughout the region for all residents, businesses, institutional, and local government entities.
- Competitive choice for broadband access, content, and services equal to any other region in the world.
- A regional broadband infrastructure that provides redundant data paths to ensure that broadband users have reliable and robust access.
- Infrastructure, access, and services that support and encourage entrepreneurship and economic development initiatives throughout the region.

1.2 What is broadband?

South Korea's target bandwidth to the home is 155 megabits, or about 300 times faster than the average 512 kilobit throughput of a DSL or cable modem connection in the United States. Hong Kong recently announced

plans to provide Gigabit Ethernet (1 billion bits per second) fiber service to more than a million homes. Many other countries are also developing high capacity fiber and/or wireless broadband transport systems. For the purposes of this document, the target capacity, 4-5 years out, is a sustained throughput to a single home or business of 25-50 megabits/second, with 3x burst capacity (75-155 megabits/sec). The reason all that capacity is needed to support entertainment and business needs. Among the uses for that bandwidth will be:

- Four channels of HDTV (5-20 megabits/channel)
- Voice telephone service (multiple lines)
- Radio programs
- Music and video downloads
- Online interactive gaming
- Web surfing
- Outgoing data--business servers, video streaming, videoconferencing

1.3 General recommendations

The following recommendations summarize the goals and objectives identified in the body of this report.

Continue to invest in a regional digital transport system

Communities in the Lenowisco region should continue to collaborate on the design, development, and deployment of the existing open access, high performance broadband transport network in partnership with private sector service providers that will use the transport network to deliver broadband and broadband-enabled services to citizens, businesses, institutions, and local government affordably.

Make technology training widely available

The successful deployment and use of broadband is requires that current and future broadband customers have the skills and knowledge to put affordable broadband to good use in homes, businesses, and local government. Use the educational institutions and partners of the region to ensure that broadband users can get the training and skills they need to be competitive in the global Knowledge Economy.

Support the development of rich content and services.

The network has value only to the extent that users can access services and content critical to their personal and professional success. Ensure that every community uses the Web effectively to support community activities, and works with private sector services providers to ensure that high quality, Internet-based services like Voice over IP telephony is widely available and affordable.

Ensure that businesses and entrepreneurs have what they need to compete

Affordable broadband has become a business necessity and a cornerstone of economic development efforts in the global Knowledge Economy, just as highways were important to economic development in the Manufacturing Economy of the last century. The Lenowisco region must have the technology and telecommunications services needed to retain existing businesses and to attract new businesses to the region, serving a range of business needs, from high technology to the Creative Technology sector.

Develop a governance structure for growth

Community investments in a digital transport system that will be used by the private sector to deliver services requires thoughtful funding, management, and administration. The region must assemble an experienced group of leaders to put the appropriate funding and management mechanisms in place to ensure that community investments meet the region's goals and objectives over the next twenty to forty years.

1.4 Master planning and strategic planning

A technology master plan serves as a broad framework of goals, objectives, and basic concepts that provide direction to a region over a period of years. Central to the success of the master plan is regular review and updates of the plan itself, which must be regarded as a living document owned by the region. As technology and telecommunications systems change, so too the plan must change and adapt to fit those changes. And as local

and regional opportunities (and sometimes setbacks) occur, the plan must again be updated to reflect the changing state of reality in the Lenowisco region.

While many of the objectives and action steps in this document are quite specific, the document itself is not intended as an implementation plan. Rather, as funding opportunities and projects develop, the master plan provides guidance to ensure that specific community and regional investments fit into the master plan framework and that the goals and objectives are being met over time. Figure One illustrates the planning process over time.

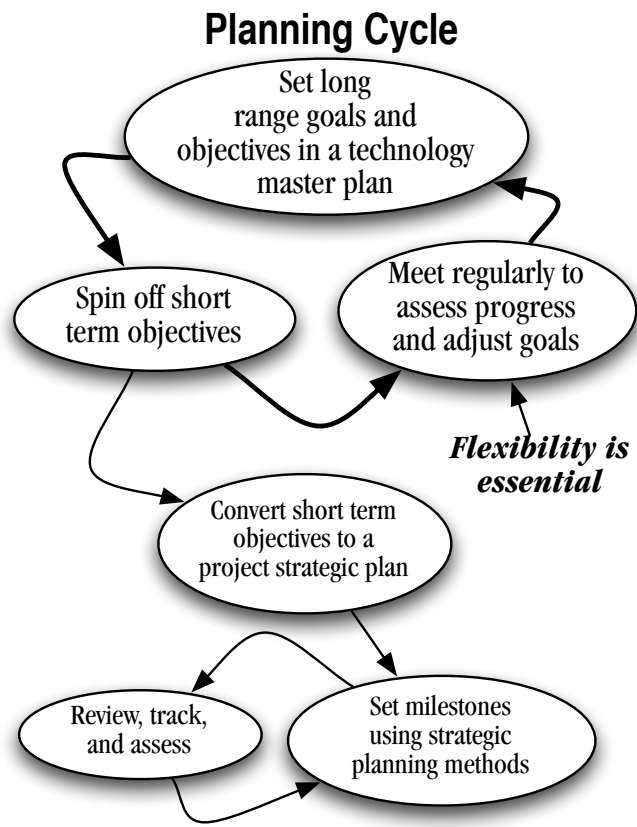


Figure One: The planning process

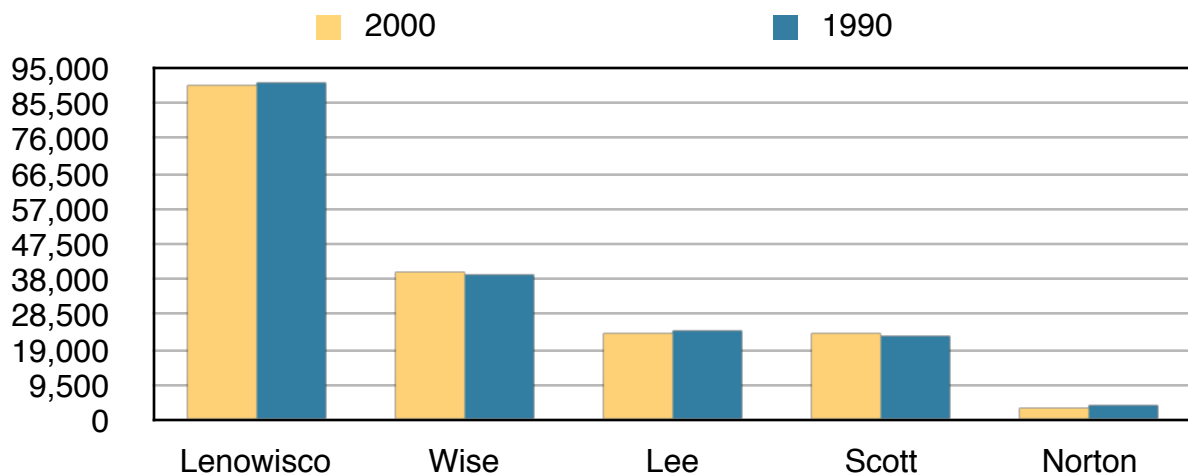
2 About the region

2.1 Characteristics of the region

2.1.1 Population of the region (2000 Census)

- Wise County – population 40,123 (change from 1990: +1.4%)
- Lee County – population 23,589 (change from 1990: -3.7%)
- Scott County – population 23,403 (change from 1990: +0.9%)
- City of Norton – population 3,904 (change from 1990: -8.1%)
- State of Virginia – population 7,078,515 (change from 1990: +14.4%)

Population	Lenowisco	Wise	Lee	Scott	Norton
2000	91019	40123	23589	23403	3904
1990	91520	39573	24496	23204	4247

