

Why Broadband Matters in Del Norte County

Many are not yet acquainted with the myriad benefits of broadband. This paper addresses many of the significant driving factors for why we need ubiquitous broadband in Del Norte County, why it is no longer a luxury item but critical to daily living.

Jobs, jobs, jobs!

Broadband is critical for our economy!

The introduction of broadband technologies has enabled traditional and new forms of communication to become a reality throughout the world. One fact that cuts across every region is that broadband technologies enable many applications that provide enormous benefits to citizens.

Broadband is an accelerator of economic development. This is because there are significant economic benefits to using broadband technologies for many applications. With broadband access, worker productivity increases, jobs are created, and wages grow. Broadband creates opportunities for bundling services together and enables operators to offer more services to consumers at lower prices, creating added efficiencies in both time and money. In addition, new or offshoot industries are created as a result of broadband. As broadband penetration rates grow, there will be a resulting demand for computer and home networking equipment, as well as wireless handheld devices and other equipment that facilitates broadband use.

The economic benefits of broadband can also be attributed to indirect factors, including increased e-commerce, reductions in commuting, increased consumption of entertainment, Internet telephony (VoIP), and savings in healthcare as a result of sophisticated telemedicine. For the entertainment sector, the economic benefits result from efficiencies in the distribution of goods, services, and information. The economic benefits of broadband arise from both direct and indirect sources.

The ability to telework -- to work either from home or another location, such as a telecenter outside a person's regular office -- is a very significant broadband application. Teleworking can contribute to time and cost savings for both employees and employers as well as to enable persons with disabilities to work. While teleworking is generally thought to be "working from home," it is not limited to this. It also refers to using virtual or satellite offices to work. In a virtual office, employees may share a reduced office space at a nearby employer facility, use the same offices on a rotating basis, or participate in a fee-based telework center arrangement.

Many community banks already offer online banking to help meet the ever-evolving needs of bank customers. Some banks see high-speed access as a way to expand those services. Broadband connectivity allows banks to offer everything from talking ATMs and digital check processing to two-way video interactions with bank personnel. The result is more competitive banks and efficient anytime/anywhere banking.

High-speed connections are as vital to today's transportation companies as railroad tracks, highways, and airports. Broadband-enabled devices help fleet managers monitor the routes of long-haul trailers, track cargo, and protect against security threats at ports, airports, and warehouses. Wireless broadband connections keep truckers in touch with loved ones while on the road, and help incident commanders provide emergency responders with critical data in the event of a transportation emergency.

From the oil company sending 3-D maps of the ocean floor to land-based operation centers via satellite links, to the gas company monitoring pipeline safety via fiber optic connection, to the electric utility that monitors hydro-electric generation facilities or reads meters remotely, energy companies use broadband technologies to improve the energy exploration, production, and distribution process to help bring affordable, reliable energy to customers.

Our children -- our future

Broadband is critical for our children and their futures!

Based on the data collected over the past decade, there is no doubt that more children of all incomes and backgrounds are using computers and the Internet than ever before. But it is also clear that some groups of young people -- primarily rural, low income and minority youth -- have poorer access to technology than others.

Since it was coined in the mid-1990s, the term “digital divide” has mostly been used to describe the gap between those who have “ever” and those who have “never” used a computer or the Internet. But as technology and its role in our society evolve, the concept of what constitutes access is evolving, too. Some updates to the definitions are needed, as suggested below:

Basic access: the ability to get to a: wired computer somewhere, at some time.

Quality of access: some homes have high-speed of access: some homes have high-speed connections that make it easy to view graphics and download documents, while others have much slower “dial-up” connections; and some schools have wired computers in each classroom, while others have only a few for the whole student body to share.

Technological literacy: the degree to which people know what they are doing online, how many applications they know how to use, and how easily they can learn new ones.

Access to useful content: the information and software they need the information and software they need to do their schoolwork, protect their health, or find a job.

Put these together, and the resulting definition of access is much more meaningful -- but nearly not as easy to turn into a sound bite -- as whether a child has ever used the Internet.

With wired computers in most schools and libraries and rising home connection rates, almost all children have at least the possibility of basic access. Yet many advocates argue that ongoing inequities in *meaningful* access have real implications for children’s educational and economic opportunities. These inequities are reflected in the use of terms such as “digital opportunity” and “digital inequality” as alternatives to “digital divide.”

