



**RURAL COMMUNITIES IN ALBERTA AND BROADBAND:  
ENABLING A CULTURE OF USE**

**FINAL REPORT**

***MARCH 31, 2009***

**Notes**

The research for this report was conducted from June to September 2008 under the guidance of a project steering committee. Robert Hornbrook of Alberta Agriculture and Rural Development (ARD) chaired the committee, which also included Paul Gervais (ARD), University of Alberta academic advisors Dr. Marco Adria and Dr. John Parkins, project researcher Lindsey Kotchon (ARD summer student) and external consultant and researcher Cathryn Staring Parrish.

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## **EXECUTIVE SUMMARY**

In the summer of 2008, the Rural Development Division of Alberta Agriculture and Rural Development (ARD) commissioned a research project on how rural communities use broadband technology. The research looked at innovative projects in communities throughout the province in a variety of fields, from business to health care to education. The research examined how communities use broadband technology and how the Government of Alberta and stakeholders could help other communities embrace broadband use.

The interviews and conversations with project leaders yielded much valuable information. These leaders were clear about the benefits of the technology, which include expansion of the role of libraries and schools, adding to community capacity and overcoming barriers created by distance and space. They were also open about the challenges they faced, and continue to face, in launching and expanding their projects. Among the challenges are connecting to broadband technology, securing funding, obtaining technical support, finding qualified staff and having time to help people learn and adopt the technology.

The leaders shared lessons about factors that create success. These include: collaboration locally and with external organizations; partnerships to obtain resources, respond to local needs and expand services and programs; social influences, particularly champions and networks within and beyond the community; recognizing local needs and leading people to technology use to meet those needs; community engagement and involvement; effective communications; and building models other communities can adopt.

To spread the culture of broadband, stakeholders could:

- facilitate the sharing of information about projects;
- consider the unique needs of areas of lower population density in developing programs;
- support the development of alternative approaches to providing final mile connectivity;
- support the expansion of existing successful projects into other communities; and
- ensure that support initiatives recognize the need for time for community adoption of broadband technology.

This study's limited scope highlighted several areas where future research could lead to a better understanding of the potential and challenges of increasing broadband use in rural Alberta. Possible areas for more study are the policies, programs and models in other jurisdictions, statistical information on the factors that promote or inhibit the spread of broadband use, and which connections and collaborations best promote broadband use.

The Alberta government has already taken steps to promote further broadband use in rural communities. It used some of the findings of this research to develop the Rural Connections: Community Broadband Infrastructure Pilot Program. In addition, Rural Alberta's Development Fund supports a wide range of community-focused projects that will contribute to the growth and prosperity of rural Alberta.

## INTRODUCTION

*The Government of Alberta officially recognizes the importance of rural Alberta and its contributions to the Alberta Advantage and is committed to work together with rural communities and rural Albertans to foster a vibrant and sustainable rural Alberta.*

*- A Place To Grow, Alberta's Rural Development Strategy*

Broadband technology has become part of everyday life in the 21<sup>st</sup> century. We use it to communicate, do business, learn, pursue recreational and cultural interests and overcome barriers and delays created by distance and time. It is a powerful tool that can support rural communities' efforts to remain vibrant and sustainable.

To do that, however, requires that rural residents and the Alberta government understand how technology use can support the social, economic and cultural vitality of rural communities. In the summer of 2008, the Rural Development Division of Alberta Agriculture and Rural Development (ARD) commissioned a research project on how rural communities use broadband technology. The research looked at innovative projects in communities throughout the province in a variety of fields, from business to health care to education.

The result is a collection of success stories that are models for rural communities and organizations. These stories provide lessons about the factors that contribute to successful use of broadband technology in rural areas and the challenges rural areas face. The suggestions for further action and research in this report respond to those lessons.

## **BACKGROUND**

### **What is Broadband?**

The term broadband comes from the words “broad bandwidth”. There is no established definition of broadband, however, the United Kingdom government advisory Broadband Stakeholder Group captures a common description:

*...always on access, at work, at home, or on the move provided by a range of fixed line, wireless and satellite technologies to progressively high bandwidths capable of supporting genuinely new and innovative interactive content, applications, services and the delivery of enhanced public services.<sup>1</sup>*

### **Broadband in Rural Communities**

In several countries—including Canada, the United Kingdom, the United States, New Zealand and members of the European Union—governments promote broadband technology as a means of improving rural economic, social and cultural sectors.<sup>2</sup>

However, rural broadband presents challenges. Uneven access to broadband can lead to an urban-rural broadband gap or geographic broadband divide.<sup>3</sup> This digital divide flows from a lack of technological capacity, absence of commercial providers or limited demand.<sup>4</sup>

Many rural communities lack the technology infrastructure or network-related hardware that allows access to broadband technology. Alternatively, individuals may not be able to use the technology because of a lack of a direct connection to a point of presence.

For many commercial Internet service providers (ISPs), there is no business case for providing broadband access in small communities with low population densities.<sup>5</sup> A 2006 Industry Canada evaluation of the Broadband Pilot Project, a project that addressed the broadband gap between served and unserved communities, found that the pilot project met a need that market forces could not. It concluded that extending broadband services to rural and remote communities requires government assistance.<sup>6</sup>

Canada, New Zealand and the European Union have seen low uptake of broadband in rural communities.<sup>7</sup> This may be a result of a lack of knowledge about the value of broadband technology. If people understand the benefits of broadband, such as distance education or electronic commerce, they are more likely to use it.<sup>8</sup>

### **Broadband in Rural Alberta**

While up to 80 per cent of the province’s population lives in urban areas with easy access to broadband, much resource-dependent economic activity (oil, gas, agriculture and forestry) takes place in rural Alberta where access may be limited. In addition, limited access to technology hinders the delivery of electronic government services to isolated areas.

Alberta SuperNet (SuperNet) is a broadband network linking approximately 4,200 government, health, library and education facilities in 429 communities across the province at affordable and sustainable costs to the Government of Alberta.<sup>9</sup> Additionally, Alberta SuperNet creates a competitive market for the delivery of broadband services by private Internet service providers throughout the province to rural retail customers.<sup>10</sup>

Axia SuperNet Ltd., a wholly-owned subsidiary of Axia NetMedia Inc. manages the SuperNet of behalf of the Alberta government. Private Internet service providers can purchase bandwidth from Axia SuperNet Ltd. for resale to residents, businesses and municipalities. As of fall 2008, SuperNet-connected ISPs served about 300 communities.<sup>11</sup>

Not all communities with access to broadband, including through the SuperNet, are taking advantage of its full social and economic potential. Final mile connectivity—the physical linking of homes and offices to the Internet—remains a challenge.<sup>12</sup>

Despite the challenges, there are innovative projects in Alberta successfully using broadband technology to further rural interests. The cases selected and explored for this research project show how broadband can help address local needs and enhance economic, social and cultural life in rural Alberta.

## THE RESEARCH PROJECT

This research project addressed two questions:

- How do communities use broadband technology to contribute to a culture of broadband use?
- How can a culture of broadband use be established in rural Alberta?

The case reports in this paper provide a response to the first question. The cases cover a cross section of life and represent a range of opportunities for the enhancement of rural communities through the use of technology. They are grouped according to the four pillars of sustainable rural communities detailed in the *A Place To Grow, Alberta's Rural Development Strategy*.

The projects are largely local initiatives focused on enhancing rural life. They helped the researchers identify challenges and success factors common to rural broadband projects. These findings respond to the second question, and provide a basis for possible government actions and further research to help spread broadband use in communities not yet using the technology.

The case studies do not represent all Alberta communities, but show what has occurred and continues to occur in selected communities. In addition, this study addresses how things are happening, not how many things are happening. This is an important distinction. As a qualitative study, the research project relies on subjective data, including personal opinions collected from people involved with successful cases of rural broadband use and the researchers' interpretations of the data.<sup>13</sup> These interpretations do not represent absolute truths about rural broadband use, but opinions about how existing broadband projects could influence the development of future projects in other communities.

