

Testimony of BalsamWest FiberNET, LLC
to
Subcommittee on Rural and Urban Entrepreneurship
of the Committee on Small Business of the United States House of Representatives

"Maximizing the Value of Broadband Services to Rural Communities"

May 9, 2007

Mr. Chairman and distinguished Members of the Subcommittee,

Thank you for allowing BalsamWest FiberNET to present testimony to this subcommittee concerning the importance of broadband services to rural areas and the small businesses and entrepreneurs who live and work there.

BalsamWest is a certificated Interexchange Carrier and Competitive Local Exchange Carrier in North Carolina, Tennessee, and Georgia. BalsamWest is a unique company and an example of the success that can be achieved through collaboration, determination, and innovation.

BalsamWest was formed in 2003 to serve the critical need for access to reliable, affordable high-performance broadband infrastructure and services in the southwestern region of the Southern Appalachian Mountains.

BalsamWest's testimony concerns the unusually severe challenges faced by a rural mountainous region in obtaining reliable, affordable, high-performance broadband infrastructure and services, the difficulties of telecommunications and cable companies in serving the needs of the people in the region, and how—of necessity—people from within the Southern Appalachian Mountain region worked collaboratively to overcome the problem on their own—with stunning success.

The area served by BalsamWest is one of profound beauty with terrain ranging from the highest mountains east of the Rockies to deep, shaded gorges where trout-filled streams turn into

rushing whitewater rivers. One of the most geographically isolated and economically challenged areas in southern Appalachia; this area is surrounded on all sides by the 5,000-foot peaks of the Blue Ridge and Smoky Mountains. Small communities and towns have grown up wherever level ground was formed by rivers carving valleys through the mountain ranges. Communities are widely separated by steep, winding roads to the next river valley. Population in the region has historically been sparse, but is growing due to an influx of retirees, second-home owners, and resort developments attracted to the scenic beauty and lifestyle of the region. Tourism is a major economic force in the region.

The culture of the mountain people is rich, yet encapsulated. In the history of the region, there have been many challenges to overcome in obtaining basic infrastructure. In the more recent past, there have been barriers to economic prosperity in the face of agricultural decline, off-shore job flight, and the seasonal nature of tourism. Far from major trading centers and isolated by formidable terrain, mountain people have had to independently overcome many challenges through collaboration, determination, and innovation.

Coupled with these challenges has been the simultaneous emergence of a new economy powered by 21st Century technologies and knowledge resources. The new economic order presents a wealth of opportunity for those who have access to these resources— increased economic opportunities, higher living standards, better schools and health care, stronger communities, and more meaningful participation in government and public life—and a widening gap for those who do not. Economic development in our region increasingly depends less upon landing a single, blue-chip industry and more upon how well we have prepared our labor force and supported our small businesses and entrepreneurs to enter and thrive in a knowledge-based economy.

To create a new economic reality for itself, our region must have:

- A Poised Infrastructure →
- 1) Access to reliable, affordable high-performance broadband telecommunications infrastructure and advanced services at competitive prices;
 - ↘ 2) Connectivity to major metropolitan areas outside the southern Appalachian mountains, overcoming long distances to major trading centers and jobs with high-speed connectivity;

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| A Poised Workforce | ➔ | 3) Community-based digital literacy campaigns as well as seamless, comprehensive training and re-training opportunities; |
| A Poised Market | ➔ | 4) A process for identifying, engaging, readying, and supporting the local workforce, small businesses and entrepreneurs to transition to—as well as perform and compete in—a global marketplace; and |
| | ➔ | 5) Innovative and collaborative approaches to business market expansion to a more diversified and robust national and global platform. |

By 2002, the lack of affordable access to reliable, high-performance broadband connectivity in the region had become a serious impediment to effective provision of health care services, education, government services, and to economic development. The needs of existing businesses for connectivity to modernize and expand were great and economic development recruitment activities were hampered when prospects inquired about access and cost of broadband connectivity. Prospective buyers of second homes in resort communities wanted access to “Triple Play” and “Quadruple Play” services available in the largest cities in the U.S.: IPTV (full high-definition video entertainment over Internet protocol delivered to the home over fiber-optic cable), VoIP (unlimited voice calling over Internet Protocol), digital surveillance, and high-speed Internet service of at least 8 megabits per second.

Cell phone coverage in the mountains is also limited by the terrain. Tower siting is difficult due to the mountains, and the high percentage of publicly-owned protected natural areas where towers would spoil the scenic beauty. While mountain people had grown used to being “out of range” in many places in the region, people moving to and visiting the region were not used to being out of touch for such long distances. While people in cities are rapidly replacing their landlines with cell phones, many people in the mountains do not have that option.

While it would seem logical to place the blame on local telephone and cable companies for failing to serve the needs of the area, it would be unfair to do so. The local management and employees of these companies live in the area, their children attend schools here, and they must obtain health care and government services from local institutions. They have the same needs and

hopes as all the other residents of the mountain communities, and they do their very best with the infrastructure resources available to them. The problems are at a higher level:

- The law of supply and demand fails in areas that are so extremely difficult and expensive to serve due to formidable terrain barriers and low population density.
- From a policy standpoint, the policies and regulations that Congress and the FCC pursue do affect the ability of competitive companies to deploy and provide service. In the past few years, the FCC has not pursued policies that promote competition and protect consumers, with especially adverse results in rural isolated areas that are difficult for any carrier to serve. Instead, the FCC has favored policies that specifically benefit the large incumbents. These large, publicly-traded companies, with shareholders expecting returns comparable to investments in other industries, cannot justify the necessary investments in advanced infrastructure and services that are so critically needed in areas like the southern Appalachian Mountains. Many areas of the rural region have had no other choice but to be served by the large incumbent carrier, which in turn cannot justify investment in the area. The result of these policies is that our businesses—which are comprised mostly of small businesses and entrepreneurial ventures—have been critically affected. We have fallen far behind in the new, global economy, and our school children and rural businesses are unprepared and unable to compete.
- Federal and state incentive, grant, and loan programs have restrictions that either prevent investments in the infrastructure, or are too complicated, cumbersome, and slow to be of benefit.