Whatever they call the current digital divide, policy experts and advocates generally agree that increasing technology access for disadvantaged children is a worthy policy goal. They also see a natural evolution from policies focused on major infrastructure investments, such as wiring the nation’s schools and libraries, towards integrating online access into other policy objectives. Instead of technology goals, there are goals to help children learn, develop, and succeed in the workforce with the help of technology. Where policy and political differences arise is over how to define the significance of the current divide, and what role the government should play in narrowing it.

A great deal of progress has been made in closing the digital divide. Most children from all major income groups and ethnicities have gone online, but significant gaps in both the quantity and quality of access remain: where their access is located, the speed of their connection, and the skills they are taught for

making the most of their online experience. These gaps could have real implications for children. Will all young people be prepared to participate in an increasingly digital economy and culture? Or will those who are already at risk be left farther behind as those with high-quality access -- from better computers at school to high-speed connections at home -- move ahead?"

What role can or should state government play in closing today's digital divide? The remaining gaps in technology access may well be the most challenging to bridge. They are both less visible and more complex than the gaps we have already closed. As the first generation to grow up with the Internet starts to enter the larger world, we will undoubtedly learn more about the effects of the digital divide and see new directions for state policy.

In the meantime, there appears to be enough information about today's divide, in all its aspects, to inform a state and national debate about the educational importance of children's access to technology, what meaningful access looks like, and how much private and public investment is enough. While it may require new language and new approaches, this could be a very fruitful time for policymakers, industry leaders, and advocates to refocus on the digital divide, especially as it relates to the future of our state, our children.

Healthcare

Broadband is critical for healthcare!

Broadband technologies can eliminate the distance barrier for rural patients by providing access to out-of-area physicians and health care resources. High-speed wireless links let doctors deliver medical care more quickly and efficiently. Broadband-enabled medical devices are currently being used to improve the quality of life for all Americans.

The costs of health care impose an enormous burden on the economy. The latest projections from the Centers for Medicare & Medicaid Services show that annual health-care expenditures are expected to reach \$3.1 trillion by 2012, growing at an average annual rate of 7.3% during the forecast period or 17.7% of gross domestic product, up from 14.1% today. Telemedicine will become a multi-billion dollar industry. But just what are the benefits of telemedicine? A recent white paper by the Telehealth Association of Oregon (TAO) examined this from three perspectives. For purposes of this report we only list below the three perspectives and the impact category analyzed.

Economic Development and Quality of Life Perspective:

- Advancements in delivery of services
- Keeps dollars in the local economy
- Aids business recruitment and retention
- Workforce development / jobs
- Quality of life and longevity gains are worth a lot
- Clinical trials – expands opportunity for participation

Patient's Perspective:

- Access to healthcare
- Saves time, travel, and other expenses
- Healthcare at home
- Health provider integration
- Increased comfort-level with the technology

Provider's Perspective:

- Emergency Room "front line" support
- Accuracy of diagnosis / reduction of medical errors
- A multifold increase in efficiency
- Continuing Medical Education / Lifelong learning

The advent of telemedicine brings some very useful technology to the medical community and the rest of the U.S.. Yet many challenges remain ahead. Everything about the suggested programs for telemedicine also depends on the hurdle of availability. *Will broadband Internet services be available to all community residents?* Within the answer to this question lies the answer to whether telemedicine is going to be a beneficial product of the technological age.

Telemedicine, if used to its full extent, has the potential to cause great and far-reaching effects on the field of medicine. That is why it is important to take a look at the possibilities and limitations now. In that way we prepare to make the most of the technology available to us in the 21st Century.

Access to Government

Broadband is critical for government!

The big idea here is "e-the-people." E-government links people not just to each other and the e-commerce marketplace, but also to the public marketplace of ideas, debate, priorities, initiatives, innovation, services, transactions, and results. It puts ownership of government truly in the hands of all residents.

Imagine government truly of, by, and for the people -- where individuals and organizations no longer wait in line between eight and five on weekdays only, but where they can be online at any time or place they wish. A place not only to get information but also to complete transactions with government, get services, talk with elected representatives -- even to vote; a government that organizes and furnishes information and services around the needs of people while protecting their privacy.

Imagine people in government who are excited about using the Internet to make a difference and produce results, answering questions instantly, using secure networks that cross organizational boundaries to serve the public. Imagine people in business enjoying fast and easy interactions with government that produce results in the public interest.

Imagine people in all sectors—government, business, non-profits, and the research community -- working together to make this happen quickly, creatively, and cost effectively. This is e-government—*our* government of the future, not *the* government of the past.