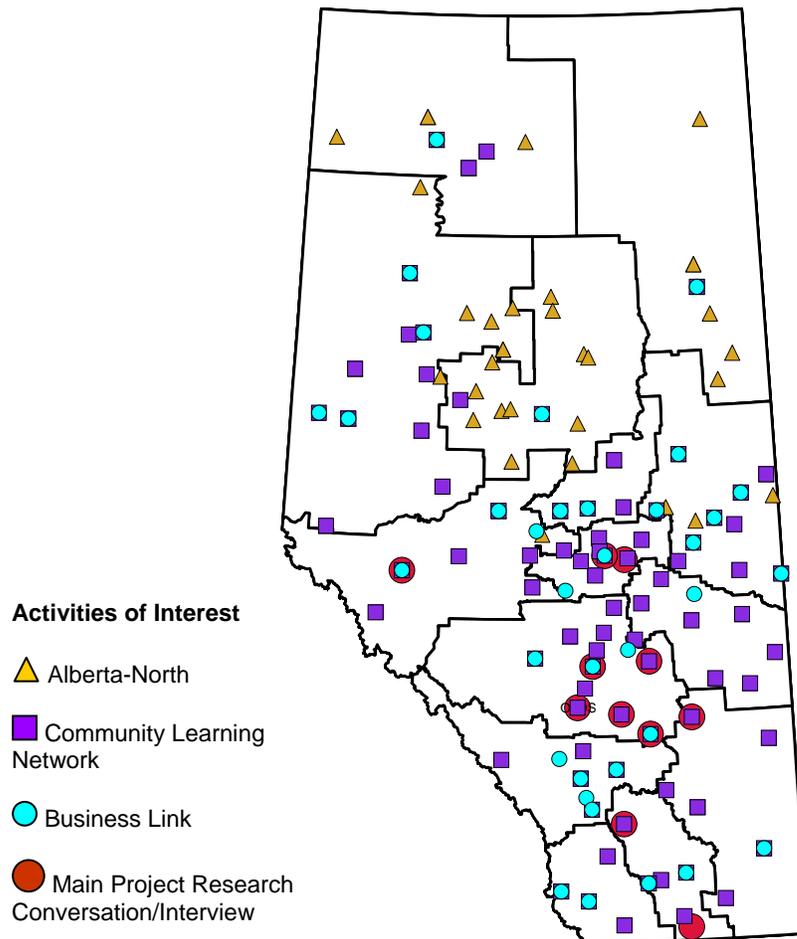
### Research Details

Researchers selected projects following consultations with key people in each community and in Alberta's business, health and post-secondary education sectors. The project did not examine government-to-government applications.

Key contacts for each project were interviewed or spoken to by telephone and, occasionally, face-to-face. Conversations were informal and focused on a topic of interest to the research project. Interviews followed a structured interview guide (Appendix A) and focused on a specific case of broadband use. The project researcher conducted most conversations and interviews in collaboration with the external consultant but also conducted some interviews alone.

For two province-wide projects, The Business Link and Alberta Telehealth, information was gathered from project websites.

### Map 1: Activity Map of Broadband Projects



Source: Alberta Agriculture and Rural Development

The researcher and the consultant analyzed the collected data to determine themes related to rural broadband use. This allowed the project team to organize their findings and suggestions for future activity and research.

The initial grouping of the projects followed the four pillars for sustainable rural communities identified in *A Place To Grow*:<sup>14</sup>

- Economic growth;
- Community capacity, quality of life and infrastructure;
- Health care; and
- Learning and skill development.

This grouping provided a way to focus the conversations and interviews. However, many of the projects address more than one pillar (see Appendix B for an overview of the key features of, and pillars addressed by, each project).

## CASE STUDIES

**Table 1: Categorization of Case Studies**

<b>Category</b>	<b>Project</b>
<b>Economic Growth</b>	Milk River Cable Club Vulcan Business Development Society Northline Angus Green Hectares The Business Link
<b>Community Capacity</b>	Three Hills Clicsite The Hanna Learning Centre The Community Engagement Sites Project of Olds College Stettler Virtual Extension Project The Royal Tyrrell Museum Distance Learning Program Hinton Municipal Library Videoconference Project
<b>Health Care</b>	Alberta Telehealth
<b>Learning and Skill Development</b>	NAIT DATE Pilot Project Alberta-North Community Learning Network

## **Economic Growth**

The following cases show how broadband technology can help grow both community and individual business economic activity. The technology offers a way to expand the suite of services available to businesses and increase their market reach. Improving access to technology within a community can also make it an attractive destination for people looking for an alternative to city life, as the Milk River case study shows.

### **1. The Milk River Cable Club**

#### *Location*

Milk River is located about 600 kilometres south of Edmonton and 20 kilometres north of the United States border. It has a population of about 1,000.<sup>15</sup>

#### *Lead Organization*

The Milk River Cable Club began in 1967. It is a community-owned society, licensed under the Canadian Radio-television and Telecommunications Commission (CRTC,) that provides cable services to the town and nearby residents.

#### *Website*

<http://milkriver.mrcable.ca>

#### *Challenge*

Internet service was a challenge in Milk River. Large telecommunications companies had no plans to provide service due to the small size of the town, and there was no sign of the SuperNet when the cable club decided to become an ISP.

#### *Project*

In 2003, local businesses and the Milk River Cable Club acknowledged the benefits of an on-line presence, including the opportunities it would provide to expand businesses. The club investigated becoming an ISP to provide high-speed Internet access. Its first attempt, arranging a radio link with a company in Lethbridge, cost \$60,000 and was unsuccessful.

In 2004, the Government of Alberta established a SuperNet point of presence (POP) in the town. The cable club developed an agreement with Axia SuperNet Ltd., which manages the Alberta SuperNet, and arranged to provide broadband access to the community through the SuperNet.

The Milk River Cable Club provides service to all interested parties, including businesses and residents of Milk River, Coutts and surrounding areas. Customers include all types of residents and businesses, including young families and seniors and banks, doctors' offices, community health centres and farmers. The club charges a flat rate of \$30 per month for unlimited Internet access and \$12 per month for high-definition television.

The club's business has grown substantially since the connection to the SuperNet. The customer base has grown from 70 or 80 community residents to over 700 clients plus 80 to 100 rural customers. More than 90 per cent of local businesses are customers. The base includes 425 customers in Milk River and more than 195 in Coutts, where service is

provided by microwave cable connected to the Coutts SuperNet POP. A new tower has allowed the service to reach another 120 customers outside of Milk River.

In the last few years, 160 people have bought homes in Milk River. People have moved in from Lethbridge and Calgary for the quality of life in a small town. The reliability of the Internet service and connection allows them to work from home or operate a home-based business.

## **2. The Vulcan Business Development Society**

### *Location*

The town of Vulcan is about 130 kilometres south of Calgary. It is located in Vulcan County, which contains the town, five villages and several hamlets.<sup>16</sup> The town has a population of 2,000 and the county a population of close to 7,000.

### *Lead Organization*

The Vulcan Business Development Society (VBDS) includes Vulcan, Vulcan County and the villages of Lomond, Milo, Arrowwood, Carmangay and Champion. The society encourages business and residential development by promoting and facilitating activities, managing investment projects and programs and creating employment.<sup>17</sup> It targets current and potential residents and businesses. The society works in-person or through broadband technology to build programs and networks to meet local needs.

The society receives half its operating budget from the Town of Vulcan and half from the county.

### *Website*

<http://www.vulcanbusiness.ca>

### *Challenges*

Like other rural Alberta communities, Vulcan faces the challenges of building community capacity and knowledge and encouraging youth to remain in the area.

### *Projects*

VBDS has two technology projects, a BizPal partnership and the Vulcan Innovation Project.

BizPal is a service that provides well-networked on-line resources to any municipality. Residents can use it to find information and answers to questions about starting a business.<sup>18</sup> The VBDS launched BizPal in October 2008.

The Vulcan Innovation Project will use broadband technology to develop a virtual rural college and green energy projects over the next three years. Project partners include the Vulcan and District Waste Commission, the Palliser School Division, Lethbridge College, Digital Alberta and various local organizations and businesses. Rural Alberta's Development Fund (RADF) is providing \$1.45 million.<sup>19</sup>

The project will provide trades training, technology and skills training, training in and testing of videoconference technology, mobile trades trailers and youth and seniors training. It will create opportunities equivalent to those in urban areas, support entrepreneurial skill development and develop higher quality employment. The goals are to encourage youth to stay in the community, enhance business succession and create new businesses.

#### *Other Activities*

The VBDS partners with Community Futures and SouthGrow, organizations that help individuals create business plans and improve their business skills. VBDS also works with local schools to provide greater community access to the SuperNet and collaborates with Lethbridge College and industry to determine the types of courses relevant to area residents.

### **3. Northline Angus**

#### *Location*

Northline Angus is a cattle farm located in Ardrossan, in Strathcona County near Edmonton.

#### *Lead Organization*

The farm is owned and operated by the Schneider family and has sold purebred Black and Red Angus cattle for 25 years.<sup>20</sup> It sells bulls, replacement females, show prospects, embryos and semen.

#### *Website*

<http://www.northlineangus.ca>

#### *Challenges*

Many agricultural producers do not recognize the importance of an on-line presence to marketing and building relationships with consumers and are limited by the slow speed and limited bandwidth of dial-up connections.

#### *Project*

For the last fifteen years, the Northline Angus operation has included a website which the Schneiders use to promote their products on-line from the farm and in person outside the farm. They were one of the first breeders of show cattle to have a website. It gives them an advantage in the Alberta, Canadian and international markets and allows them to build relationships with consumers regardless of location and time. Much of their business is done with people they have never met.

The website also gives Northline Angus market flexibility. For example, during and after the Bovine Spongiform Encephalopathy (BSE) crisis, cattle farms faced challenges when the Canada-United States border closed to sales. With its on-line presence, Northline Angus maintained international sales and exported embryos and semen.

### *Other Activities*

The Schneiders have worked to increase local knowledge of the use and value of broadband technology. They have collaborated with the University of Alberta to teach neighbours in Strathcona County how to use the Internet. In this way, they demonstrate the value of local champions in addressing challenges and expanding the use of technology within communities.

## **4. Green Hectares**

### *Location*

Strathcona County, east of Edmonton.