The fiber-optic infrastructure serving traffic in and out of the region was deployed when population in the area was still growing slowly. Growth in population; the now critical importance of Internet access to residents, businesses, government, education, and health care; imaging applications for education and health care, and the rising demand for high-definition video and Triple and Quadruple Play services by homeowners had driven demand to the point at which

existing infrastructure was becoming too constrained to serve the demand for higher bandwidth services.

More importantly, reliability of service had become a major issue by 2002. The region is served by a number of telecommunications companies that interconnect their fiber-optic networks to transport traffic to remote switching facilities. In some areas, these interconnections form a lateral line, not a ring. This is an important concept, because a single cut of an underground lateral fiber-optic line can cause widespread outages. In a fiber-optic ring configuration with high-end electronics, traffic is automatically rerouted in the other direction on the ring when an outage is detected.

In 2002, there were 8 outages in the western North Carolina area of the region. One of these outages took down communications over landlines, cell phones, and Internet for several hours over four counties.

Clearly this created problems for residents and businesses in the region. Millions of dollars of electronics funds transactions of two local businesses in the area, Drake Software of Franklin, North Carolina, and Harrah's Cherokee Casino in the Cherokee Indian Reservation in Cherokee, North Carolina were affected.

Why couldn't the telecommunications companies serving rural communities in this area expand the capacity of the fiber-optic infrastructure and create a ring to solve the reliability issue?

It was too expensive to do so in light of the terrain barriers – extensive rock and steep terrain – and population density was too low to provide a return on investment that is expected by telecommunication carriers. A large share of the cost of expansion and building redundancy would have to be passed on to the people in the region.

In 1998, the people and organizations in the Western North Carolina area of the region began meeting with Southwestern Community College of Sylva, North Carolina to share concerns and search for answers to the dilemma.

Southwestern Community College

Southwestern Community College, a longtime community and technology leader in the western North Carolina area of the southern Appalachian region, had offered distance learning in the early 1990s to the region's schools in its service area. Needless to say, distance learning curricula are critically important to rural schools that cannot afford to hire a teacher of advanced math and science programs for only a few children. Young people graduating from rural high schools and entering college often found themselves at a competitive disadvantage with students from metropolitan area high schools with large enrollments, where college level math and science programs are a common offering.

Southwestern Community College created an interactive instructional television network, Community Link. This closed-loop, analog-based system was designed to deliver full-motion video and audio among 13 sites—including the community college sites, four public school districts, and a regional university. This network was especially beneficial to public high schools previously unable to offer low-enrollment, high-cost, advanced course work that would not otherwise be available to small rural high schools.

As capacity on the serving carrier's network became constrained, and services became more expensive to provide, Southwestern was faced with changing its analog, full-motion video system to compressed video to save bandwidth cost. The quality of video using compression technologies at that time was not high-quality, and the learning experience for students and teachers suffered. Southwestern's experiences with high cost and service quality meshed with others' in the community. Southwestern realized that the isolation of the region and the high cost of connectivity out of region would continue to exclude it from the resources needed to compete in the new economy. They understood that the region must gain the ability to reach outside the confines of the mountains—perhaps its only hope for joining mainstream America in the fruits of the 21st Century. Finally, the College was aware of other applications, rich electronic content, and on-line services that would add tremendous value to the lives of the people living and working in the region. The College and the region would not be able to seize these opportunities without better telecommunications infrastructure.

In 1999, Dr. Cecil Groves, President of Southwestern Community College and current Community Interest Director of the BalsamWest Managing Board, initiated the Appalachian Access project to examine the needs of the region, to identify the exact nature of the issues affecting rural infrastructure deployment, and develop and assess strategies for resolving the issues. The design of the project comprised an examination of the business issues, regulatory, technological, and political factors affecting rural broadband infrastructure deployment. Mr. Jim Campbell, Vice President for Information Technology, and Mrs. Laura Pennington, Community Resource and Development Director, were responsible to inform and manage this initiative on behalf of the institution. The College partnered with Sherry McCuller, Managing Director of The Institute at Biltmore, a regional nonprofit research and planning organization and current Manager of BalsamWest FiberNET, to conduct research in the four project focus areas, develop and assess strategies in light of the factors affecting infrastructure deployment in a mountainous rural area.

The project was a groundbreaking initiative to develop in-depth knowledge and understanding of the highly regulated and complex world of telecommunications infrastructure and service delivery, and a grassroots effort to lower the cost and increase availability of broadband telecommunications services in rural western North Carolina.

The Appalachian Access partners discovered that in remote, rural areas with terrain barriers, such as communities in mountains or islands and peninsulas, the highest cost component of high-performance broadband service is more often not in the “Last Mile”—the portion of the community network between the serving carrier facilities and customer premises—as is frequently the case in other rural communities. Instead, the high-cost component is often in the “Middle Mile”—the regional network between the local carrier facility and out of area “traffic aggregation hubs”. In the isolated, low population area, traffic was transported—sometimes long distances—to a remote location, where it was combined with traffic coming from other areas in the region and then transported to interconnection points where the traffic hopped onto major US long-haul networks that crisscross the country.

Internet traffic is transported to Internet Points of Presence or “PoPs” over these long-haul networks. PoPs are facilities where fiber-optic network owners physically interconnect their fiber to exchange traffic and drop and pick up services.