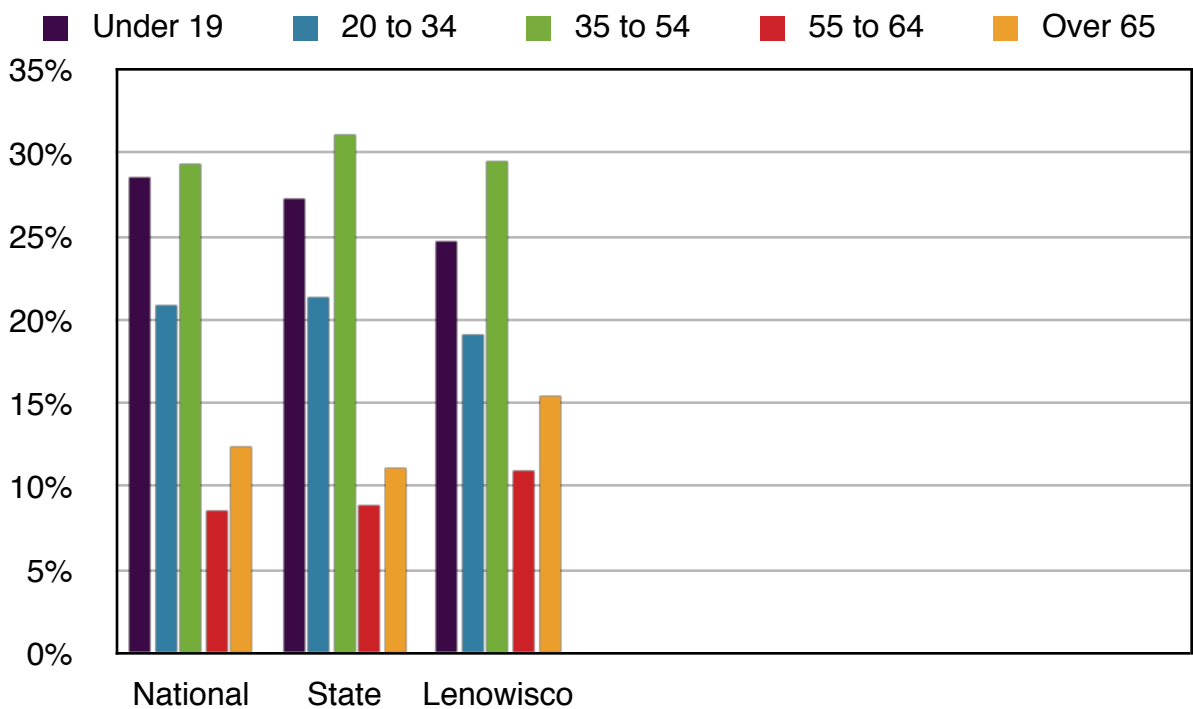


2.1.2 Age distribution (2000 Census)

The area has an aging population that is higher than average in the 55 and over age groups, and lower in the 54 and younger age groups. This is a long term structural problem that will eventually affect workforce capacity issues. It also is probably related to a general lack of opportunity in the region.

A key challenge for the region will be to develop a series of long term (5, 10, and 15 year) strategies to both retain and attract younger people to the region. Availability of jobs that are less tied to traditional extraction industries will be extremely important, and given the national growth of jobs in the small business category, the region must work vigorously to support existing and new small business development.

%	National	State	Lenowisco	Wise	Lee	Scott	Norton
Under 19	28.6	27.3	24.7	26.5	25.1	22.9	24.3
20 to 34	20.9	21.4	19.15	19.8	18.3	17.8	20.7
35 to 54	29.4	31.1	29.55	29.9	29.8	29.3	29.2
55 to 64	8.6	9	11.025	9.9	11.4	12.3	10.5
Over 65	12.4	11.2	15.575	14	15.5	17.6	15.2

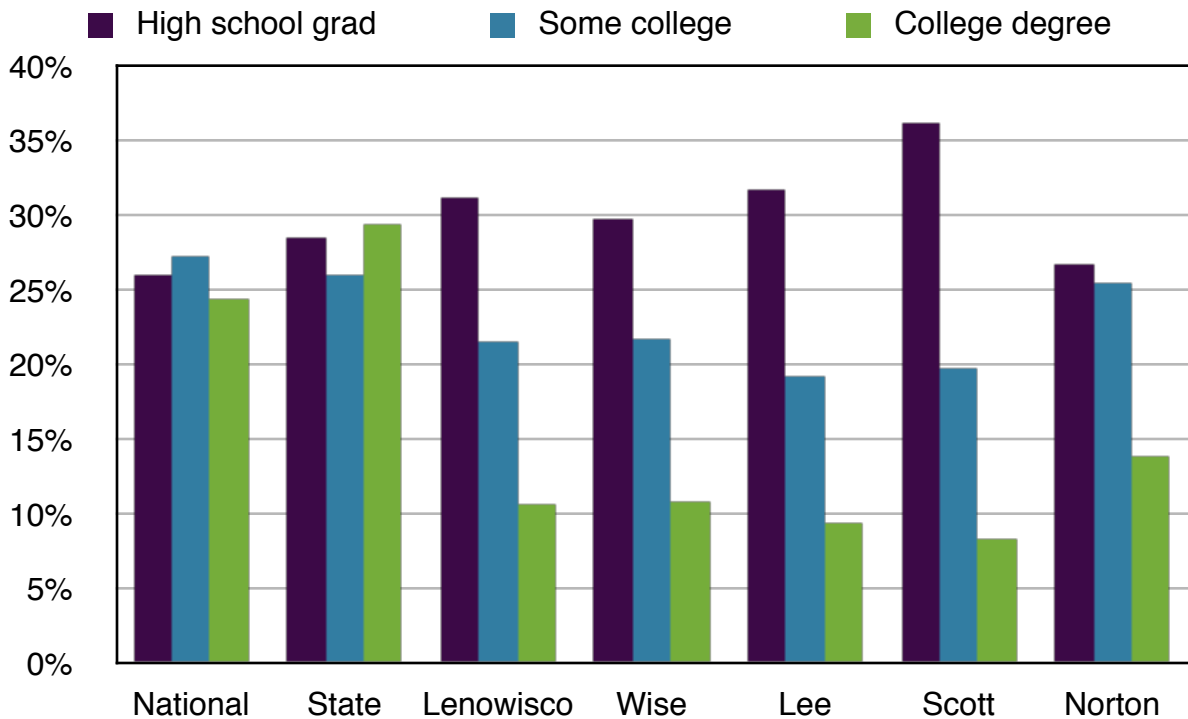


2.1.3 Education (2000 Census)

The region is doing slightly better than state and national averages for high school graduates. However, the area lags both college categories, with a notable lack of college graduates (including advanced degrees), which is probably related to the lack of appropriate jobs in the region.

The lower figure for “Some college” (includes no degree and two year degree) is a potential danger signal. As manufacturing jobs are moving offshore, the new jobs being created generally require some college education and a higher degree of technical skill than the jobs being replaced. The region has been replacing traditional manufacturing jobs with call center jobs, which provide limited advancement and work opportunities. Call centers represent the factory floor of the Knowledge Economy; they are an important part of a diversified economic development strategy, but the region must be careful not to rely too heavily on them, as the work is easily moved to other regions and/or other countries.

Education levels	National	State	Lenowisco	Wise	Lee	Scott	Norton
High school graduate	26.0%	28.6%	31.2%	29.9%	31.8%	36.3%	26.8%
Some college, no degree	27.3%	26.0%	21.6%	21.8%	19.3%	19.8%	25.6%
Bachelor’s, adv. degree	24.5%	29.5%	10.7%	10.9%	9.5%	8.4%	14.0%