### *Lead Organization*

The non-profit Josephburg Agricultural Society directs and financially supports this developing project. The society has a long history of support for the agricultural community, with a focus on the next generation.<sup>21</sup>

The project also involves the Schneider family of Northline Angus and many other rural families. The project board is composed mainly of young adults from the agricultural community.

### *Website*

<http://www.greenhectaresonline.com>

### *Challenges*

Rural youth need access to more opportunities for education and training. In addition, urban residents need a better understanding of the agriculture industry.

### *Project*

Green Hectares will be an educational demonstration project designed to promote economic growth, learning and skill development. It will incorporate a physical centre for hands-on learning and meetings and an on-line presence for knowledge management, multi-media programs and wide access. It will focus on innovation and sustainability within the agricultural sector. Broadband technology will allow 24-hour webcasts of the activities at the physical centre and access to knowledge regardless of location or time.

The project will target young adults and provide education and training to promote the involvement of youth in long-range planning and improving sustainability of agricultural processes. Broadband technology is important to appeal to young farmers, especially those under age 35. However, the combination of a traditional demonstration farm with broadband technology to send and receive information could appeal to a wider audience.

The project aims to address the rural-urban gap in agricultural knowledge, increase access to knowledge and innovation and promote agricultural living.

## 5. The Business Link

### *Lead Organization*

The Business Link is a non-profit organization supported by the governments of Canada and Alberta. It is a member of the Canada Business Network. The Business Link has a network of regional access sites that have strong links with the communities in which they are located.

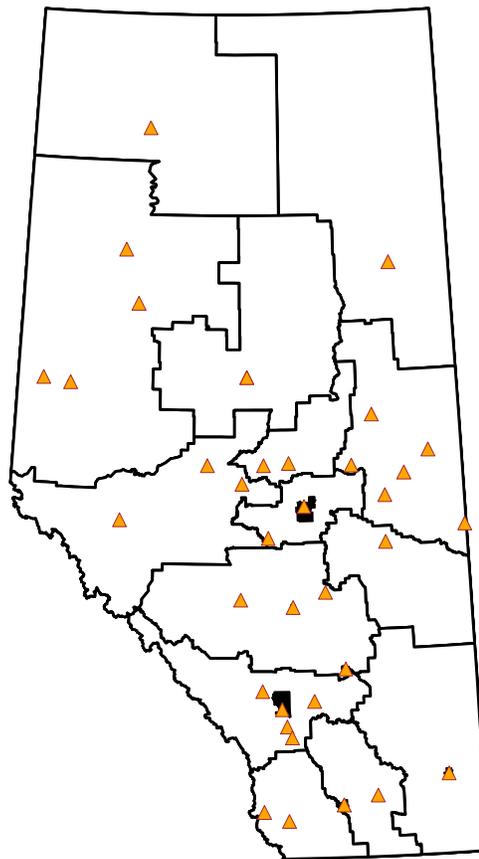
### *Website*

[www.canadabusiness.ca/alberta/main.cfm](http://www.canadabusiness.ca/alberta/main.cfm)

### *Challenges*

Distance and travel time limit opportunities for rural entrepreneurs to access information and resources to start or enhance a business.

### **Map 2: The Business Link – Regional Sites**



Source: Alberta Agriculture and Rural Development

### *Projects*

The Business Link supports economic growth by providing physical and on-line information and services to entrepreneurs and small businesses. Resources are extensive and include: information about start-up, financing and incorporation; information about government and private sector programs; a resource library; and knowledgeable staff.

Entrepreneurs can access a number of business tools, including an interactive business planner, an on-line small business workshop, a business start-up assistant and an export diagnostic tool.<sup>22</sup>

The Regional Lending Library makes resources available throughout the province. Free seminars and brown bag lunch sessions are available via videoconference, providing rural entrepreneurs with current information on a range of topics.

## **Community Capacity**

Broadband technology can expand the capacity of a community to provide a range of services to residents. As the following cases show, the technology can work in existing facilities—libraries, schools, government offices and provincial institutions—and expand resources. It increases the number and types of programs available locally and connects rural Albertans to programs and people anywhere in the world.

### **1. Three Hills Clicsite**

#### *Location*

Three Hills is located 133 kilometres north-east of Calgary and has a population of 3,300.

#### *Lead Organization*

The Three Hills Library Board led development of the Clicsite project beginning in 2004. The project receives most of its funds from Rural Alberta's Development Fund and receives support and additional funding from the Town of Three Hills. As well, ten new organizations have recently contributed \$360,000 towards the Clicsite and related projects.

#### *Website*

<http://www.clicthreehills.com>

#### *Challenges*

Because it is not available, and not a tool they use, some rural Albertans do not understand the value of the high bandwidth of the SuperNet to everyday life.

Many rural residents and organizations lack final mile connectivity to the Internet.

#### *Project*

“Clic” stands for Community Learning Innovation Centre. The Clicsite is a community hub for a range of services to help residents connect to education, business, career and public services and supports. It includes a business incubation centre that provides services from counseling, to a mail room, to computers and videoconferencing.

The Clicsite project began in 2004 when the Three Hills Library Board wanted to explore better use of the SuperNet in the library. It decided to develop the library as a virtual learning centre and a central place, or marketplace, for consumers and content providers.

The services Clicsite provides include access to the Internet and videoconference technology, promoting two-way communication and information delivery. It has been used for local projects, The Business Link videoconferences and a showcase with the Agriculture Information Centre in Stettler.

The Three Hills Clicsite is part of a network of clicsites in the province. The Three Hills Municipal Library and the Hanna Learning Centre were the original two sites. The Three Hills Clicsite was funded as a joint venture through Rural Alberta's Development Fund to give residents of east-central Alberta better access to the SuperNet.<sup>23</sup>

The Clicsite is also well-networked with other projects, including the Agriculture Information Centre in Stettler, Alberta-North, the Hinton Municipal Library, the Royal Tyrrell Museum, the Vulcan Business Development Society and Olds College. This expands the education, business and other resources available within Three Hills.

The project developed as a community capacity and social capital model, for use by all people. It was designed as a prototype that can be transferred to and used in other communities—even in the smallest library.

Implementing the project provided valuable insights into encouraging broadband use. The directors note that:

- It is important to network between organizations in a community, to create partnerships.
- Progress takes time, and it is important to start with ideas then move to action.
- It is also important to think ahead, to think about the future and next steps.
- Information technology (IT) support is crucial to technology-based programs.
- Two-way communication is important in programs.

## **2. The Hanna Learning Centre**

### *Location*

Hanna is a town of about 2,800 people in central-east Alberta, about 350 kilometres southeast of Edmonton.

### *Lead Organization*

The Hanna Learning Centre is a non-profit community resource centre that offers a range of programs for people of all ages. Its offerings include family literacy programs, youth initiatives, career help for youth and seniors' programs.

The centre started in 1976, when it offered non-credit interest programs on a part-time basis. Today, it operates during regular weekday business hours and offers multiple non-credit and credit programs for a broad range of interests, including professional development and life essentials. It targets untapped learners—those who cannot leave the community but need learning opportunities to reach their full potential. This focus is particularly important for post-secondary education.

The centre is located in the provincial building in Hanna, in space originally provided by Alberta Agriculture and Rural Development and now supported by Alberta Advanced Education and Technology. In 1998, the centre received funding for a computer lab and ongoing intern staffing from the Industry Canada Community Access Program (CAP). The CAP site offers public access to computers and the Internet.

The centre employs 20 people.

### *Website*

<http://www.hannalearning.com>

### *Challenges*

Many rural residents face barriers in accessing learning opportunities due to distance from education providers.

### *Project*

The Hanna Learning Centre offers confidential support to its clients through personal contact, by phone or by email. Individuals can register for programs in person or by phone. To this point, on-line registration has been too costly for the centre to offer, but it plans to implement this option in 2009.

The centre has two websites. One, [www.hannalearning.com](http://www.hannalearning.com), gives program information, and the other, [www.aroundhanna.com](http://www.aroundhanna.com), gives community information. The community website began with volunteer services and developed from the ground up. It subsequently received funding from the Wild Rose Foundation and was relaunched in 2008, and continues to be owned and updated by community organizations. The site is user friendly and allows area residents to subscribe to information about community organizations. For example, the local minor hockey organization has provided information and maps to events through the site. The site will soon be expanded to include the communities of Oyen, Consort, Vegreville and Taber.

The Hanna Learning Centre includes a videoconference suite. It is used in several ways: for meetings, saving time and travel and meal costs; for presentations; and for information and networking events. Post-secondary institutions have used it to provide career counseling sessions to students.

The centre was the first associate member of The Business Link network. It offers The Business Link brown bag lunch sessions, business workshops and guest advisor sessions by videoconference. Meridian Community Futures pays The Business Link annual \$1,500 fee.

The centre has taken creative approaches to, and spent much time on, securing sustainable funding. It receives a mix of government and non-government support. Alberta Advanced Education and Technology provides the centre with space and a subsidy for its SuperNet connection. Agriculture and Agri-Food Canada provides expertise and other support. Other organizations fund specific programs, and the Town of Hanna shares the cost of a semi-annual course and program guide that includes community programming and services information.

The centre has a small advertising budget, which makes communications a challenge. In addition to the semi-annual guide, it uses weekly newspaper ads, a community newsletter and word of mouth.