The closest Tier One (largest) PoP to the southwestern North Carolina and northern Georgia area of the southern Appalachian region is in Atlanta, Georgia. Two 40-story buildings on Marietta Street provide physical interconnection facilities for the fiber optic networks of almost every major carrier in the US and some international carriers to interconnect and exchange traffic and drop off or pick up “content” such as Internet Service, Internet Protocol Television (“IPTV”) and Voice over Internet Protocol (“VoIP”). This content is transported over the fiber-optic networks to other carriers and on to consumers.

The importance of a Tier One PoP cannot be overemphasized because content can be purchased at these PoPs at the lowest possible cost. A Tier One PoP spurs rapid economic growth in a surrounding area as businesses and other types of organizations and institutions locate nearby to reap the benefits of proximity to lowest-cost transport and content.

Transport on the middle mile network in the rural Southern Appalachian region was priced by the mile, and that is the primary reason why the cost to the area was up to ten times higher than higher-quality services offered in metropolitan areas.

While Last Mile services were also high-cost, the cost and service quality of the Middle Mile network represented a much greater issue. The middle mile network would have to be expanded and improved, or a new network would have to be built. This was a daunting prospect in terms of cost and time to completion.

To spur investment in this component of infrastructure, the Appalachian Access partners developed a strategy to aggregate regional demand for broadband services, and combine the demand with incentives in the form of grants or public subsidy. The demand aggregation phase took almost a year and involved 129 local businesses and institutions who all agreed to aggregate their demand in a volume purchase of services.

Project principals began the negotiation process with 21 prospects in 6 categories:

- Transport providers (fiber providers)
- Applications & managed network providers
- Cable providers
- Supply brokers
- CLECs
- ILECs

All of the vendors were provided with the following list of criteria that would be used by project principals in selecting the vendor:

- Reduced prices for advanced telecommunication services for end users - at parity with adjoining urban areas;
- Enforceable service level agreement;
- Blended rate pricing (one price for everyone on network), rolling rate based on volume;
- Flat rate, not distance sensitive, middle mile pricing.
- Reduced local loop charges (last mile);
- Length of contract term (longer-term contracts allowable for high-bandwidth fiber customers);
- Redundancy to at least two national long-haul interconnection sites;
- Number and type of peering relationships;
- Degree of fiber infrastructure in proposal;
- Time required to offer services;
- Time required to provide infrastructure; and
- Other value-added offerings.

Project principals structured the following vendor incentives:

- Marketing and aggregation of demand for telecommunications services through a regional nonprofit “Master Demand Aggregator”, the Western North Carolina Knowledge Coalition. These services would be provided free of charge to the winning vendor.
- Significant network construction subsidy.
- Continued resource development by the Appalachian Access team to raise additional sources of funding for the required network construction above the subsidy.
- Low-cost expansion and strategic positioning in a growth area. (Asheville, North Carolina is within a 2-hour drive of 7 of the top 200 growth cities in the US as listed by Forbes Magazine in 2001).

- National press and a replicable rural model for the vendor to expand its customer base throughout rural America.

The US economy began a precipitous decline as early as February of 2001—and with spectacular ill timing the telecommunications sector led the plunge. With venture capital drying up for telecommunications companies and stock prices dropping at alarming rates—project principals had to rethink its list of selected vendors—in light of several factors:

- Financial stability (cash levels replaced revenue levels and market share as our focus);
- Potential to continue to attract venture capital for approximately 18 months on declining share prices; and
- Willingness to invest in capital equipment to expand into rural markets as liquidity and risk management became key factors for economic survival.

In the most fundamental terms, telecommunications companies began to focus on cash flow and improvement of liquidity ratios. Strategic moves requiring capital expenditures moved to the bottom of the priority list for all but the most cash-rich companies. As one venture capital company analyst remarked, “If a venture-backed CLEC has to spend one dime on capital equipment to expand its market territory, the deal isn’t going to happen.” The future of the project seemed dubious.

In the end, there was one viable vendor candidate who vied keenly for the region’s business because it represented an attractive strategic positioning opportunity, as well as a way to deploy a lower cost build through the area to connect from its operations in Florida to a large new business customer in New York.

In the negotiations with this vendor, project principals worked tirelessly through every aspect of the business model—which was one of a for-profit entity looking for an internal rate of return, seeking to contain risk, minimize upfront investment, and maximize upside potential, while maintaining asset liquidity in a dangerous marketplace where Chapter 11 and divestiture loomed large.

The vendor agreed to invest significant capital in infrastructure deployment in the area in return for incentives, and assigned senior and technical staff to work side-by-side with the Appalachian

Access team to conduct the design and engineering of the fiber-optic middle mile network ring and electronics, to work through the interconnections at local carrier facilities, to develop the cost of a dedicated connection to a Tier One PoP to reduce the cost of content, to develop the cost of the demand for services identified by Appalachian Access, and to develop the structure of the transaction.

This work spanned almost a year

Tragically, the devastating terrorist attacks of September 11, 2001 occurred as the transaction was nearing final completion, and the vendor—like most companies in the U.S.—became concerned with cash conservation, liquidity, and risk. Ultimately, to the great sorrow of all involved, the vendor could not take the financial risk of entering the mountain region marketplace at that time. The Appalachian Access partners remain grateful to this vendor to this day for its tireless commitment to making an innovative plan work for the region and itself, and for the hard work of the vendor management and staff.

Appalachian Access partners turned to the public and nonprofit sectors for funding the deployment of the network and plan. Just as the private-sector viewed investment of capital into the mountain region telecommunications infrastructure as high-risk in terms of return on investment, so too did the public and nonprofit sectors. The project was viewed as too expensive and too risky by these sectors. The same factors that prevented deployment of a redundant, high-performance network by the private sector were also barriers to the public and nonprofit sectors.

