

Executive Summary: TERRA Region Internet Use Study and Literature Review

The following are some of the conclusions from the TERRA Internet/broadband study and the literature review that are relevant for the Task Force's strategic plan.

Households: Internet and Broadband

Internet use is already quite widespread in remote communities, and two-thirds of users are online almost every day. Thus, many people in the region are already "Internet-savvy", but most are dissatisfied with slow speeds and uneven quality of service, and would like faster and more reliable connections.

Community access is important for Internet users, including those with home subscriptions. Outside the home, they access the Internet at work and at school, and also at libraries and tribal offices. About 60 percent think members of their household will access broadband elsewhere in the community, even if they subscribe at home.

There is definitely *enthusiasm about broadband* -- only 8 percent think their households definitely won't subscribe (this is considerably fewer than among rural residents across the country). About 45 percent think their households would definitely sign up for broadband. The remainder who aren't sure are primarily concerned about cost -- monthly subscription and overages or other charges.

Concerning likely *uses of broadband*, personal communications and entertainment ranked highest (social networking, downloading music and video, playing online games). However, 48 percent said they expected to use broadband for education, 45 percent said they would use Skype or similar services for video conferencing, and 39 percent said they would use broadband for work or telecommuting. The interest in education and telecommuting indicate that broadband could help residents upgrade their education and work from their homes or communities.

In many locations, more than one-third of households have their own VSATs (except in Bethel, where cable and DSL access are available). Those households with satellite service may indicate how *early adopters* of broadband may use the service, as they have chosen to upgrade to higher speed Internet service than is currently available from local carriers. Some 88 percent of satellite users accessed government services online, 87 percent accessed financial services, while 68 percent used the Internet for education, and 62 percent for work or telecommuting. These early adopters of the fastest connections available provide some indication that future broadband users will take advantage of broadband for work, education, and public and private sector services not available in their communities.

Educational use of broadband from home is likely to increase, as more schools provide laptops to students. To derive maximum benefit from the laptops (or tablets) students need to be able to access the Internet from home, where laptops can also be shared with other family members.

Other services that residents thought they would use include online banking, reservation services, and online shopping.

Cellphone penetration is high, with 87 percent of households having at least one cellphone and 60 percent of households having a smartphone. Primary use is for voice and text, but may also use their mobile phones to access the Internet for social networking, browsing the web, and sending and receiving photos, etc. However, bandwidth and speed are limited for these applications. Some residents take their smartphones to school where they can use the WiFi connection. More than 50 percent also have an iPad or other tablet, or e-reader. There will thus clearly be demand for *mobile broadband*.

The need for digital literacy training among people with limited experience in using the Internet, the generally widespread use of computers and other devices and upgrades in connectivity all indicate a need *for local employees with IT skills*. These IT workers could provide training as well as technical support in each community.

Organizations and Businesses: Internet and Broadband

Respondents from *Native organizations* commented that broadband could save them time in accessing online information and software compared to time required using current Internet services, and would be beneficial in applying for grants and filing reports with funders, and helping Tribal members applying for jobs. Some also noted opportunities to offer training in villages, and to help local entrepreneurs develop websites to sell crafts and other products.

The *tourism industry* also requires reliable communications to support their operations and build their businesses. Fishing lodges and other wilderness tourism businesses rely on telephone and email to respond to potential customers, and websites and travel agencies to attract business. Similarly, businesses in hub communities use online services to attract customers and manage their operations.

The *seafood processing* industry would definitely benefit from faster connectivity to run their back office operations, such as uploading catch information, payroll and other accounting data, and using other software for their business. They also have thousands of seasonal workers who want to use the Internet to keep in touch with family and friends and to access entertainment. Broadband wireless connectivity to boats and processing vessels would be used both to keep crews up to date on operations, as well as to provide personal broadband access for crews and seasonal employees. These applications for logistics and back-office communications as well as for personal use by employees are also likely to apply to other key industries in rural Alaska such as mining and oil and gas.

The study did not include data collection on *educational institutions* (schools and community colleges, etc.) or *health services*, as substantial information is available from other sources. However, these sectors will continue to be major users of connectivity. Schools offer access to online courses that are not available locally, and provide computers that students use to access the Internet for assignments and research projects. Continuing education for teachers is

also available online. Increasingly, schools are providing laptops or tablets for students to use in class and take home, where it is expected that they and family members can access the Internet. Alaska is a pioneer in telemedicine with some 248 sites connected to the AFHCAN network that links village clinics to regional hospitals, and regional hospitals to ANMC and other sources of specialists and consultants such as radiologists. Both schools and rural health care facilities receive subsidies for connectivity from federal universal service funds.