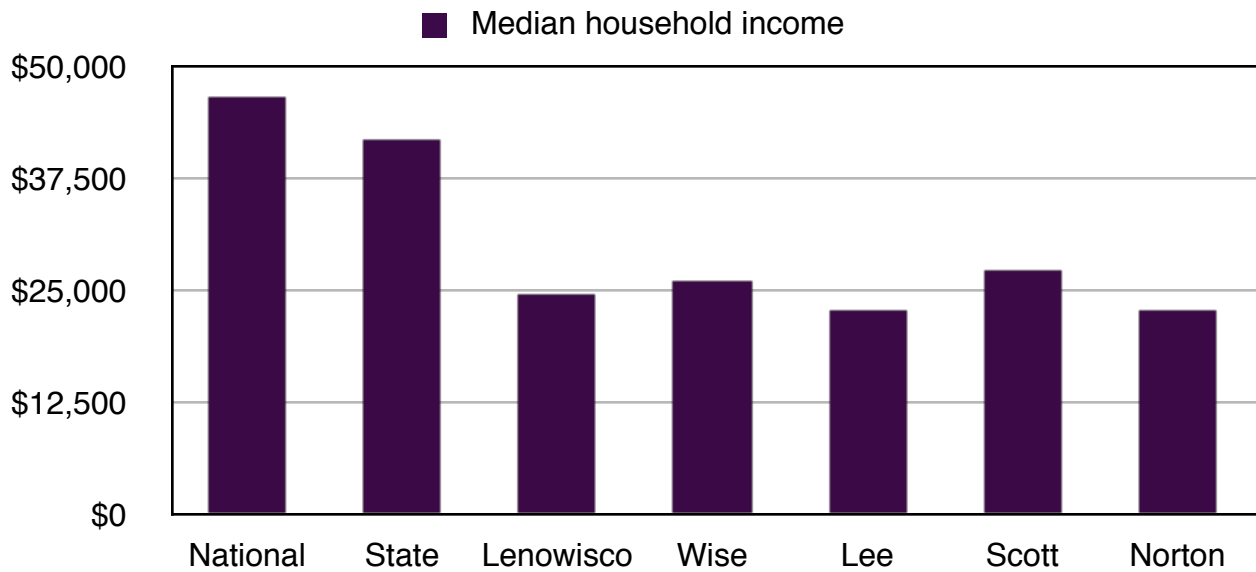


2.1.4 Median Household Income (2000 Census)

Median income for the region is almost half the national average, and not much better when compared to the state level. This reflects a regional dependence on entry level extraction industry jobs and entry level Knowledge Economy jobs (e.g. call centers).

The region must develop long term strategies to attract, support, and retain more Knowledge Economy businesses that employ higher skills workers (e.g. Tuck Engineering, Data Ensure).

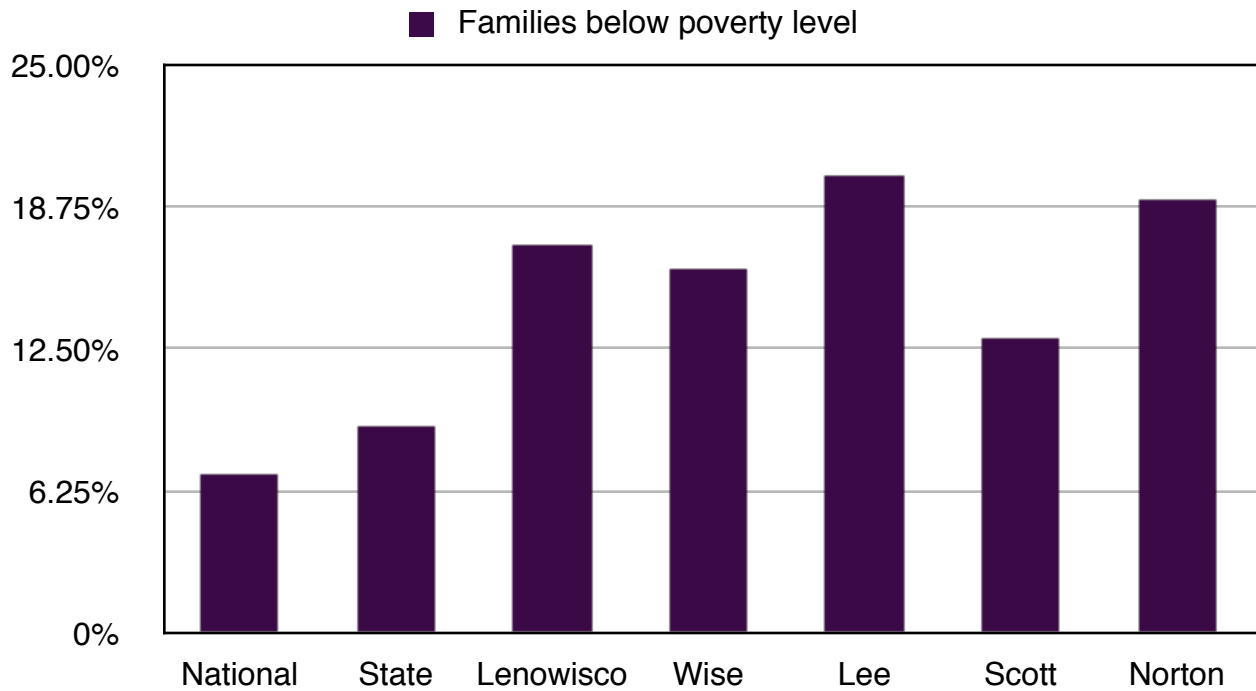
	National	State	Lenowisco	Wise	Lee	Scott	Norton
Median income	46677	41994	24812	26149	22972	27339	22788



2.1.5 Families Below Poverty Level (2000 Census)

The region has relatively high levels of poverty. Like the median household income, this represents an overdependence on entry level jobs in the local economy and a general lack of work opportunities.

	National	State	Lenowisco	Wise	Lee	Scott	Norton
Families below poverty line	7%	9.2%	17.1%	16.1%	20.2%	13%	19.1%

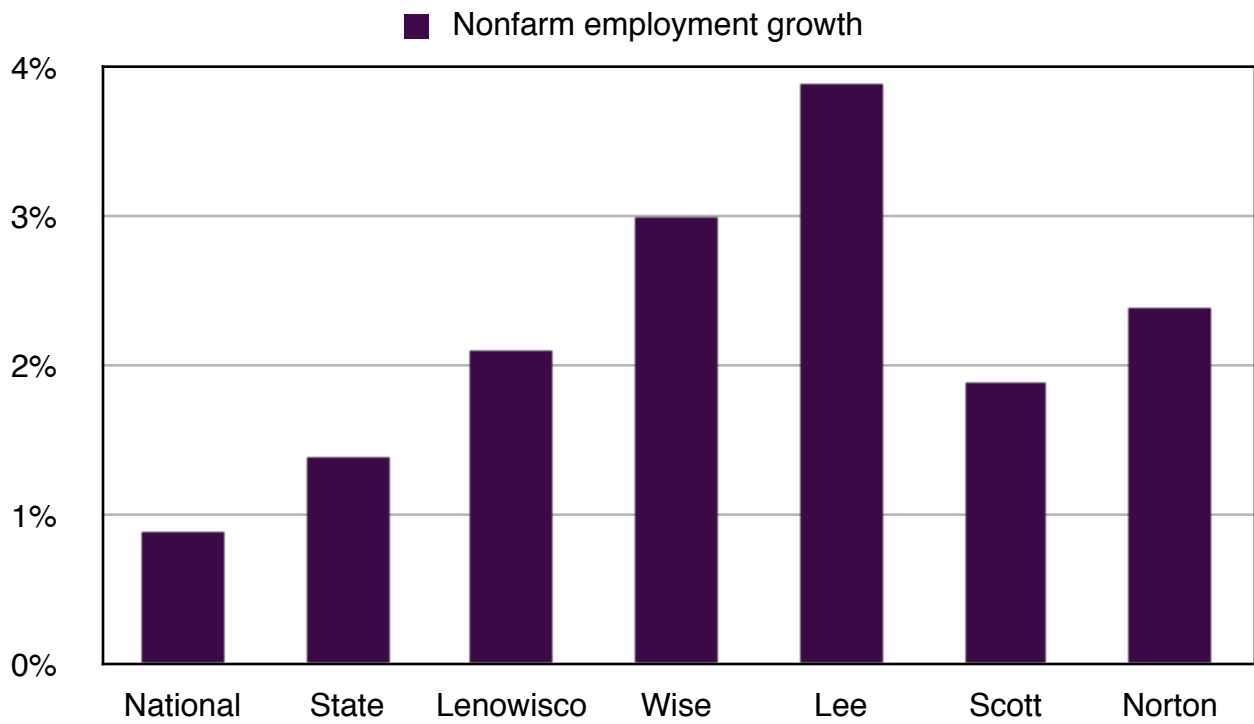


2.1.6 Nonfarm employment growth (2000 - 2001, Bureau of the Census)

The region saw slightly better growth in the 2000-2001 period (most recent data available from the U.S. government). It is important to recall that this was a period of very slow growth nationally, and the IT industry shed hundreds of thousands of jobs during this time.