After years of work, the Appalachian Access partners had to begin again, but this time they were armed with a comprehensive plan, knowledge, and expertise. The work of the Appalachian Access principals led to the conclusion that the rural mountain region would not be served with comparable infrastructure and services as metropolitan areas by the private-sector unless demand justified the investment, and even aggregated demand, incentives, and strategic advantage were not enough to attract investors in a downturn in the U.S. economy in the aftermath of the terrorist attacks on September 11, 2001. Western North Carolina needed regional private-equity investors willing to develop and own a middle mile ring that would traverse the entire region, and for economic reasons

other than return on investment in and operation of a telecommunications company or cable company.

In 2003, Ms. McCuller resigned as Managing Director of the Institute at Biltmore to concentrate her efforts full-time on developing a regional private equity funding model for infrastructure in the region. Ms. McCuller and her family, like the other members of the Appalachian Access team and BalsamWest FiberNET, live in southwestern North Carolina, and she understands first-hand the critical importance of the high-performance infrastructure to the region. She believed that her experience gained through a 20-year career with a regional investment bank in Charlotte, NC, where she served as CIO and CFO before retiring in 1992 would be important to the continuing effort and she was deeply committed to its success. Ms. McCuller formed Peregrine Management Partners to partner with Southwestern Community College and continue the work.

Regional Collaboration

By 2003, the partners knew that the only real hope for the region was to raise private equity from investors within the region whose businesses and operations depended heavily for success upon high-performance broadband and reliable infrastructure. Two organizations who were seriously concerned with the impact of the situation on their own operations responded to Southwestern's call for regional support, and BalsamWest FiberNET was born.

Drake Software

Drake Software of Franklin, North Carolina met with Southwestern Community College to explore the feasibility of developing such a network. Drake Enterprises is a family of 13 companies in the region, whose flagship company, Drake Software, was created by Phil Drake – a highly successful entrepreneur with deep roots in the region. Mr. Drake's company has grown from his development of an innovative software program to transmit tax return information electronically from accounting firms to the I.R.S., to the second largest electronic tax filing company in the U.S and a clearinghouse for approximately \$5 billion of electronic funds transactions associated with income tax returns. Dnet Internet Services, the Internet arm of Drake Enterprises, was hard pressed

to maintain reliable connectivity to major Internet PoPs during tax season in light of the network outages in 2002, and its cost of service was much higher than the cost of comparable service in metropolitan areas. Mr. Drake did not want to move his business – which has created over 530 jobs in the area – out of the area in order to obtain affordable access to needed high-performance broadband services.

Mr. Drake and his management team are committed to improving conditions in the region for their business, their families, and all of the people in the region whose prosperity is so intertwined. Thanks to the work of the Appalachian Access initiative, Mr. Drake was able to clearly see the problem, the necessary action, the cost, and the potential return to his business from cost savings and reliability improvements. He knew that from a purely business prospective, he was faced with moving his business out of the region or solving the problem independently. He was well aware of the benefits to other small and medium-sized businesses in the region, as well as the benefits to education, health care, and government services in the region. While the return on investment on development and operation of a telecommunications interexchange carrier middle mile network and connectivity to a major metro Tier 1 PoP were, on their own, not compelling—the benefits to his core business, his subsidiaries and all of the businesses and organizations in the region were clear.

In September 2003, Mr. Drake committed to an investment to begin the deployment and operation of the BalsamWest FiberNET network, and appointed two members of his senior management team to represent Drake Software in BalsamWest FiberNET: Mr. David Hubbs, Director of Dnet Internet Services, which serves Drake Enterprises and also operates as a local ISP, and Mr. Tim Hubbs, President of Drake Enterprises. Both David and Tim Hubbs and their families have deep roots in southwestern North Carolina. David Hubbs served BalsamWest as its first Chairman of the Managing Board.

Construction of what is now a 300-mile network through the southern Appalachian mountains connected to Atlanta, Georgia, commenced with construction of a the first phase of the ring connecting Franklin to Webster to Sylva, North Carolina and a spur to Cullowhee, North Carolina to allow the regional university, Western Carolina University, to also benefit.

Eastern Band of Cherokee Indians

Southwestern Community College's distance learning network serves the Qualla Boundary of the Eastern Band of Cherokee Indians. Tribal Government, headquartered in Cherokee, NC, and Tribal businesses, merchants, hospitals, schools, and residents had also been deeply affected by high-cost services, limited capacity, and reliability issues. Tribal Government began examining the Appalachian Access assessment and plan, and began discussions with Drake Software and Dnet Internet Services to explore the BalsamWest partnership to pool capital to deploy and operate an advanced middle mile network.

Principal Chief Michell Hicks and the Tribal Council authorized Mr. Brandon Stephens, Tribal Planner and Grant writer, and current Chairman of BalsamWest's Managing Board to represent the Tribe's interests in the BalsamWest venture.

Economic and Social Conditions:

Despite the scenic beauty of the Great Smoky Mountains National Park and the Nantahala National Forest, western North Carolina is characterized by poverty and diverse social needs. The multi-generational residents, largely Cherokee and Scotch-Irish, have a similar experience of independence and self-reliance that is characteristic of most mountain people. They have much in common with other Appalachian people faced with stagnant economies. Because the town of Cherokee serves as the eastern gateway to the Park, much of the area has a long history of serving traditional tourists. Yet, the area has limited employment opportunities for those with special skills, so a serious out-migration of young, educated residents has been all too typical. Much of the current employment is seasonal and at low hourly wages. Unemployment rates increase in the winter months to sometimes as great as six times the national average. These economic conditions have contributed to the need for social services that are seriously underfunded in these poor counties.

Separate statistical information related to the economic and social conditions for each sector of the population within the Qualla Boundary and Eastern Band of Cherokee Trust Property follow.