But don't stop there. E-government is not just about speed, efficiency, or accessing information online. It can also be tailored by individuals according to their preferences and needs. Imagine individual

Americans creating customized, one-stop sites for themselves online, where they can choose to get information, conduct transactions, or communicate with their elected representatives. Imagine having your own self-designed, interactive site where you can directly conduct all your business with government whenever you wish. You can pay taxes, check your Social Security earnings, find out whether your building permit has been granted, renew your driver's license after your site has reminded you without being asked that it is coming due. You can also participate in public hearings, create communities of interest with others online, monitor voting records, and express your views to your representatives. In short, you can choose how and when to connect with government, with the ability to choose appropriate levels of privacy and security.

We do not just advocate substituting electronic for personal communications between people and public servants. Rather, we envision more strategic and satisfying personal communications of higher quality, supported by electronic information, sources, transactions, and interactions.

Public Safety

Broadband is critical for public safety!

Disaster relief and being committed to the relief of suffering people in situations of complex humanitarian emergencies and natural disasters is an enormous task. Not only does this involve technical equipment but also human engagement and methods of communication are important factors to guarantee the safety of people and nature.

A growing demand for mobile broadband services within telemedicine, fire fighting, mobile robotics and peacekeeping operations is rapidly emerging. Remote patient monitoring is one of the key aspects of crisis and disaster management is the effectiveness of frontline medical assistance to injured citizens. The concept of remote patient monitoring is the subject of intense study in both the civil and military peacekeeping sectors where the need for a reliable, secure and very high capacity mobile technology has been identified in order to address activities on the scene of incidence.

Another area of interest in this field is mobile robotics. This is also a subject of active study in both the public safety and military sectors, and is also depending upon the application of a highly reliable and broadband wireless technology. Robots designed in both micro and macro scale may be used to assist in the rescue of people from hazardous areas, to provide for automated inspection of non-accessible areas, to offer the safe and swift clearing of land mines or other hazards and to assist in the difficult process of resolving terrorist actions. Interconnection to one or more of the planned broadband satellite constellations is also in order to ensure a stable communication path from remote areas where terrestrial infrastructures may be seized during natural disasters. To be able to communicate, it is crucial that both people and various types of terminals understand each other.

Capabilities, involving either an ad hoc or day-to-day operational environment, include:

- Wireless mission-critical broadband data
- Secure and interoperable capabilities
- Multiple users with multiple applications
- Self-establishing and -healing network nodes (i.e., route diversity)
- IP-based mobile networking
- Robust management and control systems
- Flexible existing infrastructure dependence
- Dynamic and flexible radio configuration

- Real-time digital voice, video and sensing
- Still photos, complex graphics and drawings files
- Enhanced bio-telemetry information
- Maintain integrity/security of national networks

Non-profit organizations

Broadband is critical for not for profits!

Foundations and their grantees, no longer are solely at the mercy of the mass media for coverage, have an important new platform of their own from which to express views, exchange ideas, publicize their work, and continue to do what they do best -- touching the lives of millions.

Nowadays, most people expect that all organizations - including nonprofits - will be able to connect to the Internet. Internet connectivity allows organizations to perform a wide variety of mission critical tasks: use e-mail, conduct research on the web, post information to the web, create and maintain a web site and use web-based software applications. The question for nonprofit organizations is no longer whether they should have Internet connectivity, but rather what type of connection, and who is the best provider.

Not unlike other sectors non-profit organizations are increasingly taking advantage of video conferencing, distribution of educational videos, Internet telephony (i.e. Voice over Internet Protocol – VoIP), and other large demand bandwidth applications.

Recreation

Broadband is critical for recreation!

Many people have used broadband to further personal hobbies, browse the Internet for fun, play games, gamble, and download music, videos and movies. In addition, position location technology, combined with broadband, can allow people to obtain restaurant information, local maps, and museum and tourist information. Broadband will increasingly be used to download on-demand movies and other entertainment content.

Entertainment is one of the fastest growing uses of the Internet, demanding more and more bandwidth for its applications. It is also a large contributor to our economy.

Rural Communities

Broadband is critical for rural communities!

Rural folks need telecommunications as a substitute for transportation even more than urban folks. Telehealth, distance learning, e-government, and e-commerce are more important to rural communities than to urban communities because of they have lower population densities, greater travel distances and fewer local services. Most urban folks do not realize how much “drive time” is required to conduct business and government in rural areas. Broadband infrastructure suitable for telecommuting, including from rural communities to government offices in state capitals and even to local government offices, can make a significant difference to the economy and the quality of life in rural communities.