Highlights from the Literature Review

Broadband infrastructure appears to reduce costs and/or increase market access, and thus lead to job creation and growth in total employment. A World Bank study concludes that every 10 percent increase in broadband penetration accelerates economic growth by 1.38 percent in low and middle income countries (which are perhaps more comparable to Alaska's rural economy than national economies of OECD countries).

Several studies examined impact on sectors that are found in Alaska. For example, broadband can contribute to employment growth both as a result of infrastructure construction and spillover effects on the rest of the economy, particularly in sectors with high transaction costs such as financial services, education, and health care. Another study found that broadband deployment positively impacts mining, construction, information, and administration. Some of these findings were echoed in another study that found broadband expansion and employment growth varies across industries, and that the positive relationship is especially large for utilities; information; finance and insurance; professional, scientific, and technical services; management of companies and enterprises; and administrative and business support services. It also noted that the relationship between broadband and employment growth is stronger in places with lower population density.

Benefits can be classified in terms of:

- *Efficiency*, such as saving them time in applying for grants and filing online reports and business data; keeping track of inventory; and managing operations;
- *Effectiveness*, referring to the quality of services provided such as in health and education;
- *Equity*, reducing the distance barriers between rural and urban communities by providing access to information, entertainment, education, and other services not otherwise available remote communities;
- *Reach*, enabling Alaskans to extend their range electronically to market Native crafts, tourism, and other local assets.

Concerning *e-governance* a study found that increasing the broadband network significantly reduces inefficiency in state economies. Another study stated that use of social media as part of e-governance strategies increases social and digital inclusion and thereby political inclusion.

Studies of *natural resource industries* such as mining, fisheries, forestry, and petroleum report that broadband can be used for logistics and back office management, training of workers, and, in some cases, supporting development of new markets or trading partners.

Concerning *public safety and disaster communications*, experiences with manmade and natural disasters in the U.S. ranging from terrorist attacks to floods, oil spills, and forest fires have demonstrated the need for telecommunications networks that are robust and interconnected. In Alaska, beneficiaries could include village public safety officers, forest fire fighters, oil spill response teams, etc.

However, several studies point out that broadband and other investments in information and communications technologies (ICTs) may be *necessary but not sufficient* for economic development. As one researcher points out, the impact of broadband is neither automatic nor homogeneous across the economic system. Therefore, public policies may be needed in other areas such as telecommunications regulation, education, economic development and planning, and science and technology.

Estimating Benefits for Alaska

Estimating the value of benefits of broadband investment in Alaska was beyond the scope of the current ISER research. However, several approaches could be considered to get an estimate of the number of workers and organizations/businesses that would benefit, and some idea of new job creation.

For example, beneficiaries could include:

- Education: total number of rural students and rural teachers
- Health care: total number of rural health aides
- Public safety: total number of Village Public Safety Officers (VPSOs) etc.
- Native organizations: Native corporations, village corporations, Tribal councils, Native nonprofits, etc.
- Resource industries: seafood processing companies, mining companies, oil and gas companies, etc.
- Tourism: ecotourism, tour operators, lodges, etc.
- Other rural businesses: estimates of number of businesses from state data.

For workers in these sectors, their jobs may be enhanced and skills improved by access to broadband. For many of these entities, economic benefits may be cost savings in terms of increased efficiency or travel substitution. For example, research by ANTHC has documented travel savings from telemedicine of over \$2.85 million dollars for Medicaid from 2003 to 2009, so that for every \$1 spent by Medicaid on reimbursement, \$10.54 was saved on travel costs. For others, there may be increased revenue and possibly new jobs such as from more grant funding received by Native organizations, more business for tour operators and lodges, etc.

It is difficult to estimate the number of new jobs resulting from broadband availability, but it may be possible to indicate some types of new jobs such as:

- IT workers/trainers in each community;
- Self-employed entrepreneurs who could sell crafts, other products online;
- New types of jobs such as environmental monitoring;

- Possibly new jobs such as telework to do back office data entry or customer support, etc.

Benefits in terms of upgrading skills and accessing services such as banking and online shopping that would improve quality of life and save money or increase income could potentially accrue to all adult rural residents.

Finally, it is worth noting that while the rural Alaska population is relatively small, it is also young. For example, the median age in the Wade Hampton Census Area is 22.5; in the Northwest Arctic Borough, 25.7; in the Bethel Census Area, 26.4; and in the Nome Census Area, 27.5. Rural Alaska youth will grow up using computers and mobile phones, but will also need job opportunities if they are to remain in their communities as adults.