Census blocks are varied between 1,407 and 4,696 in population and the percentage in poverty ranged from 24 to 38 percent;

Beyond the large number of people living in poverty, it is also important to note the high percentages of workers who are considered underemployed in the area. The centrifuge in saying that an individual is underemployed is that residents are overqualified for the available jobs in the area. The underemployed, those earning \$7.00 to \$8.00 per hour or less, were identified by North Carolina County:

	<u>Graham</u>	<u>Jackson</u>	<u>Swain</u>
Persons earning \$7.00 or less per hour:	676	3,580	2,508
% earning \$7.00 or less per hour:	30.1 %	34.2%	48.2%

Tribal members have discovered the difficulty of establishing a business. Those who have the ability to operate a business have discovered that receiving financial assistance through recognized banks, financial institutions, and private financiers is not a guarantee. These organizations are ordinarily unwilling to take the risk of lending money to business owners on the Trust Property. Like most Native American Reservation or Trust Property, non-enrolled members are unable to own property. The financiers are unable to collect on a defaulted loan because they are unable to own the property. Smaller loans for automobiles or home furnishing are made because they are typically able to repossess them. The Eastern Band of Cherokee Indians Tribal government is able to repossess or take eminent domain over Tribal Trust Land.

The Eastern Band of Cherokee Indian trust lands encompass more than 88 square miles. The majority of Trust Property covers parts of Swain and Jackson counties with smaller tracts in Graham and Cherokee counties and approximately 250 acres in Haywood County. There are approximately 9,500 enrolled members of the Eastern Band of Cherokee Indians living on trust lands compared to the near 14,000 total enrolled members. Of the enrolled members living on trust property, 20 percent were judged to be living below the national poverty level. The population is about evenly split between males and females.

Employment is strongly tied to tourism, which is the number one factor affecting the economy of the Cherokee Indian. Summer unemployment levels have dropped as low as five percent but the situation changes dramatically during the winter months when at least 30 percent of the Indian work force is unemployed. In June 1998, 947 or 14.7 percent were unemployed out of a tribal labor force of 6,432. The United States Department of the Interior and Bureau of Indian Affairs has recently calculated the average unemployment rate to be 13.15%.

The situation has been especially difficult in the Swain County and Graham County portions of the Reservation where several industries in the neighboring community of Bryson City have either closed or faced severe employment cutbacks. In Graham County business and industry has been limited because of geographic barriers. The Appalachian Regional Commission lists Graham County as the only distressed county in the state of North Carolina, out of the near 30 counties it serves. To be a distressed county, according to the Appalachian Regional Commission, the sustained unemployment rate must be 8.6% or higher, a 19.7% or higher poverty rate, and a per capita market income of \$12,934.00 or less.

Current tribal per capita income was estimated at \$10,000 per year. Median family income was judged to be \$15,956.00 per year. The State reports the median family income as \$26,647.00 and the national average is \$16,450.00.

The fight for property and resistance to ethnic cleansing is no longer a fear for the Cherokee. The fear now is loss of identity, tradition, and disease.

In recent years, the Eastern Band of Cherokee Indians have made great efforts to encourage enrolled members to learn the Cherokee language and alphabet. The Tribe is also working in a diligent fashion to restore and recreate design, tradition and cultural significance to many things. Restoration and renovation to places like the Cherokee Ceremonial Grounds, downtown business district, and the manner business is being conducted.

Diabetes eclipses most concerns. The Eastern Band of Cherokee Indians is experiencing a crisis in diabetes prevalence that has reached epidemic proportions. Of the 14,000 enrolled

members, 1 out of every 3 persons suffers from this incurable disease. As a result of the high rate of the disease, the number of amputations has tripled in the last ten years.

The last count of Cherokee with diabetes eclipsed 1,600. Ten years ago there were 681, a number that has more than doubled. In the total number of Tribal diabetic population exists a greater number of children who have developed adult-type or type two diabetes. The real tragedy is that just when these children have reached young adulthood, they face the risk of developing diabetes complications such as leg amputations, kidney failure, and blindness. These are complications that a normal adult diabetic would face at senior adult ages. There are six times as many people with diabetes who have early and/or late stage kidney failure, heart disease, or leg amputations than someone who does not have diabetes.

Amenities in the Qualla Boundary portion of trust property include an elementary school with 600 students in kindergarten through eighth grade and a high school with 200 enrolled. There are as many as 176 students enrolled in Cherokee Head Start. There is a satellite campus of Southwestern Community College on the Qualla Boundary. The main campus is in Sylva some 15 miles away. There is also a satellite campus of Western Carolina University whose main campus is 18 miles away in Cullowhee.

Snowbird in Graham County is the most remote part of the Eastern Band of Cherokee Indians trust property. The population density is fewer than 25 people per square mile. The largest town is Robbinsville with about 800 citizens. 70% of the county is federally controlled land, a limiting factor for increasing the tax base. Ninety-six percent of county land is classified as forest, overwhelmingly as timberland with 60 percent counted as national forest. In the most recent Census the county had almost 8,000 people, which are 800 more than the 1990 Census.

In 2004, the Eastern Band of Cherokee Indians committed to an equal partnership with Drake Software to complete the middle mile network and operation of BalsamWest FiberNET. The Eastern Band also committed funding, as did Dnet Internet Services, to the development of community local loops through the communities of Franklin and Cherokee connecting to the BalsamWest regional ring. The Principal Chief of the Eastern Band, Chief Michell Hicks, appointed

the current Board members of BalsamWest representing the Eastern Band of Cherokee Indians: Mr. Brandon Stephens of Sylva, NC, current Chairman of BalsamWest's Board, and Mrs. Barbara Vicknair, former Cherokee County Commissioner from Murphy, North Carolina. Mr. Stephens and Mrs. Vicknair are enrolled Members of the Eastern Band of Cherokee Indians, and their families have lived in the region for generations.