Finding skilled regular and technical staff is also a challenge. The centre relies on professional development to enhance staff skills.

A non-technical intermediary works with technical resource staff in the local Special Areas Administration, the Prairie Land Regional School Division and Netago, a local ISP, to secure technical support.

### **3. The Community Engagement Sites Project of Olds College**

#### *Location*

Olds is a town of over 7,200 people located about 210 kilometres south of Edmonton.

#### *Lead Organization*

Olds College is a post-secondary institution that grants certificates, diplomas and applied and baccalaureate degrees in a range of courses, including agriculture, horticulture, land and water resource management, animal sciences and business. It also provides non-credit courses for adults in a variety of cultural and recreational areas. The Community Engagement Sites project is an outreach project of the Community Learning Campus.

The Community Learning Campus is a joint venture between Olds College and Chinook's Edge School Division No. 73. A key piece of the campus is the Bell e-Learning Centre, developed in 2006 in partnership with Bell Canada. The e-learning centre is one of 12 innovation centres sponsored by Bell across Canada, and provides specialized facilities and technology, including broadband technologies to enhance both on-site and remote learning. Facilities include a computer commons, geospatial technology laboratories, a media services studio and an International Centre.<sup>24</sup>

#### *Website*

<http://www.oldscollege.ca>

#### *Challenges*

Many rural residents lack access to broadband services and distance learning opportunities.

#### *Project*

The Community Engagement Sites project helps communities connect to broadband resources. It targets rural communities in which broadband services are not readily available from private Internet service providers.

The first four engagement sites are Cremona, Delburne, Bowden and a site serving Red Deer using community connections in schools or libraries. Current sites use schools; future sites, such as those planned for Carstairs and Innisfail, may use libraries.

Olds College is a content provider.

The goal, over two years, is to continue to set up new sites and encourage people to experiment with new methods of delivery, sites to share strengths and communities to participate in the global marketplace. Ongoing challenges include securing community involvement, time and funding.

The Community Engagement Sites project manager relies on local community involvement to set up sites. In each outreach community, he seeks out people with the interest, involvement and time to help address community needs. He encourages development of a social space and organizational structure within each community to ensure the site's continued operation and helps develop connections with content providers. He also documents broadband technology's benefits to communities, such as community capacity building, business interest in implementing best practices, support services and offerings for post-secondary education. The involvement of local champions is important to ensure that each site develops in a way that fits the community.

#### **4. Stettler Virtual Extension Project**

##### *Location*

Stettler is located 200 kilometres southeast of Edmonton and has a population of around 5,800.

##### *Lead Organization*

The Agriculture Information Centre of Alberta Agriculture and Rural Development began in 2002 as a call centre that provided a first point of contact between members of Alberta's agriculture industry and the department. It has 22 staff members and 15 specialists.

##### *Website*

<http://www1.agric.gov.ab.ca/general/progserv.nsf/all/pgmsrv50>

##### *Challenges*

In rural communities, face-to-face meetings and consultations can create significant time and travel costs for individuals, agencies and businesses. Winter weather can also make travel hazardous.

##### *Project*

In 2004-05, the Agriculture Information Centre purchased a videoconference unit, becoming one of two locations for the technology within Alberta Agriculture and Rural Development. Initially, the centre had no external access for videoconferences. It installed an external switch to connect to the SuperNet to solve this problem. The centre now has two videoconference units. They are used for meetings, eliminating the need for travel and allowing people from multiple locations to participate, increasing productivity.

The Virtual Extension project is also intended to build community and business capacity. The centre has done external presentations through The Business Link and participated in a video showcase with groups in Three Hills, Hanna and Vulcan. Another application would be discussions on particular topics between the Agriculture Information Centre and groups in different locations throughout the province.

Individual farmers can connect with the Agriculture Information Centre by videoconference. This allows them to have face-to-face discussions with experts and to actually show a specialist a problem.

The Virtual Extension project uses a team approach to help meet the challenges associated with the technology. Those challenges include:

- Connections – it can be difficult to find people who have access to the technology and the knowledge and interest to use it. The centre has worked with other communities, such as Three Hills, but there is a need to find more potential connections.
- Support – in some communities, qualified IT support can be difficult to find. Technology support provided through technology bridges can be helpful, but users need to know what questions to ask.
- Time and practice – communities and individuals must recognize that they need time and practice to learn to use the technology.

## **5. The Royal Tyrrell Distance Learning Program**

### *Location*

The Royal Tyrrell Museum of Palaeontology is located in Drumheller, a town of 7,900 people about 350 kilometres south of Edmonton.

### *Lead Organization*

The ATCO Tyrrell Learning Centre, an education wing of the museum, hosts the distance learning program. The centre has five classrooms, including the Distance Learning Studio, and a videoconferencing suite connected to the SuperNet.

### *Website*

[www.tyrrellmuseum.com](http://www.tyrrellmuseum.com)

### *Challenges*

Rural communities face challenges in accessing facilities like museums, and rurally based institutions face challenges in showcasing their resources to a wide audience.

### *Project*

The Distance Learning Program uses videoconferencing to deliver museum programs to a wide audience, both provincially and internationally. Groups with access to videoconference equipment can participate in a 45-minute Royal Tyrrell Museum experience for \$125 per session. Museum staff provide basic technical assistance when needed. Most users are grade schools, but libraries, the general public, senior centres and day camp groups have also used the programs.

Programs work with the Alberta curriculum for kindergarten to grade 12 and provide virtual tours of the museum suitable for any group. The museum provides videoconference information sessions for teachers to show samples of programs and answer logistical questions.

Videoconferencing allows this world-renowned museum to make its collections and experts available across the province and around the world. Videoconferences can be booked at any time, avoiding the rush of in-house group visits and the environmental impact of travel to the museum.

The Distance Learning Program launched with three offerings in 2006 and grew to eight in 2008. Museum staff delivered over 125 sessions the first year and 180 the second. The original three-year program plan did not include international connections, but opportunities arose and these connections occurred in the first year. International connections have included schools in the Honduras and the Netherlands.

Future plans include equipment upgrades and expanding the number of programs to about a dozen, to satisfy all grade levels. Staff continue to build expertise in videoconferencing technology, including green screen, multimedia development and interactive programming.

While the content of the museum's programs cannot be transferred, the best practices in program establishment, booking and workshop development have value for other institutions. Staff have learned to pre-plan programs in stages, with new elements tried one at a time and then evaluated and modified as needed. The project leaders believe it is essential to have well-trained staff with the proper skills to provide support to participating groups and build long-term relationships.

## **6. The Hinton Municipal Library Videoconference Project**

### *Location*

Hinton is located 288 kilometres east of Edmonton on Highway 16 and has 9,800 people.

### *Lead Organization*

The Hinton Municipal Library is an important community centre. It provides hard copy resources as well as extensive on-line resources and services. Its role as an information source is particularly important as the town lacks a bookstore.

### *Website*

<http://www.hintonlibrary.org>

### *Challenges*

Rural Albertans' access to places and ability to make connections is limited by distance, especially in the winter.

### *Project*

In 1995, the library was the first place the public learned about the Internet. Instead of buying their own computers, people used the library's Internet connection. This trend has continued, and the library has expanded from one publicly accessible computer to five, which are in constant use.

Since 1996, the library has received technical support from the Grande Yellowhead Regional School Division No. 35. The library pays \$5,000 annually for that support, and high school students in the division receive free library cards.

Videoconferencing is the newest advancement at the library. A SuperNet connection to Hinton, which came in 2001, made videoconferencing possible. In 2004, the library was

renovated and expanded to include a multi-purpose program room with top-of-the-line videoconferencing equipment and a SmartBoard. The renovation cost \$2.8 million, with half coming from grants and fundraising and half from the Town of Hinton. Ongoing funding comes from provincial and local governments, including Yellowhead County. The school division provided advice on the renovation.

The library and local schools use the videoconference technology extensively, for example, to connect to programs offered by the Royal Tyrrell Museum. It is also used for adult education, including literacy programs. For example, the school division collaborated with the Hamilton Botanic Gardens to offer an adult course on African sculpture.

With the exception of educational uses, the library board charges fees for use of the equipment to partially recover the \$15,000 equipment costs. Community organizations and individual private contractors pay fees for business applications, interviews and large videoconference events. Currently, the rates are \$100 for the first hour and \$50 for each following hour.

The library partners with The Business Link to host its large brown bag lunch sessions. It also provides an alternative videoconferencing facility for the Hinton Hospital.

There is a constant effort to work within the community to maximize the use of all resources. Videoconference capacity has become an important tool for the library and the community at large. The videoconferencing facility gives the Hinton Municipal Library potential to expand its own and community programming as more libraries come on stream. There is also potential for schools to expand further into communities and for communities to share programs to create value-added opportunities for rural Albertans.

## Health Care

This research project excluded areas of direct government action such as health care services. However, health care is one of the four pillars essential for sustainable rural communities. The researchers looked at health care from the patients' point of view, with an interest in how broadband technology could help rural residents meet their health care needs at home. The Alberta Telehealth project discussed below shows how technology can expand the range of health care services and information available in rural communities.