Benefits of Broadband and Other Technologies

A 21st Century Information Age Community depends on broadband and other technologies to respond to the needs of its residents, institutions and businesses in a number of ways. Here are a few to consider:

Broadband reduces and eliminates barriers related to the geography of the region

- ✓ Reduces the need for travel as business and educational activities can be conducted online without fear of disruption.
- ✓ Eliminates barriers to public safety by improving access to and linking of emergency services, public safety and infrastructure agencies, both public and private, into a systematic network for disaster preparedness without fear of disruption.
- ✓ Reduces or eliminates cost-prohibitive and logistically unworkable barriers to providing distance learning for workers with families who can learn and take courses at home.

Addresses the needs of businesses wanting reliable and advanced online services

- ✓ Improves opportunities for expanded business and revenue.
- ✓ Increases the knowledge and skills of employees in utilizing telecommunications technology.
- ✓ Decreases customer dissatisfaction and resulting revenue loss due to inefficiency caused by unreliable technology,
- ✓ Broadens the ability of businesses in rural areas to access business support activities via online companies.
- ✓ Supports a multitude of tasks - everything from credit card transactions to placing on-line employment ads - with a higher degree of confidence.

Targets key industries

- ✓ Aids in the recruitment of target industries that are dependent upon the availability of broadband and a population knowledgeable in its use.
- ✓ Supports the growth of and retention of target industries using or desiring to use online technology to support or expand operations.

Broadens employment opportunities

- ✓ Provides avenues for entrepreneurial activities that may lead to self-sustaining employment. The better the technology the more opportunity for online entrepreneurial success.
- ✓ Allows for accessing employment opportunities on a broader scale (regional, state or national).
- ✓ Supports training of employees to upgrade computer and telecommunication skills and thus improve their employability through cross training.

Improves healthcare access and providing health professions support

- ✓ Makes available video medical consultation and high-speed record and X-ray transmission
- ✓ Allows more reliable and advanced links between health and public safety services, especially important in emergencies.
- ✓ Allows for reliable and advanced distance teaming for health care professionals in isolated rural areas.
- ✓ Supports the development of and makes available to residents a database of health care resources and health education information.
- ✓ Supports funding from outside sources that support rural telemedicine programs/projects, which creates jobs and improves health care access.

- ✓ Improves the ability of health care providers to maintain business records, bookkeeping and other services that can be conducted or supported with online businesses.

Supports Education

- ✓ Allows cost effective distance learning (students telecommute) in rural areas with up to date telecommunications capabilities.
- ✓ Allows sharing of teaching materials, techniques and presentations among educators online.
- ✓ If free of disruptions, promotes group collaborative learning through conferences online that can include students and educators from around the world.
- ✓ Provides alternative resources for professional development of teachers without spending funds on transportation.
- ✓ Extends the hours beyond the normal campus hours of access to information and communication by students, students' families, and faculty, and expands the type of curriculum available.
- ✓ Facilitates curriculum coordination between public schools and public libraries.
- ✓ Reduces isolation of teachers in rural areas by allowing linkages with other educators in rural and urban settings.
- ✓ Experts from other parts of the country can be an interactive part of any classroom when the telecommunications technology is advanced.

Meets the demands of residents to have online services

- ✓ Supports the needs of rural residents to have access to the same information and resources provided to non-rural residents via online resources.
- ✓ Increases the ability of residents to engage in entrepreneurial and educational opportunities made available with telecommunications technology.

Efforts to make online technology available to all residents, regardless of income

- ✓ Increases access to advanced online technology at home, school or work and within the community (for example, libraries) eliminating information access divisions.
- ✓ Lower income residents in low-employment areas will have access to efficient online resources for job seeking within and outside of the area.

Makes online telecommunications more accessible to all age groups

- ✓ Supports the needs of individuals most likely (by age) to utilize telecommunications online services at home, school or work.
- ✓ Supports efforts to train young children and the elderly in the use of online technology.

Advances access and exchange information within the community

- ✓ Increases access to local information resources through local libraries.
- ✓ Allows public libraries to share electronic databases.
- ✓ Connects Fire and Police Departments with other departments for safety and disaster communication.
- ✓ Allows online access to publications/newspapers outside of rural areas.
- ✓ Allows nonprofit organizations to access funding resources without investing in long distance travel or costly books/publications.
- ✓ Links rural communities with other rural communities for the purpose of exchanging strategies addressing a number of rural issues.
- ✓ Is an effective marketing tool for products and services for rural business reaching to broader markets.

Expands public library usage

- ✓ One way in which information access and exchange can be improved is through better online capabilities that can be provided at public libraries. For low-income families, the elderly, and children, the public library is an easy and cost-free (usually) way to learn about and use online services.