The Eastern Band of Cherokee Indians made the decision to invest in the fiber-optic network infrastructure of BalsamWest due to network outages in the region that disrupted communications. The Tribe lost millions of dollars during these outages, and the loss for the region as a whole was estimated at \$72 million. To improve service and offer residents on tribal lands high-performance broadband service and Internet access, the Tribe made the decision to partner with Drake Software.

The Tribe has begun to realize the benefits of the regional fiber-optic network and its community fiber-optic loop. Combining the low-cost, high-performance broadband infrastructure and services with tax incentives and a location in a region surrounded by high growth, the opportunities for development became evident. The Tribe has been exploring economic development outside of tourism, including call centers, software development, health care provision, and national entertainment.

To prepare the community for such development, the Tribe has provided high-performance connectivity for the Cherokee Indian Hospital to send and receive images, telemedicine applications, and video-conferencing. The housing department is exploring amenities such as Voice over Internet Protocol telephony ("VoIP"), security and surveillance systems, high speed Internet service, remote control systems for environmental monitoring and control, and Internet Protocol television ("IPTV"). The Tribe is also building on the new connectivity for Tribal schools for distance learning, video-conferencing, ultra-high speed connectivity to other schools and colleges, high-speed Internet services, and a host of education learning tools and content now possible with the installation of fiber-optic connectivity to the Cherokee school sites.

The challenges and barriers for the Cherokee in this new work of technology is that they lack a technically trained labor force due to the years of out-migration as described earlier and the access to financial resources and technical assistance to continue to move the fiber optic project forward. The work will be slow in the beginning to build a new economy and one that will attract the best and brightest, who now leave the Reservation to seek an education and never return. The Tribe is also learning that in the beginning it must rely on its own resources as there are no available state resources from North Carolina. Federal support programs are difficult to navigate and support, and the process is long. Outdated policies prevent the Tribe from taking part in active programs that support the advanced services and infrastructure needed by the Tribe and the region. Generally the programs are designed to meet the needs of regions that live in extreme conditions where the population is low (100-200 city population); the poverty level or unemployment level is 10 times the national level; and where an almost absolute zero level of connectivity exists. Broadband connectivity is currently defined as 200 kilobits per second of bi-directional bandwidth, but this bandwidth will not support high definition imaging and programming, and it would be difficult to conduct interactive, distributed work at this speed. Requirements currently imposed are difficult to meet in most rural areas like the Cherokee Indian Reservation, but the area still needs support in the form of resources to expand and leverage what has been begun by BalsamWest.

Deployment and Operation of BalsamWest FiberNET

In 2004, Ms. McCuller invited John Short to join Peregrine Management Partners to provide needed expertise in telecommunications service provision. In December, 2004, the Managing Board of BalsamWest FiberNET retained Peregrine Management Partners as the company's Manager. Peregrine reports to the BalsamWest FiberNET Managing Board.

Construction moved forward rapidly in 2004. BalsamWest collaborated with a scenic railroad in the area – the Great Smoky Mountain Railroad – to share the railroad Right of Way through some of the most difficult terrain in the entire area – from Dillsboro over Fontana Lake and through the Nantahala Gorge, areas with very steep terrain, sections of almost solid rock, and trestle bridges over Fontana Lake created by the historic Fontana Dam. Great Smoky Mountain Railroad's collaboration allowed BalsamWest to save costs in support in the region, and the Railroad was able

to gain access to infrastructure along its railway to enhance its own and its passenger's communications capabilities.

The N. C. Department of Transportation supported the effort to bring this badly needed infrastructure to the region. Mr. Conrad Burrell, the regional representative on the State Commission, communicated the importance of this effort for community development and economic development in the area to the Commission members in the State Capitol.

In 2005, BalsamWest connected its first customer: the West Care Hospital System, which was able lowered its transport costs between remote, rural health care facilities by 25 times, and decreased transport time of critical medical imaging between facilities from 30 minutes (by car) to 12 seconds. The President of the Hospital, Mr. Mark Leonard, and the IT director of the System, Mr. Shawn Remacle, understood the benefits to the hospital and to the region of the network. Westcare's innovation and collaboration allowed BalsamWest to use facilities in two of its hospitals to create colocation facilities for the communities it served. BalsamWest installed state-of-the-art electronics and rack space for others in the community to interconnect. As a consequence of Westcare's collobation, the remote facilities in the WestCare system are located directly on a 300-mile underground network connected to Atlanta, Georgia. The WestCare system has been able to lower its cost of transport service *by 25 times*, transmit critical medical imaging *in seconds*, gain access to new and valuable medical applications and Internet service, and benefit the communities and the BalsamWest network at the same time.

Also in 2005, BalsamWest worked with Blue Ridge Mountain Electric Membership Cooperative, a Young Harris, Georgia-based organization serving Clay and Cherokee counties in southwestern North Carolina and Towns and Union County communities in northern Georgia. Blue Ridge Mountain EMC and its Executive Director, Mr. Joe Satterfield, and Community Development Director, Mr. Erik Brinke, have long served the rural region with electric infrastructure and services and are deeply committed to community development in the area. Blue Ridge Mountain EMC wished to use its electric utility poles and facilities to offer Internet services to underserved communities in its electric service areas. BalsamWest tailored its construction design in this area to meet the needs of Blue Ridge Mountain EMC, and Blue Ridge Mountain EMC obtained

long-term ownership of strands of fiber being constructed through the region. Blue Ridge Mountain EMC provided facilities in its Young Harris, Georgia headquarters for BalsamWest's use in installing its electronic equipment, and BalsamWest created a colocation site open to the community for interconnection. BalsamWest was able to obtain a facility with excellent electric utility service and back-up electric service, and Blue Ridge Mountain EMC's headquarters facility was then located directly on the regional middle mile ring, with off-net service to Atlanta. Blue Ridge Mountain EMC, BalsamWest FiberNET, and the rural communities all benefitted tremendously from this arrangement.