The slightly better growth in the region is not necessarily good news, as it probably reflects a lack of IT jobs in the region. The Lenowisco area remains tied to extraction industries like coal and timber, which tend to offer low and moderate pay jobs with little opportunity for advancement.

	National	State	Lenowisco	Wise	Lee	Scott	Norton
Growth	0.9%	1.4%	2.1%	3%	3.9%	1.9%	2.4%

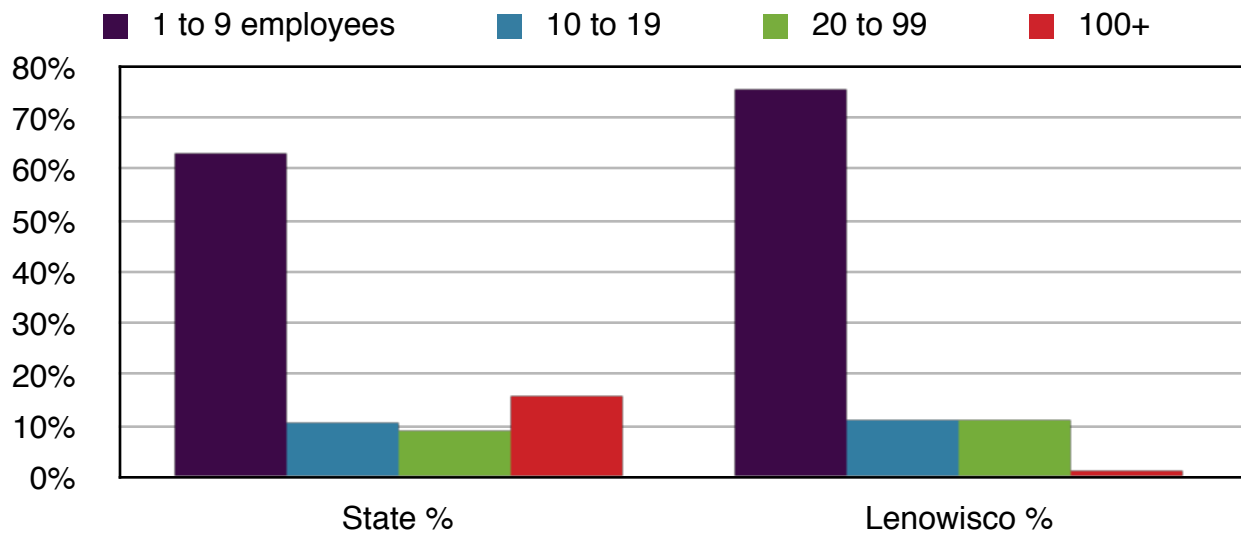


2.1.7 Business size distribution (2001 Bureau of the Census)

The region has mostly small businesses. The greatest disparity between the region and the state is in large businesses, with the state having ten times more businesses of 100 or more employees than the region.

This is not necessarily bad, as the trend is toward smaller businesses, and most job creation is in the category of small business (25 employees or less).

Business size	State %	Lenowisco %	State	Lenowisco
1 to 9 employees	63.6%	75.8%	89467	1472
10 to 19	10.8%	11.5%	15212	223
20 to 99	9.4%	11.3%	13225	219
100+	16.2%	1.4%	22774	27
Total businesses			140678	1941

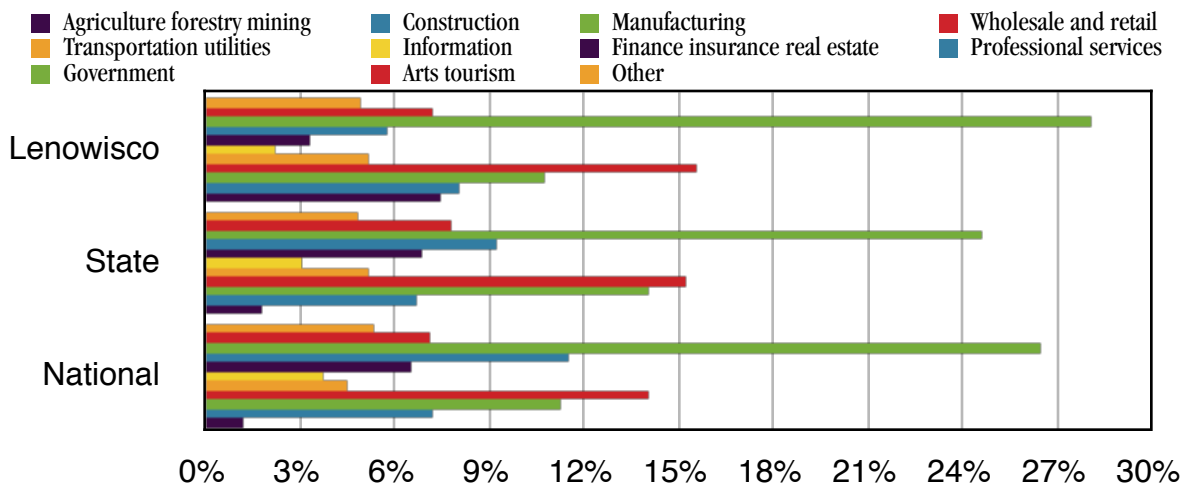


Business size	Wise	Lee	Scott	Norton
1 to 9 employees	720	288	266	198
10 to 19	111	40	36	36
20 to 99	96	45	31	47
100+	12	4	4	7
Total businesses	939	377	337	288

2.1.8 Business and Jobs Distribution(2001, Bureau of the Census)

The region’s largest employment segment is government (health, education, social services, local government). It is somewhat higher than the state and national average. Agriculture, forestry, and mining provide twice as many jobs in the region as the statewide average, and it is five times higher than the national average. The Information (IT) sector is not quite half the national average, and a third lower than the state average. Professional services are also much lower than state and national averages. Professional services are needed by Knowledge Economy businesses and entrepreneurs, and special attention should be paid to this sector to ensure that local businesses have access to the services they need to grow.

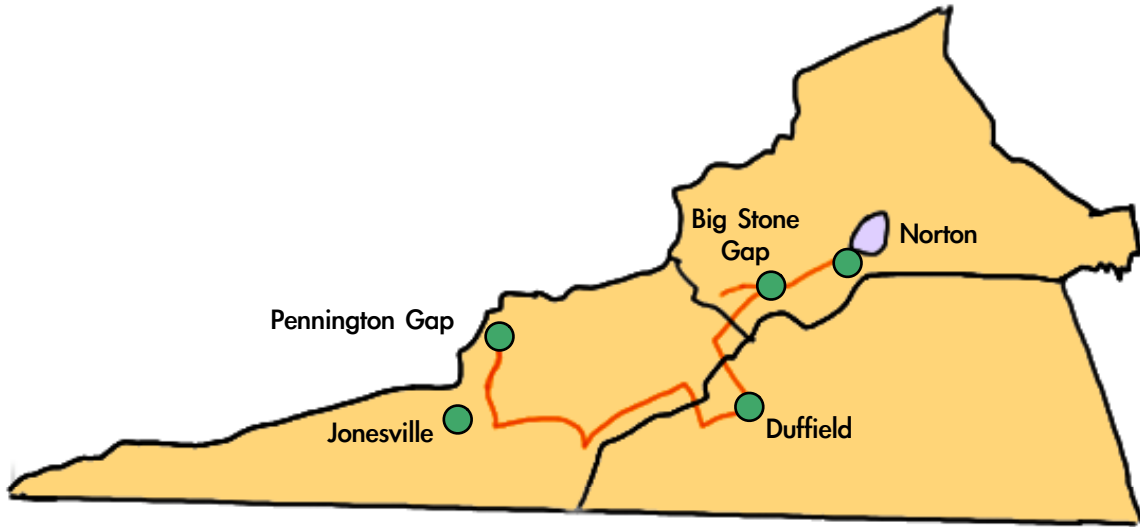
Business enterprises	National	State	Lenowisco	Wise	Lee	Scott	Norton
Agriculture, forestry, mining	13%	19%	7.5%	10.7%	9.5%	4.2%	5.7%
Construction	7.3%	6.8%	8.1%	7.3%	9.5%	8.9%	6.5%
Manufacturing	11.3%	14.1%	10.8%	2.5%	12.1%	21.3%	7.3%
Wholesale and retail	14.1%	15.3%	15.6%	16.9%	13.2%	16.9%	15.3%
Transportation, utilities	4.6%	5.2%	5.2%	5.7%	6.3%	4.6%	4.4%
Information	3.8%	3.1%	2.3%	3.0%	1.7%	2.1%	2.5%
Finance, insurance, real estate	6.6%	6.9%	3.4%	2.9%	4.1%	4.0%	2.6%
Professional services	11.6%	9.3%	5.8%	5.0%	4.6%	4.9%	8.5%
Government	26.5%	24.7%	28.1%	30.2%	30.1%	22.7%	29.2%
Arts, tourism	7.2%	7.9%	7.3%	6.9%	4.3%	5.6%	12.4%
Other	5.4%	4.9%	5.0%	5.2%	4.3%	4.9%	5.7%