### 1. Alberta Telehealth

#### *Location*

There are 641 Telehealth endpoints across Alberta.

#### *Lead Organization*

Alberta Health and Wellness

#### *Website*

[www.albertatelehealth.com](http://www.albertatelehealth.com)

#### *Challenges*

Rural residents often do not have access to needed health services or specialists within their communities.

#### *Project*

Telehealth refers to medical services that use technology to overcome distance barriers. It uses broadband videoconferencing technology to transmit pictures, voices and information to improve the effectiveness of health care decision-making.<sup>25</sup>

The technology is used:

- By specialists to consult with patients or other physicians;
- To deliver rehabilitation sessions, such as physiotherapy; and
- To serve home care clients needing services such as wound care, palliative care or children's health services.

Telehealth videoconferencing provides real-time audio and visual consultation between patients and health care providers in health care facilities and physicians located elsewhere. Every hospital in Alberta has videoconference equipment.

It supports new models of health care by facilitating interdisciplinary consultation, provides follow-up care that reduces repeat hospitalizations, provides health services and workforce services to meet local needs, increases the capacity of clinicians to deliver services and supports rural health care providers.

Telehealth is also used to deliver continuing education to health care providers in remote communities, and to give these providers access to current resources on health care

topics. It also allows administrators to hold meetings involving people from across a large geographic area.

The Alberta Telehealth network is an important tool in the Alberta government's vision for the future of health care in the province. It sees increased use of the network as a way to improve access to high quality services in rural Alberta.

## **Learning and Skill Development**

Most of the cases in this study support learning and skill development. However, the following cases have a particular focus on expanding learning opportunities in rural communities. They target people unable to leave their communities due to other commitments. The projects use technology in many ways, often in combination with personal interaction or counseling and hands-on practice, to deliver credit and non-credit education to rural Albertans

### **1. The NAIT DATE Pilot Project**

#### *Location*

The Northern Alberta Institute of Technology (NAIT) main campus is located in Edmonton, and the Distance Apprenticeship Training and Education (DATE) pilot project targeted students in northern Alberta. Students in Drayton Valley, Edson, Grande Cache, Hinton, High Level, Jasper, Westlock and Whitecourt participated in the project.

#### *Lead Organization*

NAIT is a post-secondary technical institution that provides technical training and applied education to meet industry needs. The project also used storefront locations with high-speed Internet access provided by the Yellowhead Region Education Consortium, the Pembina Educational Consortium and the Fort Vermilion School District.

#### *Contact*

Bill Fricker

#### *Challenges*

Rural residents are often unable to participate in education and training opportunities due to an inability to leave jobs or families for long periods of time.

#### *Project*

The NAIT DATE pilot project offered training in welding and electrical trades using on-line course delivery modeled on existing paper distance-delivery programs. Students did not need to have a computer at home but could access the program through local Internet-connected storefronts.

Course delivery involved real-time interactive videoconferences between students and instructors using the SuperNet as well as webcasts of archived videoconferences that could be viewed at any time. Students could take part in on-line text chats. Students also received in-person instruction and hands-on experience. Mobile trades trailers and instructors traveled to the students' communities for selected activities.

A team of 12 to 15 people and representatives of the storefront partners delivered the program.

The program allowed apprentices to live in their home communities, maintain jobs and family living arrangements and save moving, rent and travel costs.

Employers were involved from the start. However, it became difficult for some employers to release workers when business was busy, resulting in some students working significant overtime. This made it difficult for some to complete courses and increased the potential for more drop-outs with technology-assisted training than with traditional training. However, the students who completed the program received grades similar to those received by students in traditional training.

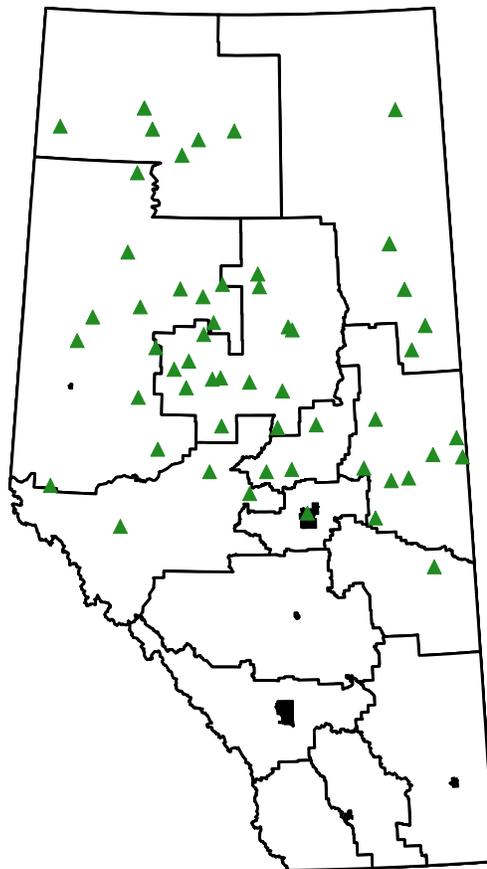
At the time of this research the NAIT DATE program was a pilot project. It received praise within the NAIT community and from students.

## 2. Alberta-North

### *Location*

There are 80 Alberta-North Community Access Points (CAPs) across northern Alberta.

**Map 3: Alberta-North Community Access Point Locations**



Source: Alberta Agriculture and Rural Development

### *Lead Organization*

Alberta-North is a partnership of post-secondary institutions including Athabasca University, Grande Prairie Regional College, Keyano College, NAIT, Northern Lakes College, Portage College and Aurora College in the North West Territories. The

partnership began in 1994 as a way to increase and improve access to education and training opportunities for learners in northern Alberta communities. The member organizations pooled their resources and created a network of education services.

The partnership believes that providing training to northern peoples in their region is a sound investment because people who learn in the north tend to stay in the north. They also believe that providing education in their home communities reduces the financial barriers to education by eliminating moving expenses.<sup>26</sup>

Since 2005, Alberta-North has received an annual grant from Alberta Advanced Education and Technology. The seven partner institutions pay an annual membership fee.

#### *Website*

<http://www.abnorth.ab.ca>

#### *Challenges*

Some rural Albertans face financial and distance barriers to obtaining a post-secondary education. In addition, communities often lose residents who leave to pursue an education.

#### *Project*

Alberta-North targets adult learners interested in post-secondary education and training. Students can advance their education on-line and feel part of a post-secondary institution while remaining in their home community. The partnership uses broadband for course delivery, to support media-rich courseware that includes multimedia, audio and videoconference content and to allow on-line research and other applications.

Expansion plans include encouraging more students to register for post-secondary courses, although it has sometimes been difficult to get people to understand the value of post-secondary on-line or distance education. Plans also include adding more communities to the CAP list. The goal was to add three CAP sites per year, but only five were added in the last three years. There are significant challenges.

Communities must form a committee and financially support CAP sites in collaboration with the regional college and Alberta-North. Sites need local funding to pay the costs of a broadband connection and ongoing staff training. This funding can be difficult to find and sustain.

The costs of establishing a broadband connection can be prohibitive. CAP sites that existed when the SuperNet was launched were connected at government cost. The cost of connecting new or relocated CAPs falls to local communities. An alternative to a new connection would be cooperation with government or private facilities already connected to the SuperNet, but these facilities do not always have the physical space needed for individuals and groups of students.<sup>27</sup>

Staffing challenges include recruitment, training and obtaining distance learning software.

Alberta-North's executive director points to several lessons learned from the partnership's experience:

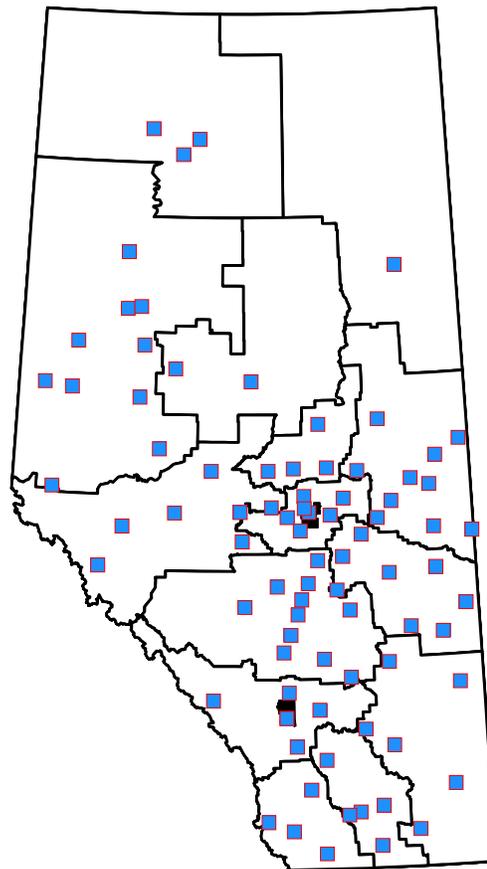
- Collaboration is hard work, and there is no quick fix;
- It takes time to get a project up and running;
- Relationship building is essential; and
- Community support for the network, CAP sites and students is vital.