In 2006, BalsamWest deployed local community loops connecting to the middle mile network in Sylva and Bryson City, North Carolina, and CopperHill, Tennessee. In Sylva, BalsamWest provided a low-cost spare duct to a local Internet Service Provider and CLEC: Metrostat Communications. Since that time Sylva-based Metrostat has deployed copper, fiber, and wireless access to the downtown Sylva area and installed a free Wi-Fi system for the town. BalsamWest's investment in underground fiber-optic infrastructure began to benefit local last mile service providers. In Bryson City, BalsamWest provided duct and fiber to the Swain County Government and Bryson City municipal government for use in connecting government sites to save cost and improve capacity and transmission speed.

Also in 2006, BalsamWest completed the first phase of a project in which it takes great pride. This project, known as "WNC EdNET" is the first of its kind. BalsamWest worked collaboratively with Southern Pipeline, Drake Enterprises, the Eastern Band of the Cherokee Indians, and Blue Ridge Mountain Electric Membership – collectively known as the "ASAP Partners" ("Advancement of Southern Appalachian Prosperity Partners") to knit its middle mile network fiber together with the fiber belonging to the other ASAP Partners and low-cost construction services where new construction was required. The network design connects all 70 K-20 educational institutions in a 6-county rural school district and the Cherokee Indian Reservation. This network is a private, educational network connecting the public and charter K-12 schools together with one another and the two community colleges and regional university serving the region.

BalsamWest has assisted the public and charter schools in southwestern North Carolina in leveraging BalsamWest's investment of \$16 million in rural fiber-optic infrastructure. The ASAP Partners, working collaboratively, offered this network to the schools in a competitive bid at **more than \$60 million lower than the second lowest bid.**

The schools are being connected together on their own private fiber-optic network with virtually unlimited capacity, which is controlled by the schools. This network allows the schools to share scarce resources and work together, if they wish, to purchase services in volume. More importantly, it allows the two community colleges and regional university to connect directly to all the schools, some of which are located in remote, isolated areas, to provide real-time high definition distance learning to the classroom. The high capacity network will support concurrent, interactive programming from the community colleges and university to multiple schools. This is critical for rural schools that cannot afford to hire teachers to offer subjects to only a handful of students. Metropolitan area schools with high enrollment routinely offer college level math and science classes. Rural students are often at a competitive disadvantage in science and math upon entry to college.

The schools had initial funding of only approximately \$2.8 million upon award of the bid, awarded through the Golden L.E.A.F. (the N.C. State Tobacco Trust Fund), and Cherokee Preservation Foundation, a nonprofit organization that supports Cherokee cultural heritage. Funds were awarded through the Western Regional Educational Service Alliance (WRESA) and Southwestern Planning Commission, a regional planning and economic development organization.

Since the initial funding award, BalsamWest has assisted the schools by raising additional regional philanthropic funding of **\$3.0 million** to connect the schools and community college sites in the remote mountain communities of Robbinsville and Cashiers, NC. The cost to build the long distances through steep, rocky terrain to connect schools in these communities was high. The **Cherokee Preservation Foundation** and the **Carlton Family of Cashiers, North Carolina** stepped forward to fund these long builds and donate connecting fiber-optic strands to the schools in Robbinsville and the schools and library in Cashiers.

The schools' ownership of their own fiber network ensures their complete control and freedom to choose the "content" they wish to receive, and from whom they receive it. Content includes Internet Service, High Definition Video programming of all types, digital surveillance, video and voice telephony, dedicated data transmission, distance learning programming, and shared computing applications. BalsamWest does not require the schools to purchase these content services through BalsamWest.

Funding has been awarded and construction is underway to connect 51 of the 70 K-20 schools. These schools will be connected by during the next 12 months. There are 19 institutions left to connect, and at this time, and BalsamWest and the ASAP partners and community leaders are working hard together to raise funding to connect the remaining sites and link them all together on their own fiber-optic ring

The patient capital Drake Enterprises and the Eastern Band of Cherokee Indian invested into the region has already begun to pay tremendous rewards to all. The business model of BalsamWest FiberNET is sustainable. Its model of providing metropolitan area wholesale pricing for dark fiber, colocation, and high-capacity services within and through the region to carriers, local enterprises, Internet Service Providers, and other providers and consumers of electronic content is working. BalsamWest was cash flow positive in its first six months of operation, and again at the end of 2006. This is quite an accomplishment for any new venture, much less a venture involved in rural fiber-optic deployment and wholesale transport services in a mountainous rural area. There was a large amount of pent-up demand for connectivity within the region, as well as to connect to a major metropolitan area and Tier One Internet PoP. As with any new venture, there will be ups and downs, but with the continued support of so many people who are so dependent upon the success of this venture for future prosperity and enhancements to quality of life, it will not fail.

Since September, 2003:

- ✓ BalsamWest has deployed over 300 miles of underground fiber optic cable in the southern Appalachian region of Western North Carolina, eastern Tennessee, and northern Georgia, meeting the critical need of the region for affordable access to reliable,

high-performance state-of-the art fiber-optic broadband infrastructure, deploying underground for maximum network reliability, as well as to protect the beauty of the region.