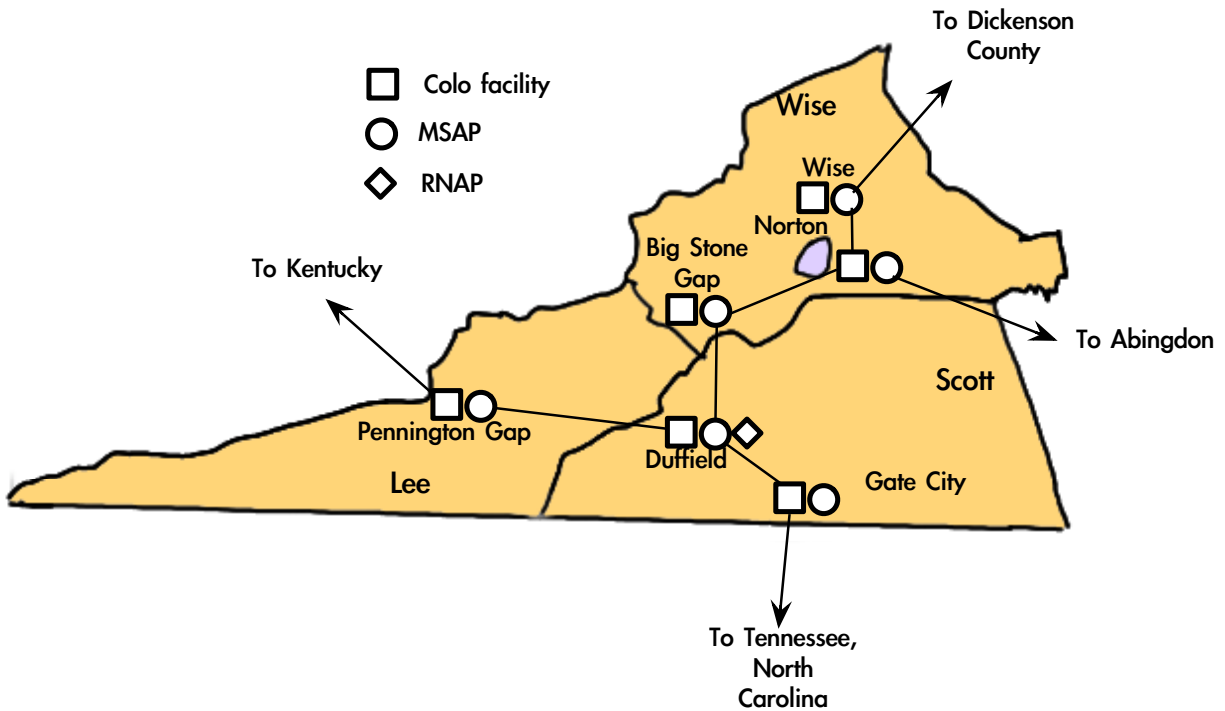
3 Infrastructure

3.1 Current projects

- Lenowisco Network Backbone--linking Duffield, Big Stone Gap, Jonesville, Pennington Gap, Robbins Chapel. The fiber network currently comprises sixty-nine miles of fiber connecting all three counties and the City of Norton. It's one of the most sophisticated networks in the United States, utilizing a combination of microduct and blown fiber, along with some conventional fiber cable. A head end and colocation facility is located in Duffield, on the premises of the Lenowisco Planning District Commission. The colocation facility is a standalone engineered structure with its own backup power generator.
- Downtown Big Stone Gap -- Downtown backbone that will provide business, and some residential service in the downtown area of town. This system utilizes microduct and blown fiber for ease of installation. The microduct lowers the initial cost of installation, and additional capacity is added easily by blowing additional fiber.
- Downtown Pennington Gap -- Downtown backbone that will provide business access and some residential access.
- Scott County Telephone Coop --\$11 million DSL upgrade in the SCTC service area will provide increased access to DSL services.
- Jonesville Downtown -- Downtown fiber backbone that will provide business access and some residential access.



Facilities: Current Lenowisco Inc. fiber routes



Facilities: Proposed key connectivity routes, colocation facilities, and data switch points

3.2 Projects in planning

- Big Stone Gap wireless service -- private provider waiting for fiber connection
- Downtown Norton -- Downtown backbone -- Business and some residential
- Laurel Tree subdivision -- Fiber to the home project in Norton
- SWVETN network -- fiber extensions to existing SWVETN network
- WiFi hotspot at Visitor's Center, Big Stone Gap
- Self help duct/fiber, mesh network wireless installs
- Downtown Wise -- Downtown backbone -- Business and some residential
- Big Stone Gap "Southern" neighborhood -- utilities upgrade; add duct/fiber to the home
- Gate City -- Downtown technology center
- Daniel Boone Museum and Expo Center -- Broadband access for tourism, livestock auctions
- Crooked Road Project -- Streaming video programs between centers
- Business/Industrial/Technology Parks Interconnection -- connect all business parks with fiber

3.3 Goals, Objectives, and Action Items

Goal One

Communities in the LENOWISCO region should have a robust intracommunity and intercommunity digital transport system that is the equal of any other region in the world.

Objectives

- LENOWISCO communities should develop fiber and wireless overlay plans that define where key backbone fiber routes and wireless tower sites (existing and future tower and antenna sites) should be located in communities.

Action Step: Inventory existing community and regional mapping (GIS) capacity, and identify additional needs in the region.

Action Step: Every community should create a fiber overlay plan that identifies near term (next twelve months) and far term (next three years) opportunities to install telecom duct and/or fiber.

Action Step: Ensure that all users of public right of way have provided appropriate GIS data for their cable routes.

Action Step: Every county and city should create a fiber overlay plan that identifies near term (next twelve months) and far term (next three years) opportunities to install telecom duct and/or fiber.

- Over the next three to five years, make regional investments in telecomm facilities that will support the bandwidth required by the quadruple play of services (voice, video, data, advanced and new services) a minimum of ten years in the future.

Action Step: Adopt a regional goal of providing a minimum of Gigabit Ethernet to every home and business in the region by 2008.

Action Step: Perform wireless site survey region wide to minimize the number of towers and maximize coverage for wireless services.

- Have community–managed colocation facilities available to public and private telecommunications providers and users.

Action Step: Survey current telecom service providers to gauge interest in using community-owned colocation facilities in appropriate locations. Use feedback from providers to help identify those locations.

Action Step: Norton, Big Stone Gap, Town of Wise, Pennington Gap, Gate/Weber City area, Pound, and Duffield should provision and develop community colo facilities.

- Regional investments in network equipment and systems should include support for IPv6 protocols (next generation Internet) to ensure wide interoperability among users, institutions, and businesses.

Action Step: Develop a one page information handout on IPv6 interoperability issues and circulate it widely among network administrators in the region.

Goal Two

Adopt policies and/or ordinances as needed that minimize the burden of regulations and the cost of offering broadband services while preserving the natural landscape and beneficial features and aspect of LENOWISCO communities.

Objectives

- All new neighborhoods should have land set aside for an NSAP (Neighborhood Service Access Point).

Action Step: Convene a meeting of town and county planners to discuss changes to comprehensive plan that are required.

Action Step: Write a sample specification for an NSAP set aside that can be provided to planners and developers.

- Ensure that community master plans adequately address telecommunications issues.

Action Step: Canvass LENOWISCO communities to collect existing ordinances that relate to telecommunications issues.