### **3. The Community Learning Network (CLN)**

#### *Location*

There are CLN Community Adult Learning Councils in 81 Alberta communities

#### **Map 4: Community Learning Network Locations**



Source: Alberta Agriculture and Rural Development

#### *Lead Organization*

The Community Learning Network (CLN) is a non-profit organization primarily funded by Alberta Advanced Education and Technology, the Access to the Future Fund and sales and marketing. The CLN has offered continuing education and skills training to adults in

their home communities for over 20 years. The main office is located in Edmonton, and each of the 81 Community Adult Learning Councils (CALCs) serves a community and surrounding area. Alberta Advanced Education and Technology must approve CALCs, and they are eligible for Rural Innovation and Access to the Future grants.

*Website*

<http://communitylearning.info>

*Challenges*

Rural communities often have limited local educational opportunities for residents.

*Project*

The CLN provides leadership, support and resources to CALCs. Its philosophy encourages relationship building, community engagement, collaboration and use of technology for alternative service delivery. Programs are available to community residents 18 years and older with or without computer experience. Programs are non-credit and provide information and skills training useful for day-to-day living, such as English as a Second Language, literacy, employability enhancement, career planning and professional skills. CALC coordinators help students plan and pursue education.

In January 2008, the CLN received \$2 million from the province's Innovation Fund for the iCCAN project that will give 160 organizations across the province access to videoconferencing technology through the SuperNet.<sup>28</sup> The project will provide opportunities for learning, professional development and community engagement and capacity building. It will improve business and administrative efficiency within the organizations and increase their access to technology support.

## **FINDINGS**

The interviews and conversations with project leaders yielded rich data on the use of broadband technology in rural Alberta. These leaders were clear about the benefits the technology brought to their communities, and were open about the challenges they faced, and continue to face, in launching and expanding their projects. They also shared lessons from the experience about what factors help create a culture of broadband use.

### **Benefits of Broadband**

#### **Expanding the role of libraries and schools**

The case studies show how rural communities can use broadband technology to expand the use of libraries and schools to sustain their economic, social and cultural vitality. This has taken two forms.

The Three Hills Clicsite and the Hinton Municipal Library are community-inspired initiatives. Individuals and organizations in each town saw the potential of broadband technology to expand the traditional role of the public library. Both projects created community centres used by schools, businesses and the public to connect with programs offered elsewhere, hold meetings, or conduct one-on-one discussions. This expanded role adds to what programs can be offered within the communities to their residents and offers time and cost savings to businesses and organizations.

The Olds College Community Engagement Sites' approach is to take advantage of existing points of presence (POPs) in libraries and schools to encourage communities to embrace the potential of technology. The POPs provide a focus for the building of both community support and involvement and actual programs that use broadband technology to meet local needs. Olds College, a group from outside the community, provides the spark and initial support for each site.

#### **Building Community Capacity**

The majority of projects studied provide access to facilities and technology that would not otherwise be available to residents of the communities, such as high-speed Internet access and videoconferencing. In addition, many of them give residents access to programs offered by organizations outside the community, such as The Business Link programs or post-secondary courses.

In Hanna, this expansion of community capacity occurred gradually. The Hanna Learning Centre started out offering non-credit interest programs and gradually added programs that provide professional development, life skills training and credit courses. It has built relationships with the local school division to provide school outreach and the Registered Apprenticeship Program, with post-secondary institutions to provide student career counseling, and with The Business Link to help deliver its workshops and brown bag sessions to local entrepreneurs.

The Vulcan Innovation Project will expand both the educational and economic capacity of the community. The virtual college will give local residents, particularly youth, more

opportunities for learning. Economically, the project will add to the skills of both employers and employees and potentially lead to new business opportunities through green energy projects.

The Olds College Community Engagement Sites, while led by a post-secondary institution, recognize the potential of broadband technology to support and expand recreational and cultural opportunities within a community. For example, in Cremona, the first Community Engagement Site, one of the local site's council members, a yoga instructor, sees the technology as a way to reach people who cannot travel to her classes.<sup>29</sup>

Alberta Telehealth represents both an expansion of services within a community and an extension of government services via broadband technology. It enables people and health care providers in rural and remote communities to access specialist services located elsewhere. In addition, the government has recognized its value as a tool to expand the health and health education services it can provide to rural Alberta.

Several projects, such as Northline Angus, target the use of broadband technology as a business and community marketing tool, to expand the market reach of local businesses. Others, like The Business Link and projects that provide links to it, increase access to business tools.

Finally, the Milk River Cable Club shows how expanding the availability of broadband access can be an asset to community growth. The existence of easy access to the Internet has attracted new residents to the community from larger urban centres.

### **Shifting Time and Space**

One of the challenges faced by residents of rural communities, particularly in the winter, is the need to travel to meetings, events, educational institutions or places of interest. The projects in this study have shown how broadband technology can overcome the barriers created by distance and, in doing so, open up opportunities for more people and save time and costs.

With videoconferencing—a key component of the projects in Stettler, Hanna and Hinton and the Alberta Telehealth, NAIT DATE and the Royal Tyrrell Museum of Palaeontology distance activities—it no longer matters where individuals or organizations are located. The technology allows participation in real-time meetings, workshops and classes by people throughout the province, country or even the world.

Broadband technology is particularly useful in providing education to rural residents. The NAIT DATE project, Alberta-North and the Community Learning Network take distance learning to a higher level through the use of a multi-media approach. Students can access videoconference classes, webcasts of classes and course materials and conduct research over the Internet. They can also participate in one-on-one or group discussions. And they can do so without the costs and disruptions to jobs, families or other commitments a move to a larger centre for education would involve. As noted in the Alberta-North

project, the ability to obtain education and training in their home communities makes it more likely that people will stay in those communities.

## **Challenges to Broadband Use in Rural Communities**

### **Connecting to Broadband**

Rural communities face a mix of challenges in establishing broadband connections: a lack of final mile connectivity, high costs of connections or a lack of a service provider.

Final mile connectivity refers to the broadband connection to a home, business or office. While some projects overcome this barrier to an extent by using the point of presence location as the centre of their activities, the expansion of access would encourage broadband use as part of everyday life and equalize opportunities between rural and urban areas.

The cost of a connection to the SuperNet or other provider can be high. In Consort, for example, the Learning Centre is located across an alley from the SuperNet point of presence (POP). The cost to connect to that POP was reported to cost \$15,000, which was prohibitive for the Learning Centre.

Alberta-North has encountered cost issues in connecting to the SuperNet. For CAP sites that existed when the SuperNet launched, the provincial government covered costs. However, new sites require local funding for the connection. Facilities that already have SuperNet connections often do not have the space Alberta-North needs to provide programs.

There are various technologies available for connecting to broadband services, including: fibre optic cable connections; digital subscriber line (DSL), fixed, mobile and satellite wireless technologies; broadband over power lines (BPL); and unloaded copper. Each of these alternatives have their own set of advantages and disadvantages, such as availability, latency, speed, interference, licensing requirements, range, or other technological or cost limitations, or regulatory issues.

Unloaded copper refers to standard copper telephone lines that have no services—no dial tones or connections. The Three Hills Clicsite, for example, is examining the use of unloaded copper to expand their access to broadband. Wireless technologies allow connections between wired networks and wireless devices, and the development of wireless (Wi-Fi) hotspots is becoming more common for very short-range connections. In rural Alberta, Wi-Fi, Wi-Max, satellite and related wireless technologies are alternatives to fibre optic cable for final mile connectivity.

As noted earlier in this report, there is often no business case for commercial ISPs to serve a small rural community. The case studies provide examples of how to overcome this challenge. The Milk River Cable Club, an existing community-owned organization, expanded its high-speed broadband services when it connected to the local SuperNet POP. It had the resources to install the necessary towers and fibre optic cable to make

personal and business connections possible. In Hanna, The Special Areas Administration has developed a public-private partnership to establish wireless high-speed broadband solutions. Some municipalities have partnered with ISPs to offset the high costs of establishing broadband networks in hard-to-service areas by investing in towers and related infrastructure.

The government, project participants and other stakeholders continue to look for solutions to this challenge.

### **Finding Funds**

Securing funding to develop local sites for broadband access and use remains a challenge for many rural communities. For example, the executive director of Alberta-North notes that CAP sites need local funding for broadband connections and staff. In its case, a lack of local funding has slowed expansion from a planned three new CAP sites a year to an actual five in the last three years.

The Hanna Learning Centre learned that securing sustainable funding requires a creative approach, and the centre spends a lot of time on funding applications. It has been successful: the centre has secured a mix of funding, expertise and other support from provincial, federal and municipal governments and from other organizations for specific projects.

The government and stakeholders continue to explore creative approaches to funding, like those used by the Hanna Learning Centre.

### **Obtaining IT Support**

Finding people who can provide knowledgeable support to all users when needed is a challenge.

Bridges to technology support provided on-line or as part of applications are one solution. However, as the lead for the Stettler Virtual Extension project notes, users need to know what questions to ask.

Another solution is partnerships with organizations that have in-house technical support. The Hinton Municipal Library has an arrangement with the local school division that gives it access to the division's resources. In Hanna, the learning centre has partnerships with the Special Areas Administration, the school division and a local Internet service provider. They have hired a non-technical employee to work with the resource staff from all three partners.