- ✓ BalsamWest is providing direct access to lease strands of fiber in its fiber-optic network under operating or capital leases.
- ✓ BalsamWest is providing high-performance transport circuits at *wholesale carrier pricing, comparable to metropolitan areas of the US* where there is plentiful infrastructure and competitive wholesale pricing.
- ✓ BalsamWest offers a guarantee on service reliability comparable to the largest major US carriers serving worldwide businesses.
- ✓ BalsamWest is now serving local ISPs (Internet Service Providers), an electric cooperative, schools, hospitals, libraries, a mental health system, county and municipal governments, a regional economic development commission, and, soon, two real estate resort developments for Triple Play and Quadruple Play services. BalsamWest has interconnected with a major U.S. carrier and is working with an incumbent local exchange carrier to provide dark fiber and high-capacity circuits to expand service within the area.
- ✓ BalsamWest has adopted an “empty pipe” policy. BalsamWest offers only fiber and “empty pipes” (dedicated transport circuits used to transport “content” – voice, data, video and computing applications) within and through the area. BalsamWest does not sell content. Local content providers serve rural communities with low populations.
- ✓ Through the outreach of the Southwestern Community College, and representatives of Drake Software, the Eastern Band of Cherokee Indians, BalsamWest FiberNET, and all of the collaborators in the venture, rural EDCs (Economic Development Commissions”) are becoming aware of their new capability to offer facilities in the

region, connected to Atlanta, as locations for electronic operations of Atlanta companies. Rural EDCs are reviewing or deploying technology incubators connected directly to the fiber backbone for use by small businesses and entrepreneurs in conducting electronic businesses.

BalsamWest's future plans include:

- Expansion of the middle mile network into more mountainous rural communities in rural western North Carolina, eastern Tennessee, northern Georgia, and western South Carolina.
- Connectivity to first tier research universities in surrounding areas for access to additional distance learning programming for rural schools, and to allow technology businesses to tap the intellectual and research capabilities of these institutions.
- Connectivity of rural municipal and county government sites in the BalsamWest footprint to provide a secure and reliable, low-cost, high-performance, private government network so that they may obtain the same cost savings and benefits as the schools served by WNC EdNET.
- Connectivity from the Eastern Band of Cherokee Indians Tribal Government offices in Cherokee, NC to the remote reservation lands of Snowbird in the isolated, remote area of Graham County, NC.
- Additional connectivity for Triple Play and Quadruple Play content providers into the region for new residential developments connected on fiber.
- Raise awareness of public and private sector organizations concerning the broadband infrastructure situation of rural areas of the U.S. with significant terrain barriers
- Seek ongoing collaboration and support for network expansion to nearby metropolitan areas through the Southern Appalachian Mountain region.

- From a policy and support standpoint, even with our own regional fiber network we, or the companies to which we provide service, must interconnect to the existing telephone networks in each community for local loop access to premises. This means that we must lease the last mile of copper from the large incumbent carriers. Congress must ensure that our company, or the carriers and ISP companies to which we provide service, have access to the existing incumbent local network at reasonable rates.
- Mr. Chairman, we cannot rely on the old monopoly companies to drive broadband to rural America, especially in areas like the southern Appalachians that are so underserved. We have heard promise after promise from these companies “Just change this law or regulation and we will deploy advanced networks.” If we want broadband available quickly to rural America, we must open the networks to competitors so that we can insure everyone in our area is able to benefit from the good work that we have begun. BalsamWest is an OPEN network offering services to all. We welcome competitive access to our network to increase the number and kinds of advanced services that can be provided at competitive pricing to residents, businesses, government, education, and health care institutions. To build on the good work begun by BalsamWest and ensure that the maximum benefit is obtained by our region, we, and other carriers, require competitive access to local incumbent networks in the communities we serve.

Summary

BalsamWest’s work has indeed been a stunning success for everyone who has been touched by the high-performance network, thanks to the support of so many mountain people and organizations throughout the Southern Appalachian Region. Much work remains to be done, and more challenges will surely arise. But, the resiliency and commitment of the mountain people to independently solve challenges will overcome future challenges. The work of this isolated remote mountain region is a perfect example of the entrepreneurial spirit that has spurred so much innovation in the U.S. By collaboration and pooling of capital, resources, and expertise, the isolated mountain communities of

this region are networked together, and can network small business and entrepreneurs together on an ultra-high-speed superhighway of virtually unlimited capacity. The region can distribute jobs, access to information, expertise, and resources across an entire regional network, and the network has been connected to one major metropolitan area trading center, with more to come. Through bold action and perseverance in the face of seemingly impossible challenges, the Southern Appalachian Mountain region is stepping forward as a new entrant into the global new economy, bringing a wealth of innovative ideas, products and services to the world at large – which is now at their fingertips.

**SOUTHERN APPALACHIAN COMMUNITIES CURRENTLY SERVED BY
BALSAMWEST FIBERNET**

Western North Carolina:

- **Jackson County:** Cashiers, Cullowhee, Dillsboro, East Laport, Gay, Glenville, Greens Creek, Sylva, Tuckasegee, Webster and Wilmot
- **Qualla Boundary of Eastern Band of Cherokee Indians:** Cherokee
- **Swain County:** Almond, Bryson City, Nantahala , Talc Mountain, and Whittier
- **Graham County:** Robbinsville and Tulula, (crosses Fontana Lake on the railroad's bridge trestle)
- **Cherokee County:** Andrews (adjacent to Andrews airport), Hothouse, Marble, Murphy, Ranger, Suit, Tomotla and Tipton
- **Macon County:** Cullasaja, Franklin, Iotla, Pumpkintown, Rainbow Springs, Union, and traverses Chunky Gal
- **Clay County:** Hayesville, Shooting Creek, and adjacent to Ridges Country Club

Eastern Tennessee:

- Polk County: Copperhill, Ducktown and Isabella

Northern Georgia:

- Fannin County: Blue Ridge, McCaysville and Morganton
- Towns County: Friendship, Jacksonville, Hiawasse, Young Harris
- Union County: Blairsville