Action Step: Develop a set of “model” ordinances and master plan guidelines for telecommunications that can be used by LENOWISCO communities.

- “Open ditch” policy evaluates potential of laying fiber lines alongside road, water, and sewer projects.

Action Step: Get at least one county or city to adopt a formal “open ditch” policy in 2005.

Action Step: Provide training for public works employees to install and maintain telecommunications duct of various kinds. Look for a pilot project to use as a hands-on training opportunity.

Goal Two

Residents, visitors, businesspeople, and other travelers should have convenient wireless access throughout the entire region.

Objectives

- Every visitor center in the region should offer free WiFi access, with appropriate signage advertising the availability of access.

Action Step: Invite the organizations that manage visitor centers to attend a meeting on the issue of WiFi access at those locations.

Action Step: Create a plan and project template for providing WiFi access at a visitor center.

Action Step: Use the established network of inns, B&Bs, restaurants, and other visitor attractions to publicize the availability of public WiFi.

Action Step: Design an appropriate sign that indicates graphically the availability of WiFi access.

Action Step: Ask the Virginia Department of Transportation to adopt the sign as a standard throughout the state.

- Community and regional Web sites should provide “free WiFi” maps and directions so that travelers can easily identify public WiFi hotspots.

Action Step: Write a one page “talking points” handout for Web site managers that discusses the benefits of providing easy to find WiFi information on their Web sites.

- Lower the barriers to market entry for wireless providers in the LENOWISCO region.

Action Step: Communities in the LENOWISCO region should perform wireless site surveys to identify appropriate locations of antennas and towers.

Action Step: Publicize the wireless survey results to wireless providers.

Action Step: LENOWISCO communities should adopt municipal ordinances that simplify procedures for obtaining antenna space on public structures.

Action Step: LENOWISCO communities should adopt a common fee structure for mounting antennas on public structures so that the costs for mounting antennas and the lease costs are uniform throughout the region.

Goal Four

The LENOWISCO has a world class, high performance, regional network that is attractive to relocating companies and entrepreneurial startups.

Objectives

- A regional network of of community-managed MSAPs and RNAPs provide world class network performance.

Action Step: Identify communities and locations for the MSAPs and RNAPs, based on current and future fiber deployments by LENOWISCO, Inc. Suggested communities for MSAPs include Duffield, Norton, Big Stone Gap, Gate City, and Pennington Gap. RNAP candidates include Duffield and Norton.

Goal Five

Community rights of way are managed to ensure that future right of way needs are not compromised.

Objectives

- Every community has a clear and concise public right of policy that is managed fairly and strictly.

Action Step: Survey existing right of policies.

Action Step: Develop a pro forma “standard” policy that can be used as a template for LENOWISCO communities.

Action Step: Hold workshops for planners and elected leaders to educate them on right of way issues and the role of local government.

Action Step: Survey existing GIS data on right of way cable use. Encourage LENOWISCO communities to adopt a common GIS data requirement for all right of way users.

4 Education and Training

4.1 Partners and Programs

The region has a wide group of partners to assist with education and training goals.

- Southwest Virginia Technology Council – Outreach and training to technology businesses
- Mountain Empire Community College and UVa-Wise – College age students, adult education, and worker training and retraining programs
- Mountain Empire Electronic Business Village – Microbusinesses, small businesses, and new business startups.
- K12 Schools – Children, GED and adult education programs
- Libraries – Community groups, citizens at large.
- Current and future private technology training centers, such as the Nice center in Norton (a facility is also being considered for Appalachia).

Current programs directed at increasing the capacity of people or groups in the region to make use of technology include:

- Electronic Business Village (EBV) Entrepreneur program
- Tek.Xam national exam for certification in IT knowledge areas
- MECC Workforce Development
- Associate degree level IT programs and IT certification programs
- UVa-Wise math and science initiative (dual enrollment)
- Scott County high school dual enrollment at MECC, Cisco Academy, and other computer/network training programs.

4.2 Goals, objectives, and action steps

Goal One

All youth graduating from high school and college in the area have achieved a defined level of technological competency that is based on a well-defined set of general skills and abilities.

Objectives

- Develop a working definition of technological competency for various key groups in the community (e.g. K12 students, community leaders, business people, planners, elected officials).

Action Step: Convene a working group to define technological competency for the region. The working group should include a broad mix of community leaders, businesspeople, and educators at both the high school and college level.

Action Step: The working group sets a target of no more than one year to reach consensus on a definition of technological competency for high school graduates, two year college programs, and four year college programs. Technological competency definitions should address specific business skills, not just the ability to use “social” programs like email and chat.

Action Step: The working group shares current SOL technology goals with the community to heighten awareness of the importance of technological competency.

Action Step: Encourage local colleges to support certification programs (e.g. Tek.Xam is one such program), especially for students that may not get a four year degree.

Goal Two

Ensure that all citizens and businesses have the skills and knowledge to use the technology.

Objectives

- Encourage the development of learning support groups (learning webs) that facilitate ongoing, regular face to face and Internet-based intra-group communication and discussion on issues and areas of mutual interest.

Action Step: Create a working group that will explore blogs of interest and develop a plan to encourage both individual blogging in the region as well as one or more regional blogs on topics of interest (e.g. a regional blog on technology issues facing the Lenowisco area).

- ❑ The SWVTC should develop a series of seminars on on current and future technologies and telecommunications and offerthem to SWVTC members and other businesses in the area.

Action Step: Convene a working group to identify subject matter experts who can design and deliver short courses (e.g. 2-3 hours) on the following topics: data center design and management, new and emerging technologies, RSS news feeds and news syndication.

Action Step: The working group should also develop “mini” seminars (1 hour) on Voice over IP, eBay for businesses, Chat for grandparents, digital photography, and advanced email features (attachments, photos, etc.). These courses would be advertised by the SWVTC and offered as brown bag lunch meetings around the region.

- ❑ Develop a core set of short courses and seminars for seniors that provide both basic and advanced skills training in technology and Internet services, and make those training packages widely available to agencies that work with Seniors.

Action Step: The regional libraries and MECC should form a working group with the regional AARP and MEOC groups to develop a seminar series for senior citizens.

- ❑ Provide training and assistance to local technical and network staff to help them understand the advantages of high performance fiber and wireless networks and why such networks may be better than legacy networks.

Action Step: The SWVTC should foster and support the development of the free and convenient exchange of technology best practice information.

- ❑ Develop a program to identify technology best practices in key public planning areas (e.g. rights of way, access issues, fiber overlay plans, etc.) and disseminate those techniques, processes, and systems widely to municipal planners, builders, developers, and other interested parties.

Action Step: Encourage public planners to adopt appropriate portions of the Lenowisco Technology Master Plan rather than creating many small plans from scratch.

Action Step: Convene a meeting of planners from Lenowisco communities to learn about the Technology Master Plan.

- ❑ Develop a permanent "technology round table" monthly lunch meeting for planners to meet informally to discuss technology issues and to share information.

Action Step: The Lenowisco PDC and selected guest speakers should attend city and town manager meetings to raise awareness of the emerging importance of telecommunications as part of town and county planning.

5 Network Access

5.1 Goals, Objectives, and Action Items

Goal One

Drive down costs for large capacity bandwidth users throughout the LENOWISCO region.

Objectives

- Assemble a list of institutional and business bandwidth users (T1 connections and above) and where possible, identify costs associated with the connections

Action Step: Identify a group who will collect and maintain the data.

Action Step: Canvass institutional and business users to determine current bandwidth use in the region.

Ensure that purchasers of bulk bandwidth understand bandwidth aggregation and how it can reduce costs.

Action Step: Hold bandwidth aggregation workshops throughout the region.

Action Step: Canvass educational, local government, and state agency users of Network Virginia throughout the region. Investigate aggregating NWV demand by bringing in one or more OC3 connections and sharing it, which would drive down costs for all NWV users.

Action Step: Develop and maintain a mailing list of network administrators in the region. Encourage frequent and regular communication among network administrators, including regular lunch or breakfast meetings.

Goal Two

Create more opportunities for local and regional access providers in the LENOWISCO region.

Objectives

- Reduce dependence on a few large backhaul providers.

Action Step: Meet with local and regional access providers to determine how bandwidth buyers can work with them to increase the total bandwidth into the region. Find out what limits the access providers from increasing the amount of bandwidth they can provide.