Alberta Telehealth and the Royal Tyrrell Museum have access to in-house support. Alberta Telehealth can rely on the support health regions provide. The museum is building its own IT resource by training staff in new technology and also supplies some customer service. It provides teachers with basic technology support when needed and hosts information sessions to, in part, answer logistical questions.

### **Finding Qualified Staff**

Several project organizers pointed to a difficulty in finding qualified staff for their programs, particularly for IT support. They therefore rely on providing staff training, which has costs and takes time. Alberta-North relies on local funding for staff training; the Hanna Learning Centre hires people and then trains them to meet its needs.

The new Rural Connections: Community Broadband Infrastructure Pilot Program recognizes this challenge. It provides funding for outreach and extension projects that can include training. Other programs may also support staff development.

### **Time**

In every community, some people are early adopters of new ideas, products or services, others are late adopters and most people fall between the two. Full adoption of new technology will therefore take time and will depend on the number of early, mid and late adopters in the community.<sup>30</sup>

The Stettler Virtual Extension project team observes that it takes time and practice to use the technology successfully. The Three Hills Clicsite directors note that, just as happened for the telephone, it will take time for broadband technology to become a part of everyday life.

## **Factors that Contribute to a Culture of Use**

### **Collaboration**

Collaboration is critical to successful use of broadband technology in rural communities. That collaboration can exist at the local level, with external organizations or with technology suppliers.

In many projects, local municipal governments are funding partners. In others, local provincial government offices provide material support such as subsidized space. School divisions are another key partner, for technical support and advice, educational programs, Internet connections and space. Local individual support is also critical. In the Green Hectares project, the Josephburg Agricultural Society works with local businesses like Northline Angus, and the project board consists of young local farmers.

Collaboration with organizations outside of the community is valuable. Many of the projects connect to The Business Link to increase the access of local businesses to its services. Others have strong ties to post-secondary institutions.

The Milk River Cable Club works with Axia SuperNet Ltd. to link customers to the SuperNet, and the Hanna Learning Centre works with Netago to obtain technology support services.

### **Partnerships**

Nearly all of the projects in this case study involve partnerships. Those partnerships help projects obtain needed resources, like IT support, but more commonly allow the projects

to provide services and programs to meet community needs. For example, the Vulcan Business Development Society has partnerships with Lethbridge College and with the Vulcan and District Waste Management Commission that will help it build green energy projects.

Partnerships also extend the reach of individual projects. The Business Link has partnerships with several other projects that allow it to reach out to a wider audience of Albertans. In turn, the partner organizations have another asset to market their project within the community.

In addition to securing necessary services, helping a project respond to individual and community needs or expanding programming, partnerships can help organizations take on projects that they could not do on their own. For example, the Community Learning Network received \$2 million for a technology project in partnership with Literacy Alberta and Volunteer Alberta. The project will involve adult learning providers across Alberta.

### **Social influences**

The structure of the social system can affect diffusion and adoption of ideas, since that system affects decision-making processes. It is important to work with influential members of the adopting communities, the opinion leaders, to tap into the communication and decision structure of the community.<sup>31</sup>

The case studies provide examples of two approaches that have helped spread the use of broadband technology in rural Alberta: the presence of local champions and the development of networks.

Northline Angus is an example of how individuals can promote the use of the Internet. In this case, a family is a vocal and active champion, encouraging others to use technology to expand their businesses. The Schneider family has even collaborated with the University of Alberta to teach neighbouring farmers about broadband technology.

Community organizations can also be champions. The Hinton Municipal Library embraced broadband technology as part of a renovation project—it had the vision and worked with the community to bring that vision to life.

Networks are also important, both to expand what local initiatives can do for their communities and as part of initiatives themselves. The Business Link, for example, has a network of regional access sites which have strong links with the communities in which they are located. The Hanna Learning Centre and the Community Learning Network are linked and also have links with Volunteer Alberta and Literacy Alberta. This allows them to have a better picture of the needs of, and learning opportunities available to, their clients.

Networking can provide a way to provide fuller service to the community and increase the potential for success within the community. The Vulcan Business Development Society networks with Community Futures and SouthGrow to give local business people

access to those organizations' business planning and skill development programs. The Three Hills Clicsite is networked with the Agriculture Information Centre in Stettler, Alberta-North, the Hinton Municipal Library and the Hanna Learning Centre, among others.

### **Recognizing Local Needs**

If new ideas provide a relative advantage, fit the needs of the community, can be tried on a limited basis and are visible for discussion and understanding, they are likely to be adopted. In addition, an innovation is more likely to be adopted if it can be altered or adapted for a new context.<sup>32</sup>

The projects that target untapped learners—residents who want or need further education but are unable to leave the community due to other commitments—directly respond to local needs. The NAIT DATE project, for example, took training to students through broadband technology and traveling instructors and trailers. It worked with local employers to facilitate student participation. As a pilot project, it developed a template for trades training that NAIT may use again in the future.

Alberta-North and the Community Learning Network also base their programs on meeting the local needs of untapped learners. Through multiple sites, they can provide customized programs for the local community and for individual learners. This customer service focus also exists at the Hanna Learning Centre, which expanded its offerings and partnerships to better meet the needs of its clients.

The Vulcan Business Development Society and the Olds College Community Engagement Sites both rose out of a desire to specifically build local community capacity. In Vulcan, the society provided the needed community involvement that allowed its activities to respond to local needs. For the Community Engagement Sites, a precondition for each site is local involvement and support.

Some projects recognize the need to lead people towards the use of broadband technology to meet local or individual needs. The Three Hills Clicsite aims at changing attitudes about the public library by expanding to become a virtual learning centre. The project leaders want to help the public see the value of technology in everyday life.

An open-door approach has also helped projects meet local needs and interests. The Stettler Virtual Extension project and the Hinton Municipal Library make their videoconferencing facilities available to the public, allowing businesses and community groups to explore and benefit from the technology.

### **Community Engagement**

The flip side of responding to community needs is community engagement. The projects in this case study were either additions to services offered by local organizations—for example, the Milk River Cable Club, Green Hectares or the Vulcan Business Development Society—or extensions of services provided by external groups that require community support—such as Alberta-North's CAP sites or the Olds College Community

Engagement sites. Many projects also rely extensively on partnerships with other organizations in the community.

Marketing is also a useful way of engaging the community for some of the projects. Northline Angus, for example, uses its marketing experience to promote Internet use to other agricultural producers.

### **Communications**

How an innovation is communicated to a new community is very important. Efforts to share ideas need to consider available channels of communication, levels of understanding within the target audiences and areas of common interest.<sup>33</sup>

Many rural projects rely on multiple forms of advertising and promotion to “get the word out.” The Hinton Municipal Library used a public relations campaign and mass media to tell community and area residents about its services. The Hanna Learning Centre finds the costs of mass media high, and uses local newspapers and newsletters. Both projects also rely on word of mouth.

Most projects also provide multiple ways for potential users to access their services. The Business Link uses the Internet and its regional access sites to accommodate email, telephone, written and personal inquiries. The Hanna Learning Centre has taken this one step further by incorporating a push function into its community website. Residents can subscribe to the site to get new information sent to them over the Internet.

### **Building Transferable Models**

The Three Hills Clicsite was deliberately designed as a model that could be scaled up or down to apply to libraries of all sizes. Other projects do not reflect this deliberate planning, but have elements that similar organizations can use. For example, the Royal Tyrrell Museum, while a one-of-a-kind institution, has developed practices in program establishment, booking and workshop development that can be adapted to other institutions. The Hinton Municipal Library’s community partnership for IT support provides a model for other communities.

Many of the projects are linked to, or their leaders are aware of, other broadband projects. There is undoubtedly some cross-pollination of ideas as a result. In addition, rural communities have links through a variety of organizations, which present opportunities to share experiences and examples with communities that are just considering or beginning to develop broadband projects.

## NEXT STEPS

### Possible Actions

Expanding the use of broadband technology in rural Alberta requires collaboration among communities, community organizations, businesses, post-secondary institutions, the IT industry, the federal, provincial and local governments and rural Albertans. Working together, they can develop solutions and practices that meet local needs, as well as share their knowledge and experience with communities that are just entering the broadband era. If the goal is to establish a culture of broadband use in rural Alberta, all facets of the community need to be involved.

Possible actions include:

#### **1. Facilitating the sharing of information about projects.**

Sharing the findings and experiences of people using broadband technology to build rural capacity is an important step in encouraging adoption of the technology. Stakeholders could consider various approaches to providing information on successful projects. This could include developing a website with information and links to the project websites, hosting a conference or a videoconference showcasing projects, compiling a key contact directory for existing projects that would be accessible in multiple formats or developing a public relations campaign to promote community action.

#### **2. Considering the unique needs of areas of lower population density in developing programs.**

Areas with lower population densities face challenges in accessing broadband technology and services provided electronically. Stakeholders should consider the development of long-term technology infrastructure funding initiatives. For example, ISPs could consider implementing average costing models to make expansion into areas with low population densities more feasible. Stakeholders could also use partnerships to expand their services and community access to broadband technology.