Action Step: Develop a regional broadband aggregation strategy document that identifies all bulk access customers (e.g. T1, DS1 and higher), including business, institutional, and government customers. Contact each organization on the list and canvass their current and future needs.

Action Step: Use the broadband aggregation strategy document to help identify future fiber and wireless routes in the region so that new duct, fiber, and wireless investments pass by key customers.

Action Step: Publicize the value of broadband aggregation (reduced costs for bandwidth) through local meetings (e.g. Tech Council, Chambers of Commerce, County Council meetings).

6 Services

6.1 Goals, Objectives, and Action Items

Goal One

Ensure that all the citizens and community groups of the Lenowisco region have access to community-supported information services that support community and civic activities.

Objectives

- Identify the package of services (by service type--email, mailing lists, etc.) that should be available for community use.

Action Step: Develop a strategy for hosting those services economically so that all communities that choose to offer community services can do so without "reinventing the wheel."

Action Step: Get advice on hosting and service options from an experienced community network services manager or consultant.

Action Step: Identify an Open Source, fourth generation Content Management System (CMS) and encourage its use throughout the region to build capacity and reduce costs for community portal management.

Action Step: Expand the eBiz Village program to include support for a regional Web portal.

Goal Two

Help communities understand the value of a community Web portal.

Objectives

- Educate community leaders on the value of well-supported, "modern" community Web portals and the linkages to economic development and business recruitment.

Action Step: Survey some out of the area community Web portals that have been identified as using best practice in design and execution (e.g. the Blacksburg Electronic Village).

Action Step: Prepare a handout for community leaders that describes the reasons why a community Web portal is important to the community, emphasizing linkages to economic development and company and entrepreneur recruitment strategies.

Goal Three

Improve the local community use of technology to deliver and access services.

Objectives

- Improve local access and involvement in community government and process.

Action Step: Encourage communities to use Web-based content management systems as the basis for community Web portals, and encourage citizens and local leaders to use the community portals to discuss local issues.

- Expand the use of GIS systems in local government

Action Step: Inventory local governments and their use of GIS.

Action Step: Provide more public access to GIS information, reports and regulations on line and in various formats.

Action Step: Identify and publish success stories of savings and improvement to access from existing examples in the area.

Action Step: Partner with libraries and community network efforts in the region to promote the use of GIS by citizens and businesses.

7 Content and Content Providers

7.1 Goals, Objectives, and Action Steps

Goal One

Ensure that the region has a wide variety of rich, timely, local content available on the Web.

Objectives

- Promote the use of broadband by developing a local capacity to webcast video.

Action Step: Identify a local school willing to teach webcasting as an elective class and as an ongoing community service project and promote its use.

Action Step: Study the Growing Digital project in Danville and model the local program after Growing Digital's very successful approach.

- Get every community and civic group that wants a Web presence on the Web

Action Step: Work with the community portal project to ensure that the community portals are using fourth generation content management tools that support blogging and RSS news feeds.

Action Step: Develop a workshop to provide training on blogging and RSS to community and civic groups.

- Use community directories to promote the region

Action Step: Inventory existing online directories and listings of information (e.g. from current community portals, Chambers of Commerce, regional listings, etc.) Identify overlapping areas and gaps in coverage.

Action Step: Develop a common directory system that provides individual portals for individual communities and organizations. Promote the directory regionally and integrate into economic development marketing.

- Have every local government entity provide at least one RSS news feed with local government information.

Action Step: Organize a half day workshop for local government Web site managers to introduce them to Web management tools, RSS news feeds, and blogging.

Action Step: Choose a mature, well-supported Open Source Web content management system for use throughout the region for community portals, community groups, and local government Web sites.

Goal Two

Ensure that the region has an evolving capacity to provide the bandwidth needed to deliver commercial content in any format, on demand.

Objectives

- Ensure that the region does not become bandwidth limited, especially with respect to business use of content.

Action Step: Hold regular discussions with local commercial and public access content providers to assess their bandwidth needs.

Goal Three

Ensure that the businesses of the region have the knowledge and training to make the best use of business content to offer their products and services to a global marketplace

Objectives

- Business owners and entrepreneurs should have the knowledge and skills to make appropriate choices in designing attractive and responsive online content that promotes their businesses successfully.

Action Step: Hold regular seminars for businesspeople that showcases well-designed, affordable, and successful business Web sites.

- Ensure that local businesses have access to local Web content and Web site design firms that can provide affordable and reliable advice on developing successful business Web sites.

Action Step: Inventory existing local firms that provide services, and identify gaps, especially for specialty services (e.g. multimedia design).

8 Entrepreneurship Development

8.1 Entrepreneurship issues for the Lenowisco region

The technology planning groups identified a series of issues that they felt needed immediate attention if the region is to be successful in creating jobs and opportunities in the future. Among them were:

- Affordable broadband -- While this is obviously a primary reason for this report, the group felt that the lack of affordable broadband options in many parts of the LENOWISCO region was directly tied to the tepid growth in jobs.
- Overlapping efforts -- The group felt there were too many groups with overlapping responsibilities for economic development, and a tendency to engage in “stovepipe” projects (efforts that are conducted in isolation, without adequate coordination and planning with other groups doing the same kinds of things).
- Lack of coordination – Related to the previous item (overlapping efforts), the group identified lack of coordination as a weakness for the region. Towns, counties, civic associations, business groups, and various regional authorities and projects tend to communicate ineffectively with each other, leading to duplication of effort, chasing of grant dollars from the same organizations (by different groups), and reduced impact on the region.
- Lack of futures thinking – The group viewed the attitude of “We’ve always done it this way” as one of the biggest problems of the region. The LENOWISCO region has a remarkable cultural and community history that deserves attention and preservation, but in numerous discussions, the resistance to doing anything differently was identified as a drag on many projects (not just telecommunications and technology efforts).

8.2 Economic Development Resources and Partners

The group identified more than ten major groups involved in economic development, and the consensus was that there were probably more than two dozen different civic, government, education, and regional groups working in this area. Among the key players discussed were:

- The Small Business Development Center at Radford University
- The Mountain Empire Regional Business Incubators at Duffield and Norton.
- Mountain Empire Community College, which offers numerous business-related programs.
- UVA-Wise, which has degree programs in business topics, as well as some adult education and outreach efforts.
- The Rural Enterprise Action Learning program, offered through Marketing Education programs in the local high schools.
- Numerous programs and activities sponsored by the Appalachian Regional Commission.
- Programs, grants, and funding provided by the Virginia Department of Housing and Community Development.
- The Wise Chamber of Commerce Entrepreneurial Committee
- Programs offered by the Cove Ridge Center
- Programs and activities of the Southwest Virginia Technology Council.
- Virginia Tech Extension activities throughout the region.
- The Virginia Coalfield Economic Development Authority
- The Virginia Tobacco Indemnification and Community Revitalization Commission.

8.3 Goals, Objectives, and Action Items

Goal One

Make the region attractive to small business owners and entrepreneurs who wish to relocate.

Objectives

- Develop a well-coordinated regional Web presence that effectively presents a compelling case that the LENOWISCO region is an excellent place to live and to work.

Action Step: Catalogue all sites that currently have information relevant to business relocation and/or those sites that should have business relocation information. Include (but don't limit to) community, local government, school, Chambers of Commerce sites, and regional sites.

Action Step: Develop an online resource for Web site maintainers that provides tips, information, and common links of interest to business owners and entrepreneurs. Ask regional site maintainers to include the information and links appropriately.

- Develop a Relocation Guide for local officials, economic developers, and planners that identifies critical factors of interest to relocating small business owners and entrepreneurs.

Action Step: Catalogue the recreational assets available in the region, especially those likely to be of interest to knowledge workers (e.g. hiking, biking, kayaking, canoeing, skateboarding, etc.).

Action Step: Prepare a cost of living guide that compares cost of living in the LENOWISCO region with higher cost areas like Richmond, Atlanta, and northern Virginia. Include quality of life "costs" like extended commutes, traffic issues, and small town advantages.

- Ensure that appropriate work and office space is available in the region for Knowledge Economy businesses.

Action Step: Encourage the development of more nontraditional and Main Street incubator projects like the Norton Hotel and the Winchester (Virginia) Technology Zone. Ensure that local planners and economic developers understand the office and work needs of Knowledge Economy businesses.

Action Step: Work with builders, developers, and planners to build more homes with work at home amenities and floor plans.

Action Step: Provide incentives for local businesspeople to create high quality "Starbucks type" businesses that will appeal to businesspeople and entrepreneurs who may be considering relocating or starting a business in the area.

Goal Two

Reduce overlapping economic development efforts and improve communications among groups and entities engaged in economic development.

Objectives

- Increase the impact of economic development efforts and reduce the cost of those efforts (e.g. more business relocations, more jobs) by reducing duplication of effort.

Action Step: Inventory all those public and private organizations that are involved in economic development activities and identify a primary and secondary contact for each group.

Action Step: Establish a regional email discussion list for all those individuals working on economic development issues.

Action Step: Convene a quarterly “networking breakfast” to encourage and enhance information exchange, collaboration, and relationship development among economic developers and interested parties.

Goal Three

Diversify the region’s approach to economic and entrepreneurship development.

Objectives

- Enhance the effectiveness of economic development efforts by adopting “futures context” thinking that supports Knowledge Economy business needs.

Action Step: Convene a one day leadership summit to reach consensus on a new, regionwide approach to economic and entrepreneurship development.

Action Step: Provide ongoing training and education for economic developers, planners, and local leaders on the Knowledge Economy and new economy business needs.

- ❑ Ensure that economic developers have appropriate guidance and a corresponding reward structure for creating jobs in the Knowledge Economy.

Action Step: Survey current job descriptions and related performance incentives for local and regional economic developers.

Action Step: Make appropriate changes and modifications to economic developer job descriptions and financial incentives to ensure that economic developers are rewarded for engaging in appropriate recruitment, small business development, and workforce development activities.

Goal Four

Develop a workforce ready to work for Knowledge Economy businesses.

Objectives

- ❑ Ensure that local high school and college graduates have the appropriate training and education that will be attractive to Knowledge Economy businesses.

Action Step: Develop an “education round table” of local educators to review the characteristics and desirable job skills of Knowledge Economy workers.

Action Step: Develop a series of “Knowledge Economy worker” profiles that describe typical educational background and work experience at various levels (e.g. high school graduate, two years of college, four years of college).

Action Step: Create improved communication channels between educators and economic developers, so that there is a better match between business workforce needs and newly graduated workers.

- ❑ Develop a broader pool of white collar workers with the skills and experience attractive to Knowledge Economy businesses.

Action Step: Market the lifestyle, recreational, and cost of living advantages more aggressively to graduating high school and college students in the area. Contrast with the some of disadvantages of living in highly urbanized areas.

Action Step: Market the region at high school reunions, and develop a job skills database of expatriate workers who are interested in returning to the area if an appropriate job is identified.

Goal Five

Create a dynamic work and community environment that enhances and support work and quality of life for existing businesses and new entrepreneurial startups.

Objectives

- Ensure the region has an appropriate level of professional support services that are required by entrepreneurs, work at home businesspeople, and knowledge-based businesses.

Action Step: Develop a regional directory of professional business services that is accessible via the Web.

Action Step: Inventory existing professional service businesses in the region and identify weaknesses. Develop a plan to promote use of local professional business services, rather than using companies outside the region

Action step: Work with existing professional service businesses to ensure that the owners and managers are familiar and can provide the appropriate levels of services and offerings that will attract relocating businesspeople and entrepreneurs.

Action Step: Make industry standard videoconferencing facilities available in local library conference rooms, so that area businesses can conduct business videoconferences with customers easily and conveniently. Use fees (may be optional) could be used to help fund this effort.

- Ensure that business owners and entrepreneurs in the region have the appropriate social and business networking support structures in place to increase their business effectiveness.

Action Step: Convene a one day summit of existing business and civic organizations (e.g. Chambers of Commerce, Tech Council, Rotary Clubs, merchant associations, etc.) to raise awareness of Knowledge Economy business needs and the shift away from traditional retail businesses as the primary constituents of these organizations.

Action Step: Encourage existing organizations to upgrade and improve their Web sites to include modern content management systems so that it is easier to update and disseminate the activities of the

organization. All service organizations should use RSS news feeds so that other Web sites in the region can easily cross-promote events, news, and activities.

- ❑ Ensure that business owners and entrepreneurs have convenient and affordable access to business management advice, financing, and business growth and development strategies.

Action Step: Develop a mentoring program for younger workers. Establish relationships between younger workers and more mature and experienced workers and managers in the region to help younger workers stay in the region and to prosper in their chosen profession.

Action Step: Leverage the increasing number of retirees relocating to the region by starting a SCORE advisory group for the region.

Action Step: Identify a group or organization that will serve as a single point of contact for business startups that will help people with business ideas find the resources they need.

Action Step: Develop better access to venture capital for startups in the region. Develop a local “micro loan” program that will make small loans (e.g. under \$10,000) to area businesses that need start up capital.

9 Organizational and Management Planning

9.1 Goals, Objectives, and Action Steps

Goal One

Ensure that communities that wish to invest in telecommunications infrastructure have access to appropriate advice and guidance.

Objectives

- Create an organizational and administrative blueprint that provides a road map to communities that want to make investments in telecommunications infrastructure.

Action Step: Develop a set of annotated and reviewed resources that will provide initial guidance to community and elected leaders on broadband issues.

Goal Two

Ensure that the LENOWISCO region has a regional entity that can help guide and assist with public investments in telecom infrastructure.

Objectives

- Provide regional coordination of public telecom investments to minimize duplication of effort and to ensure that a seamless, high performance network emerges over time.

Action Step: Ensure that local and regional leaders are aware of Lenowisco, Inc. (the nonprofit created by the PDC to hold the fiber assets) and its willingness to work with local communities on new fiber and wireless efforts.

Goal Three

Ensure that there is an appropriate regional entity that can help aggregate broadband bandwidth, software and hardware purchases, and coordinate training and education needs.

Objectives

- Help all technology and telecom users, especially institutional users, save money by pooling demand for services and technology.

Action Step: Convene a working group to collect a list of large broadband users in the region (typically institutional users like medium and large businesses, schools, hospitals, colleges, and local government that use T1/DS1 services and above).

Action Step: Once an initial list of institutional users has been created, convene a lunch meeting at an appropriate location to discuss the potential of pooling demand and reducing the cost of broadband. Provide all users with a route map of the Lenowisco Inc. fiber already in the region.

10 Policy and Legal Issues

10.4 Goals, Objectives, and Action Steps

Goal One

Organize a regional telecommunications policy advisory committee that that will provide advice and counsel to local telecom funding projects with respect to Federal and state policy and regulatory issues.

Objectives

- Convene a policy working group that will help the region manage Federal and state telecom policy and regulatory issues.

Action Step: Identify a regional group that will convene and sustain a policy working group.

Action Step: Convene an initial meeting to identify short term (next three months) and long term (1-2 years) goals for the effort.

Action Step: Develop a short “talking points” policy paper and use it as the basis for a series of meetings with state and Federal elected representatives.

Action Step: Contact all state and Federal legislators in the area and invite them to speak to the policy group.

Goal Two

Adopt a regional telecommunications policy statement that identifies appropriate local agencies that have stakeholder roles in technology and telecommunications funding and projects for the region.

Objectives

- Develop a policy statement for how the region will use Federal funding for local projects.

Action Step: Invite key stakeholders in the region to work together on Federal funding opportunities, using the Technology Master Plan both as a funding roadmap and as a competitive advantage (with respect to the competitiveness of a funding proposal).

- Develop a policy statement for how the region will use state funding for local projects, and how regional applications for state funding opportunities will be coordinated.

Action Step: Invite key stakeholders in the region to work together on state funding opportunities, using the Technology Master Plan both as a funding roadmap and as a competitive advantage (with respect to the competitiveness of a funding proposal).

Action Step: Develop a one page “talking points” handout for use when meeting with elected representatives to talk about the Technology Master Plan.

Action Step: Over the next six months, meet with all Lenowisco region elected state representatives and provide them with a copy of the Technology Master Plan. Use the talking points handout to deliver a consistent message to all representatives.