#### **3. Supporting the development of alternative approaches to providing final mile connectivity.**

Fibre optic connections are not feasible for many commercial Internet service providers and many non-profit organizations in rural Alberta. Stakeholders should work with ISPs and others to develop other connectivity options. The Rural Connections: Community Broadband Infrastructure Pilot Program provides financial support to communities for infrastructure projects and testing of new technologies, for example. Other activities could enhance the benefits of this program.

#### **4. Enabling a culture of use within rural communities.**

There are financial and non-financial ways that the stakeholders can support the expansion of existing projects to new communities. They could fund pilot projects that transfer successful existing projects. They could provide a matchmaking service, to connect community organizations considering a project with a similar existing project. They could showcase successful projects at government or rural conferences or in

publications of interest to rural Albertans. Stakeholders should explore activities that would support expansion of broadband use in rural Alberta.

### **5. Ensuring that support initiatives recognize the need for time for community adoption of broadband technology.**

Support for the expansion of broadband technology—such as the suggestions made in the previous points—should be provided for three to five years to allow enough time for rural residents to fully adopt the technology.

## **Future Research**

This study is just a beginning. Its limited scope highlighted several areas where future research could lead to a better understanding of the potential and challenges of increasing broadband use in rural Alberta. Possible areas for more study include:

### **1. The North-South Divide**

Of the 15 case studies in this research project, three are province-wide initiatives, four are in northern Alberta and eight are in southern Alberta. This could be a product of differences in population—more people live south of Edmonton than north. It could, however, be the result of other factors, such as differences in the reach of technology, in how long technology has been available or the presence of potential community partners. This is an area that requires further research.

### **2. Other Jurisdictions**

Other provinces and countries face the same issues of rural sustainability as Alberta and the same issues related to broadband use. There may be policies, programs or models elsewhere that could be adapted for use in Alberta.

### **3. Statistical Information**

The use of broadband technology, and the pace of expansion of use, varies across Alberta. There may be statistical information that can shed light on what factors promote or inhibit the spread of broadband use, or that highlights areas that need more intensive study or specific action.

### **4. Gap Analysis**

There is a need to develop reliable information on where broadband services are available and where they are not. A gap analysis would provide this information and would allow for a better understanding of where there is a lack of access and what steps would best address the gaps.

### **5. Connections and Collaboration**

This study showed the value of connections and collaboration to the success of rural broadband projects. Further research may help identify what types of collaboration is most useful and how to build successful collaboration within communities and among projects and partners.

## **A Starting Point for Action**

The Government of Alberta recognizes the need for support to create a culture of broadband use. Alberta Agriculture and Rural Development recently introduced a funding program that rural communities can use to expand their access to and use of broadband technology.

The Rural Connections: Community Broadband Infrastructure Pilot Program consists of \$9 million to fund targeted rural communities for projects that enable access to reasonable high-speed broadband services. Eligible activities include: infrastructure projects that could benefit from the Alberta SuperNet; testing and evaluating technologies to extend or enhance broadband services; feasibility studies in support of broadband infrastructure projects; and outreach and extension initiatives to create a culture of broadband use and enhance skill sets.

In addition, Rural Alberta's Development Fund supports a wide range of community-focused projects that will contribute to the growth and prosperity of rural Alberta.

## **CONCLUSION**

The case studies included in this research project show how broadband technology can allow rural communities to make community, business and education connections beyond their own borders. In essence, the technology can break down the barriers to opportunities created by distance, time, weather and costs.

Broadband technology is a valuable tool to sustain and build rural capacity:

- Economically, by allowing residents to improve skills, businesses to reach new markets and communities to become more attractive to potential new residents;
- Socially, by expanding the delivery of educational and health services within rural communities; and
- Culturally, by improving residents' access to a range of programs of interest and by strengthening the ability of communities to retain and attract people.

Some Alberta communities have embraced broadband technology; others have not. This project has highlighted some of the challenges those communities face, as well as critical factors to the success of broadband projects in rural areas. Further research may expand this knowledge.

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## APPENDIX A: INTERVIEW GUIDE

1. Introduction to the interview
  - Discussion of authority/FOIPP/consent, etc.
  - Request for participation from respondent.
  - Request for information about the application of interest - e.g. link, brochure, etc.
  - Request for contact information to maintain contact with the respondent and to provide information about our project.
2. Community overview: In your community, which age group(s) are you targeting and what sort of things are you doing to engage them?
3. What kind of computer experience (home, work) do most people have in your community? What kind of access is there to a computer (borrow, own, library, etc), and are there places in the community to purchase a computer and have it serviced?
4. Project overview: Please describe the project – when it began, what started it and why, where, and how. What is your position in the project?
5. Was there a person or persons who were the instigator(s) of the project?
6. How is the project funded? E.g. government, local, combination.
7. How has the project progressed/evolved since the beginning? Barriers, challenges, successes?
8. How has the project been communicated to users? (In what ways—on-line, offline, mass media, email push, word of mouth, etc?)
9. What benefits have accrued to the community/businesses/users/beneficiaries of the project?
10. Are there any other factors that are still holding the project back from its full potential?
11. Respondent involvement in the project: What is the current status of the project?
12. How has your role in the project changed since it started?
13. How long have you been involved with the project?
14. Are you working with other communities on this project?
15. Future of the project: How might the project progress in the future?
16. Are there specific plans for this future development? If so, what are they?

17. Are there specific communications plans related to the project for the future?
18. Lessons learned: what advice would you give to others seeking to undertake a similar project?
19. Other considerations: What other people might I talk to about the project?
20. Are you aware of other communities with projects that might be of interest to our research? If so, are there people I might talk to about those projects?
21. Do you have any questions/concerns/comments about this research?
22. May I contact you in follow-up to this interview?

## APPENDIX B: SUMMARY OF CASES

Community or project	Details	Sustainability Pillars	Significance of Project
<b>Alberta-North</b>	Network of colleges for post-secondary courses and adult learners	Learning and skill development	Partnership with northern colleges, and CAP sites for local access and resources  Allows people to stay in their own communities while taking courses
<b>Alberta Telehealth</b>	Home monitoring  Videoconference	Health care	Uses broadband technology, including videoconferencing, to transmit pictures, voices and information  Improves access to health services for rural residents and to health information for rural care providers
<b>The Business Link</b>	Brown bag lunch seminars  Business information and resources	Economic growth  Learning and skill development	Free hour-long sessions over lunch discussing business topics  Sites all over the province and associate members that host its sessions
<b>Community Learning Network (CLN)</b>	Community Adult Learning Councils (CALC)	Learning and skill development	81 communities are part of the CLN  Adult learning, literacy, community, employability enhancement, professional skills
<b>Drumheller</b>	Royal Tyrrell Museum Distance Learning Program	Community capacity  Learning and skill development	Allows people from all over the world to take part in a world-class museum of palaeontology and natural history via videoconference  6 to 8 programs tailored for K-12 education

Community or project	Details	Sustainability Pillars	Significance of Project
<b>Green Hectares</b>	Model demonstration farm	Economic growth	24-hour live video feed of the farm  Physical place to meet  Equine center, cow/calf, training for young farmers, anyone who wants to receive information is welcome to come
<b>Hanna</b>	Hanna Learning Centre	Community capacity  Learning and skill development	Networking is important to get people the answers they are looking for  Program offerings for anyone at any age
<b>Hinton Municipal Library</b>	Library as community centre  Videoconference suite	Community capacity  Learning and skill development	Offers high-speed access, videoconference, courses, sessions for anyone in the community  Partnership with the school division allows for more capabilities and technical support
<b>Milk River Cable Club</b>	Private ISP	Economic growth	Non-profit company provides high-speed access to community  Seeing a revival in the community  Charge flat rates for equal access to everyone
<b>NAIT DATE</b>	Distance apprenticeship training and education	Learning and skill development	Welding/electrician apprentices take courses via videoconference from their communities  Apprentices can stay at home and continue working while receiving training

Community or project	Details	Sustainability Pillars	Significance of Project
<b>Northline Angus</b>	<p>Raises and markets purebred cattle</p> <p>Business has a farm and a website</p>	Economic growth	<p>On-line business expands market</p> <p>Able to make it through the BSE crisis by exporting</p>
<b>Olds</b>	<p>Community Learning Campus</p> <p>Community engagement sites</p>	<p>Community capacity</p> <p>Learning and skill development</p>	<p>Setting up sites for access and connection</p> <p>Establishing a community council and organizational structure to engage local community in the process</p>
<b>Stettler</b>	<p>Agriculture Information Centre</p> <p>Virtual Extension Project</p>	<p>Community capacity</p> <p>Learning and skill Development</p>	<p>Videoconference allows showcases, info sessions</p> <p>Start to establish endpoints across the province</p>
<b>Three Hills</b>	<p>Clicsite</p> <p>SuperNet in the library</p>	<p>Community capacity</p> <p>Learning and skill development</p>	<p>Library becomes a marketplace or neighbourhood</p> <p>The “go-to” source for knowledge</p>
<b>Vulcan</b>	<p>Vulcan Business Development Society</p> <p>Vulcan Innovation Project</p>	<p>Economic growth</p> <p>Community capacity</p> <p>Learning and skill development</p>	<p>Meets challenges of rural issues</p> <p>Builds knowledge, resources</p> <p>Partners with local schools to deliver trades and skills training</p> <p>Gives rural residents equal opportunities</p>